

Oracle® Communications
Diameter Signaling Router
DSR Software Upgrade Guide
Release 7.3
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Oracle® Communications Diameter Signaling Router, DSR Software Upgrade Guide, Release 7.3

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1 INTRODUCTION

1.1 Purpose and Scope

This document describes methods utilized and procedures executed to perform a major upgrade from DSR 6.0, 7.0.x, 7.1.x, or 7.2 to release 7.3, or an incremental upgrade from an earlier DSR 7.3 release to a later 7.3 release. The upgrade of HP C-Class blades, RMS HP servers, and VE-DSR servers is covered by this document. The audience for this document includes Oracle customers as well as following internal groups: Software Development, Quality Assurance, Information Development, and Consulting Services including NPx. This document provides step-by-step instructions to execute any incremental or major software upgrade.

The DSR 7.3 software release includes all Oracle CGBU Platform Distribution (TPD) software. Any upgrade of TPD required to bring the DSR to release 7.3 occurs automatically as part of the DSR 7.3 software upgrade. The execution of this procedure assumes that the DSR 7.3 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.

1.1.1 What is Not Covered by this Document

The following items are beyond the scope of this document. Refer to the specified reference for additional information.

- Distribution of DSR software loads. It is recommended to contact MOS for the software loads as described in Appendix P.
- Initial installation of DSR software.
- Firmware upgrade. Refer to [1] (HP) or [2] (Netra).
- PM&C upgrade. Refer to [4].
- SDS upgrade. Refer to [8].

1.2 References

- [1] *HP Solutions Firmware Upgrade Pack Release Notes, 795-0000-0xx,v2.1.1* (or latest 2.1 version)
- [2] *Oracle Firmware Upgrade Pack Upgrade Guide, E54963, Oracle*
- [3] *TVOE 3.0 Upgrade Document, E53018, Oracle*
- [4] *PM&C 5.7 and 6.0 Incremental Upgrade Guide, E54387 (cgbu_010617), Oracle*
- [5] *DSR 5.x/6.x Installation Part 2/2, E52510, Oracle*
- [6] *DSR 7.0/7.1 Installation Part 2/2, E58954, Oracle*
- [7] *DSR 7.2/7.3 Installation Part 2/2, E69409, Oracle*
- [8] *SDS Upgrade document, E76623, Oracle*
- [9] *Maintenance Window Analysis Tool cgbu_010314, Oracle*
- [10] *DSR 6.0 to 7.0 Migration – IPFE Aspects, WI007086, Oracle*
- [11] *Fast Deployment and Configuration Tool Technical Reference, TR007249, Oracle*
- [12] *DSR 7.2/7.3 Disaster Recovery Guide, E69612, Oracle*
- [13] *Oracle Communications DSR Introducing SCTP Datagram Transport Layer Security (DTLS) In DSR 7.1 By Enabling SCTP AUTH Extensions By Default, OSD 2019141.1*
- [14] *Oracle Communications Tekelec Platform 7.0.x Configuration Guide, E63486, Oracle*

1.3 Acronyms

Table 1: Acronyms

CD-ROM	Compact Disc Read-only Media
CPA	Charging Proxy Agent
CSV	Comma-separated Values
cSBR	Charging Session Binding Repository
DA	Diameter Agent
DA MP	Diameter Agent Message Processor
DB	Database
DP	Data Processor
DR	Disaster Recovery
DSR	Diameter Signaling Router
DSR DR NOAM	Disaster Recovery DSR NOAM
FABR	Full Address Based Resolution
FOA	First Office Application
GA	General Availability
GPS	Global Product Solutions
GUI	Graphical User Interface
HA	High Availability
IDIH	Integrated Diameter Intelligence Hub
iLO	Integrated Lights Out (HP)
IMI	Internal Management Interface
IP	Internet Protocol
IPM	Initial Product Manufacture
IPFE	IP Front End
ISO	ISO 9660 file system (when used in the context of this document)
LA	Limited Availability
LOM	Lights Out Manager (Netra)
MOP	Method of Procedure
MP	Message Processing or Message Processor
MW	Maintenance Window
NE	Network Element
NOAM	Network OAM
OA	HP Onboard Administrator
OAM	Operations, Administration and Maintenance
OFCS	Offline Charging Solution
PCA	Policy and Charging Agent (formerly known as PDRA)
PDRA	Policy Diameter Routing Agent
PM&C	Platform Management and Configuration
RMS	Rack Mount Server
SBR	Session Binding Repository
SDS	Subscriber Database Server
SOAM	System OAM
TPD	Tekelec Platform Distribution
TVOE	Tekelec Virtualized Operating Environment
UI	User Interface
VIP	Virtual IP
VPN	Virtual Private Network
XMI	External Management Interface
XSI	External Signaling Interface

1.4 Terminology

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

Table 2: Terminology

Upgrade	The process of converting an application from its current release on a system to a newer release.
Major Upgrade	An upgrade from one DSR release to another DSR release. E.g. DSR 6.0 to DSR 7.3.
Incremental Upgrade	An upgrade within a given DSR release e.g. 7.3.x to 7.3.y.
Release	Release is any particular distribution of software that is different from any other distribution.
Single Server Upgrade	The process of converting a DSR 6.0/7.0.x/7.1.x/7.2 server from its current release to a newer release.
Blade (or Managed Blade) Upgrade	Single Server upgrade performed on a blade. This upgrade requires the use of the PM&C GUI.
Backout	The process of converting a single DSR 7.3 server to a prior version. This could be performed due to failure in Single Server Upgrade or the upgrade cannot be accepted for some other reason. Backout is a user initiated process.
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.
Primary NOAM Network Element	The network element that contains the Active and Standby NOAM servers in a DSR. If the NOAMs are deployed on a rack-mount server (and often not co-located with any other site), that RMS is considered the primary NOAM network element. If the NOAMs are virtualized on a C-class blade that is part of one of the sites, then the primary NOAM network element and the signaling network element hosting the NOAMs are one and the same.
Signaling Network Element	Any network element that contains DA-MPs (and possibly other C-level servers), thus carrying out Diameter signaling functions. Each SOAM pair and its associated C-level servers are considered a single signaling network element. And if a signaling network element includes a server that hosts the NOAMs, that signaling network element is also considered to be the primary NOAM network element.
Site	Physical location where one or more network elements reside. The site is defined by the SOAM.
Target release	Software release to upgrade to.
Health Check	Procedure used to determine the health and status of the DSR's internal network. This includes status displayed from the DSR GUI and PM&C 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 upgrading a server. The state is defined by the following attributes: <ul style="list-style-type: none"> • 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.
Management Server	Server deployed with HP c-class or RMS used to host PM&C application, to configure Cisco 4948 switches, and to serve other configuration purposes.
PM&C Application	PM&C is an application that provides platform-level management functionality for HPC/RMS system, such as the capability to manage and provision platform components of the system so it can host applications.

1+1	Setup with one Active and one Standby DA-MP.
N+0	Setup with N active DA-MP(s) but no standby DA-MP.
NOAM	Network OAM for DSR.
SOAM	System OAM for DSR.
Migration	Changing policy and resources after upgrade (if required). For example, changing from 1+1 (Active/Standby) policy to N+ 0 (Multiple Active) policies.
RMS geographic site	Two rack-mount servers that together host 1) an NOAM HA pair; 2) an SOAM HA pair; 3) two DA-MPs in either a 1+1 or N+0 configuration; 4) optional IPFE(s); 5) optional IDIH
RMS Diameter site	One RMS geographic site implemented as a single Diameter network element.
Software Centric	The business practice of delivering an Oracle software product, while relying upon the customer to procure the requisite hardware components. Oracle provides the hardware specifications, but does not provide the hardware, and is not responsible for hardware installation, configuration, or maintenance.
Enablement	The business practice of providing support services (hardware, software, documentation, etc) that enable a 3 rd party entity to install, configuration, and maintain Oracle products for Oracle customers.

1.5 How to Use this Document

When executing the procedures in this document, there are a few key points which help to ensure that the user understands procedure convention. These points are:

- 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 the procedure. It is recommended to contact MOS for assistance, as described in Appendix P, before attempting to continue.

1.5.1 Executing Procedures

Figure 1 below shows an example of a procedural step used in this document.

- Each step has a checkbox that the user should check-off to keep track of the progress of the procedure.
- Any sub-steps within a step are referred to as Step X.Y. The example in Figure 1 shows Step 1 and Step 2.1 to Step 2.6.
- The title box describes the operations to be performed during that step
- GUI menu items, action links and buttons to be clicked on are in **bold Arial** font.
- GUI fields and values to take note of during a step are in **bold Arial** font.
- Each command that the user enters, as well as any response output, is formatted in **10-point bold Courier** font.

Figure 1. Example Procedure steps used in this document

	Title Box	Directive Steps
1 <input type="checkbox"/>	Change directory	Change to the backout directory. \$ cd /var/TKLC/backout
2 <input type="checkbox"/>	Verify Network Element data	View the Network Elements configuration data; verify the data; save and print report. 1. Select Configuration > Network Elements to view Network Elements Configuration screen.

1.6 Recommendations

This section provides some recommendations to consider when preparing to execute the procedures in this document.

1.6.1 Frequency of Health Checks

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

1.6.2 Large Installation Support

For large systems containing multiple Signaling Network Elements, it is impossible to upgrade multi-site systems in a single maintenance window. However, primary and DR NOAM (if equipped) Network Element servers should be upgraded within the same maintenance window.

1.6.3 Logging of Upgrade Activities

It is a best practice to use a terminal session with logging enabled to capture user command activities and output during the upgrade procedures. These can be used for analysis in the event of issues encountered during the activity. These logs should be saved off line at the completion of the activity.

1.7 Warnings, Cautions, and Notes

This section presents notices of warnings and cautions that directly relate to the success of the upgrade. It is imperative that each of these notices be read and understood before continuing with the upgrade. If there are any conflicts, issues, or questions related to these notices, it is recommended to contact MOS as directed in Appendix P before starting the upgrade.

1.7.1 PCA/PDRA Application – PCRF Pooling Migration Precheck

If the PCA application or the PDRA application has been activated in the source release, PCRF Pooling **MUST** be enabled, and the PCRF Pooling Migration **MUST** be completed prior to the start of a major upgrade to DSR 7.3.



!! WARNING!!

**THE UPGRADE TO RELEASE 7.3 WILL FAIL IF PCRF POOLING
MIGRATION IS NOT COMPLETED WHEN THE PCA/PDRA
APPLICATION IS ENABLED**

The PCRF Pooling Migration Tool is provided to determine the status of the PCRF Pooling Migration. The tool has options to determine if the migration is complete, to indicate if upgrade is allowed or not allowed, and to estimate the time required to complete the Pooling migration.

The upgrade to DSR 7.3 CANNOT be scheduled until the PCRF Pooling Migration Tool is run to determine the status of the migration. Pooling migration can take days or weeks to complete, depending on the PCA/PDRA configuration and when PCRF Pooling was enabled.

When the tool determines that pooling migration is completed, a flag is set internally, which will allow the upgrade to proceed.

Refer to Appendix D: PCRF Pooling Migration Check for instructions on how to execute the PCRF Pooling Migration check.

The PCRF Pooling Migration Check is not required in the following scenarios:

1. The PCA/PDRA application has not been activated
2. When upgrading from release 7.1 or 7.2 to 7.3 (in this case, pooling migration has already completed)
3. DSR 7.3 incremental upgrade.

1.7.2 Obsolete Hardware Check

Due to the enhanced processing capabilities and requirements of DSR Release 7.3, HP Gen6 and Gen7 hardware are NOT supported. All Gen6 and Gen7 blades must be replaced with supported hardware before upgrading to release 7.3.



!! WARNING!!

HP GEN6 AND GEN7 HARDWARE ARE NOT SUPPORTED IN DSR 7.3. ALL GEN6 AND GEN7 BLADES MUST BE REPLACED WITH SUPPORTED HARDWARE PRIOR TO UPGRADING TO 7.3.

1.7.3 Review Release Notes

Before starting the upgrade, it is recommended to review the Release Notes for the DSR 7.3 release to understand the functional differences and possible traffic impacts of the upgrade.

2 GENERAL DESCRIPTION

This document defines the step-by-step actions performed to execute an upgrade of an in-service DSR from the source release to the target release. A major upgrade advances the DSR from the source release to the target release. An incremental upgrade advances the DSR from an earlier DSR 7.3 source release to later version of the same target release.

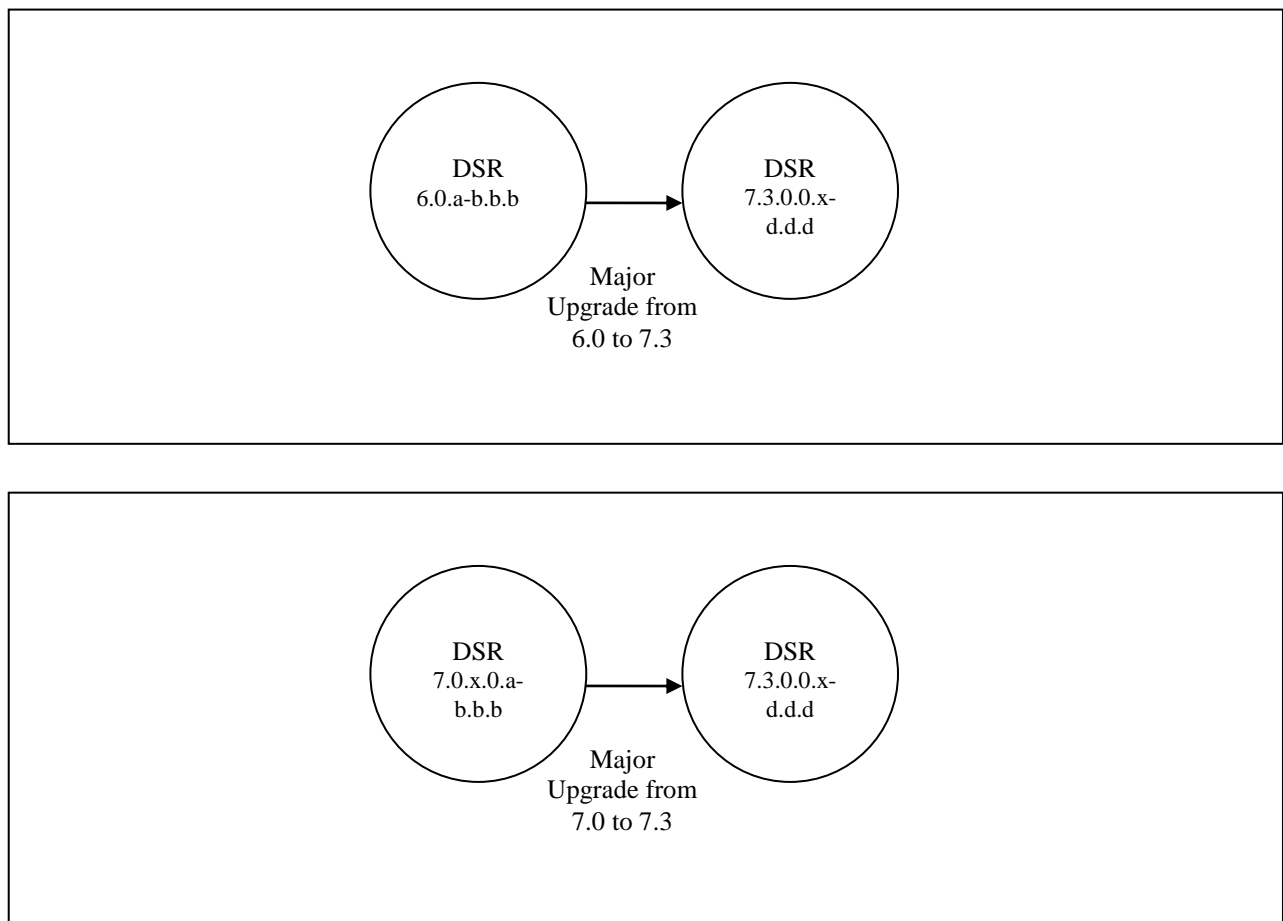
Note that for any incremental upgrade, the source and target releases must have the same value of “x”. For example, advancing a DSR from 7.3.0-73.1.0 to 7.3.0-73.2.0 is an incremental upgrade. But advancing a DSR running a 6.0 release to a 7.3 target release constitutes a major upgrade.

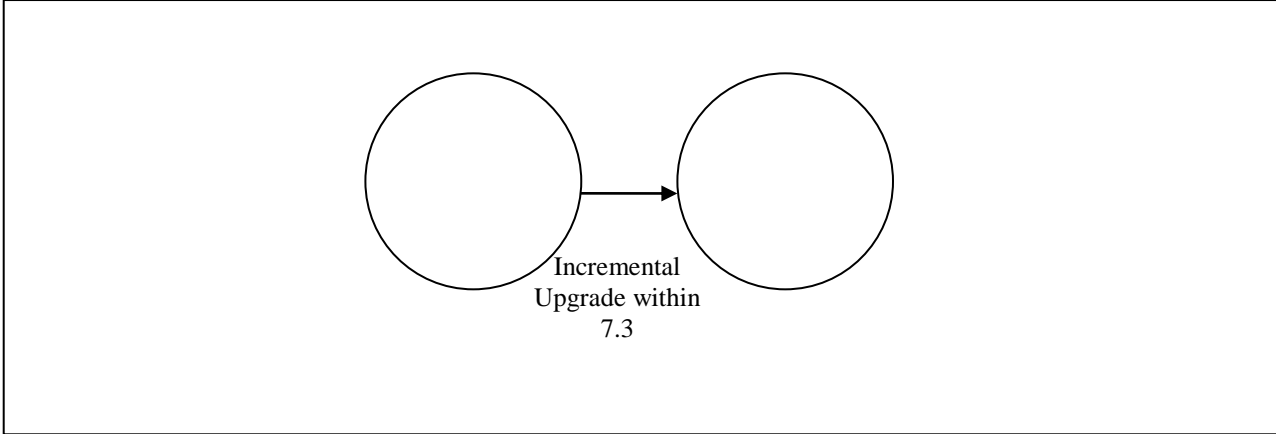
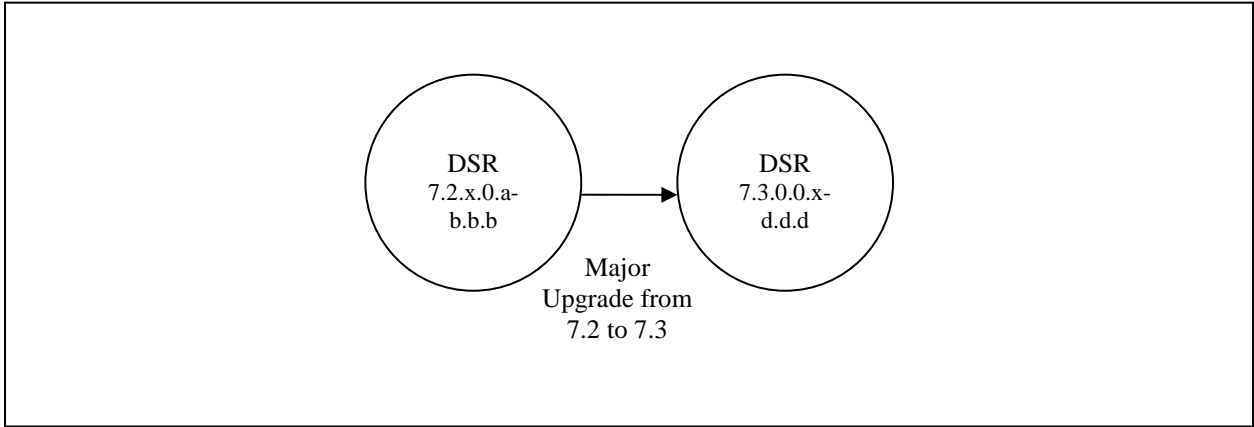
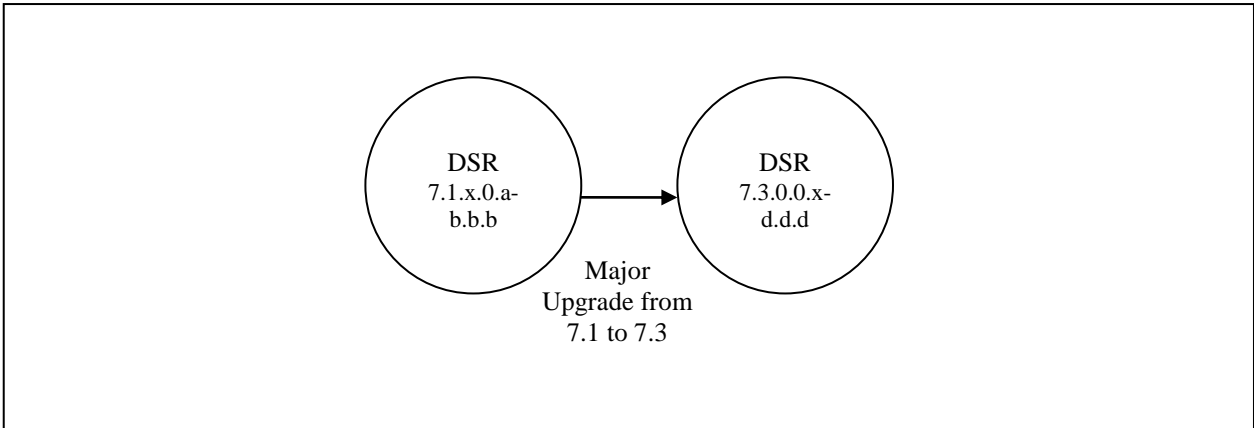
2.1 Supported Upgrade Paths

The supported paths to upgrade to a DSR 7.3 target release are shown in Figure 2 below.

NOTE: DSR upgrade procedures assume the source and target releases are the GA or LA builds in the upgrade path.

Figure 2. DSR 7.3 Supported Upgrade Paths





2.2 Supported Hardware

This section is not applicable to Software Centric upgrades.

Due to the enhanced processing capabilities and requirements of DSR Release 7.3, HP Gen6 and Gen7 hardware are NOT supported. All Gen6 and Gen7 blades must be replaced with supported hardware before upgrading to release 7.3.



!! WARNING!!

HP GEN6 AND GEN7 HARDWARE ARE NOT SUPPORTED IN DSR 7.3. ALL GEN6 AND GEN7 BLADES MUST BE REPLACED WITH SUPPORTED HARDWARE PRIOR TO UPGRADING TO 7.3.

2.3 Active/Standby (1+1) vs Multi-Active (N+0) DA-MPs

The Site upgrade procedures are different for the two DA-MP Redundancy Models:

- Active/Standby DA-MP pair - two servers only
- Multi-Active DA-MPs - up to 16 DA-MPs, and typically including IPFE servers that need to be upgraded

For this reason, separate procedures are provided for these two cases.

2.4 Geo-diverse 3-Tier Site (Active/Standby/Spare PCA configuration)

With a Geo-Diverse site, the upgrade of the SOAM Active/Standby servers must also include an upgrade of the Spare SOAM at the geo-redundant site, in the same maintenance window.

2.5 Firmware Updates

This section is not applicable to Software Centric upgrades.

Firmware upgrades are not in the scope of this document, but may be required before upgrading DSR. It is assumed that these are done when needed by the hardware, and there is typically not a dependency between Firmware version and the DSR release. See Release Notes for any dependencies.

2.6 PM&C (Management Server) Upgrades

Each site may have a PM&C (Management Server) that provides support for maintenance activities at the site. There is a separate procedure for PM&C upgrade, including TVOE. PM&C must be upgraded before the other servers at the site are upgraded.

2.7 TVOE Upgrade

TVOE (Virtual Operating Environment) is a hypervisor, which hosts multiple virtual servers on the same hardware. It is typically used to make more efficient use of a hardware server (Rack Mount or Blade), while maintaining application independence, for DSR applications that do not require the full resources of a modern hardware server.

In DSR architecture, TVOE Hosts are typically used to host several functions, including:

- PM&C
- DSR NOAM and SOAM Applications
- SDS SOAM Applications
- IDIH

(TVOE Host servers may also be used to host other DSR functions, including DA-MPs and IPFEs in a small deployment.)

TVOE Host servers (i.e. servers running TVOE + one or more DSR applications) must be upgraded before upgrading the guest applications, to assure compatibility. However, TVOE is backward compatible with older application versions, so the TVOE Host and the applications do not have to be upgraded in the same maintenance window.

The TVOE server hosting PM&C, and the PM&C application, must be upgraded before other TVOE host upgrades, since PM&C is used to perform the TVOE upgrades.

There are three supported strategies for TVOE upgrade (Options A, B and C):

- Option A: Upgrade TVOE environments as a separate activity that is planned and executed days or weeks before the application upgrades (perhaps site-at-a-time)
- Options to Upgrade TVOE and applications in the same maintenance window:
 - Option B: Upgrade a TVOE and application, followed by another TVOE and application. For example: for Standby SOAM Upgrade – stop the application, upgrade TVOE, upgrade the application, start the application; then repeat for the Active SOAM.(Preferred)
 - Option C: Upgrade multiple TVOE Hosts at a site, and then start upgrading the applications (same maintenance window)

Note that TVOE upgrades require a brief shutdown of the guest application(s) on the server. Note also that the TVOE virtual hosts may be hosting NOAM or SOAM applications. These applications will also be affected, including a forced switchover if the Active NOAM/SOAM is shutdown.

The procedure for upgrading TVOE environments in advance of the application upgrades (Option A) is documented in Section 3.3.5.

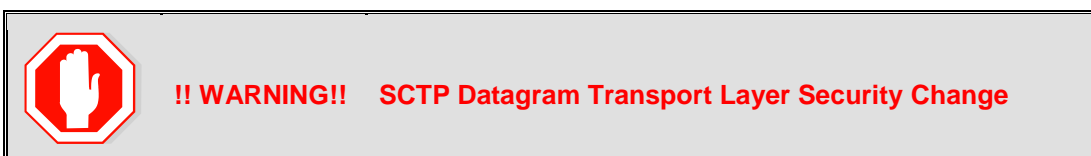
2.8 SDS Upgrade

It is recommended to upgrade the SDS topology (NOAMs, SOAMs, DPs) before the DSR topology. If this is not possible, then comAgent backward compatibility between the target and the source releases must be verified. comAgent is the process used to facilitate communication (Client/Server) between the SDS DP and the DA-MP on the DSR.

2.9 Traffic Management during Upgrade

The upgrade of the NOAM and SOAM servers is not expected to affect traffic processing at the DA-MPs and other traffic-handling servers.

For the upgrade of the DA-MPs and IPFEs, traffic connections are disabled only for the servers being upgraded. The remaining servers continue to service traffic.



Oracle introduced SCTP Datagram Transport Layer Security (DTLS) in DSR 7.1 by enabling SCTP AUTH extensions by default. SCTP AUTH extensions are required for SCTP DTLS. However, there are known impacts with SCTP AUTH extensions as covered by the CVEs referenced in [13]. It is highly recommended that customers upgrading to Release 7.2 and later should prepare clients before the DSR is upgraded. This will ensure the DSR-to-Client SCTP connection will establish with DTLS with SCTP AUTH extensions enabled.

If customers DO NOT prepare clients to accommodate the DTLS changes, then the SCTP connections to client devices WILL NOT restore after the DSR is upgraded to DSR 7.2 and later. In the event that the SCTP connections do not re-establish after the upgrade, follow the Disable/Enable DTLS procedure in [7].

2.10 RMS Deployments

All RMS deployments are 3-Tier. In these smaller deployments, the Message Processing (DA-MP and IPFE) servers are also virtualized (deployed on a Hypervisor Host) to reduce the number of servers required.

When an RMS-based DSR has no geographic redundancy, there is just a single RMS geographic site, functioning as a single RMS Diameter site. The upgrade of this DSR deployment should be done in two maintenance windows: one for the NOAMs, and the second for all remaining servers.

When an RMS-based DSR includes geographic redundancy, there are two RMS geographic sites (but still functioning as a single RMS Diameter site). The primary RMS site contains the NOAM active/standby pair that manages the network element, while the geo-redundant RMS site contains a disaster recovery NOAM pair. Each RMS geographic site includes its own SOAM pair, but only the SOAMs at the primary RMS site are used to manage the signaling network element. The SOAMs at the geo-redundant site are for backup purposes only.

The upgrade of an RMS DSR deployment should be done in three maintenance windows: one for the NOAMs; a second for the SOAMs and MPs (DA-MP and IPFE) at the geo-redundant backup RMS site; and a third for the SOAMs and MPs (DA-MP and IPFE) at the primary RMS site.

2.11 Automated Server Group Upgrade

The Automated Server Group (ASG) upgrade feature allows the user to automatically upgrade all of the servers in a server group simply by specifying a set of controlling parameters.

The purpose of ASG is to simplify and automate segments of the DSR upgrade. The DSR has long supported the ability to select multiple servers for upgrade. In doing so however, it was incumbent on the user to determine ahead of time which servers could be upgraded in parallel, considering traffic impact. If the servers were not carefully chosen, the upgrade could adversely impact system operations.

When a server group is selected for upgrade, ASG will upgrade each of the servers serially, or in parallel, or a combination of both, while enforcing minimum service availability. The number of servers in the server group that are upgraded in parallel is user selectable. The procedures in this document provide the detailed steps specifying when to use ASG, as well as the appropriate parameters that should be selected for each server group type.

ASG is the default upgrade method for most server group types associated with the DSR. However, there are some instances in which the manual upgrade method is utilized. In all cases where ASG is used, procedures for a manual upgrade are also provided. **Note that in order to use ASG on a server group, no servers in that server group can be already upgraded – either by ASG or manually.**

DSR continues to support the parallel upgrade of server groups, including any combination of automated and manual upgrade methods.

2.11.1 Pausing, Restarting, and Canceling Automated Server Group Upgrade

When a server group is upgraded using ASG, each server within that server group is automatically prepared for upgrade, upgraded to the target release, and returned to service on the target release. Once an ASG upgrade is initiated, the task responsible for controlling the sequencing of servers entering upgrade can be paused, restarted, and even canceled from the **Status & Manage > Active Tasks** screen (Figure 3).

For example, in Figure 3, task ID #1 is an ASG task, while task ID #2 is the corresponding individual server upgrade task. When the ASG task is selected (highlighted in green), the Cancel and Pause buttons are enabled. When the ASG task is paused, the Restart and Cancel buttons are enabled. Pausing or canceling the ASG task affects only the

ASG task. It has no effect on the individual server upgrade tasks that were started by the ASG task (i.e., task ID #2 in Figure 3).

When the ASG task is paused, it can be restarted by selecting the task and clicking the **Restart** button. When restarted, the ASG task will resume the process of initiating upgrade on the server group using the parameters that were initially selected.

Main Menu: Status & Manage -> Tasks -> Active Tasks

Filter						
NO1	NO2	SO1	SO2	MP1	MP2	IPFE
ID	Name	Status	Start Time	Update Time		
2	SO1 Server Upgrade (in SO_SG Server Group Upgrade)	running	2015-03-02 11:44:42 EST	2015-03-02 11:54:00 EST		
1	SO_SG Server Group Upgrade	running	2015-03-02 11:44:32 EST	2015-03-02 11:47:47 EST		
0	Pre-upgrade full backup	completed	2015-02-27 19:59:06 EST	2015-02-27 20:00:46 EST		

Figure 3. Active Tasks Screen

In the event that a server fails upgrade, that server will automatically roll back to the previous release in preparation for `backup_restore` and fault isolation. Any other servers in that server group that are in the process of upgrading will continue to upgrade to completion. However, the ASG task itself will pause and no other servers in that server group will be upgraded. Pausing the ASG task provides an opportunity for troubleshooting to correct the problem. Once the problem is corrected, the server group upgrade can be resumed by restarting the paused ASG task. Note that the failed server will NOT be selected for upgrade upon resuming the ASG task.

If the user chooses to cancel the ASG task, the task will stop running and cannot be restarted. This means that the automated upgrade option will no longer be available for that server group. Any remaining servers in the affected server group must be upgraded manually.

3 UPGRADE PLANNING AND PRE-UPGRADE PROCEDURES

This section contains all information necessary to prepare for and execute an upgrade. The materials required to perform an upgrade are described, as are pre-upgrade procedures that should be run to ensure the system is fully ready for upgrade. Then, the actual procedures for each supported upgrade path are given.

There are overview tables throughout this document that help plan the upgrade and estimate how long it will take to perform various actions. The stated time durations for each step or group of steps are estimates only. Do not use the overview tables to execute any actions on the system. Only the procedures should be used when performing upgrade actions, beginning with Procedure 1: Required Materials Check.

3.1 Required Materials and Information

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

- Target-release application ISO image file or target-release application media.
- The capability to log into the DSR 6.0/7.x Network OAM servers with Administrator privileges.
NOTE: All logins into the DSR NOAM servers are made via the External Management VIP unless otherwise stated.
- User logins, passwords, IP addresses and other administration information. See [Table 3].
- VPN access to the customer's network is required if that is the only method to log into the OAM servers.
- Direct access to the blades/RMS Integrated Lights Out (iLO)/XMI IP addresses (whichever is applicable) from the workstations directly connected to the DSR servers is required.

3.1.1 Application ISO Image File / Media

Obtain a copy of the target release ISO image file or media. This file is necessary to perform the upgrade.

The DSR 7.3 ISO image file name will be in the following format:

DSR-7.3.0.0.0_73.xx.0-x86_64.iso

NOTE: Prior to the execution of this upgrade procedure it is assumed that the DSR 7.3 ISO image file has already been delivered to the customer's premises. The ISO image file must reside on the local workstation used to perform the upgrade, and any user performing the upgrade must have access to the ISO image file. If the user performing the upgrade is at a remote location, it is assumed the ISO file is already available before starting the upgrade procedure.

The ISO will be deployed as part of the pre-upgrade activities in Section 3.3.

3.1.2 Logins, Passwords and Server IP Addresses

Table 3 identifies the information that will be called out in the upgrade procedures, such as server IP addresses and login credentials. For convenience, space is provided in Table 3 for recording the values, or the information can be obtained by other means. This step ensures that the necessary administration information is available prior to an upgrade.

Consider the sensitivity 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 prevent the actual recording of this information in hard-copy form.

Table 3: Logins, Passwords and Server IP Addresses

Item	Description	Recorded Value
Target Release	Target DSR upgrade release	
Credentials	GUI Admin Username ¹	
	GUI Admin Password	
	DSR Root Password ²	
	DSR admusr Password ²	
	Blades iLO/LOM Admin Username	
	Blades iLO/LOM Admin Password	
	PM&C GUI Admin Username	
	PM&C GUI Admin Password	
	PM&C root Password	
	PM&C pmacftpusr password	
	OA GUI Username	
OA GUI Password		
VPN Access Details	Customer VPN information (if needed)	
NOAM	XMI VIP address ³	
	NOAM 1 XMI IP Address	
	NOAM 2 XMI IP Address	
SOAM	XMI VIP address	
	SOAM 1 XMI IP Address (Site 1)	
	SOAM 2 XMI IP Address (Site 1)	
	PCA (DSR) Spare System OAM&P server – Site 1 Spare in Site 2, XMI IP Address	
	SOAM 1 XMI IP Address (Site 2)	
	SOAM 2 XMI IP Address (Site 2)	
	PCA (DSR) Spare System OAM&P server – Site 2 Spare in Site 1, XMI IP Address	

¹ NOTE: The user must have administrator privileges. This means the user belongs to the **admin** group in Group Administration.

² NOTE: This is the password for the server login. This is not the same login as the GUI Administrator. The admusr password is required if recovery procedures are needed. If the admusr password is not the same on all other servers, then all those servers' admusr passwords must also be recorded; use additional space at the bottom of this table.

³ NOTE: All logins into the NOAM servers are made via the External Management VIP unless otherwise stated.

Item	Description	Recorded Value
Binding SBR Server Groups	Binding SBR SR1 Server Group Servers (Site 1)	
	Binding SBR SR2 Server Group Servers (Site 1)	
	Binding SBR SR3 Server Group Servers (Site 1)	
	Binding SBR SR4 Server Group Servers (Site 1)	
PCA MP Server Group	PCA MP Server Group Servers (Site 1)	
	PCA MP Server Group Servers (Site 1)	
IPFE Server Groups(For PDRA)	PCA IPFE A1 Server Group Server (Site 1)	
	PCA IPFE A 2 Server Group Server (Site 1)	
	PCA IPFE B 1 Server Group Server (Site 1)	
	PCA IPFE B 2 Server Group Server (Site 1)	
Binding SBR Server Groups	Binding SBR SR1 Server Group Servers (Site 2)	
	Binding SBR SR2 Server Group Servers (Site 2)	
	Binding SBR SR3 Server Group Servers (Site 2)	
	Binding SBR SR4 Server Group Servers (Site 2)	
PCA MP Server Group	PCA MP Server Group Servers (Site 2)	
IPFE Server Groups (For PCA)	PCA IPFE A1 Server Group Server (Site 2)	
	PCA IPFE A 2 Server Group Server (Site 2)	
	PCA IPFE B 1 Server Group Server (Site 2)	
	PCA IPFE B 2 Server Group Server (Site 2)	
SS7-IWF Server Groups	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	
	SS7-IWF Server Group Server	

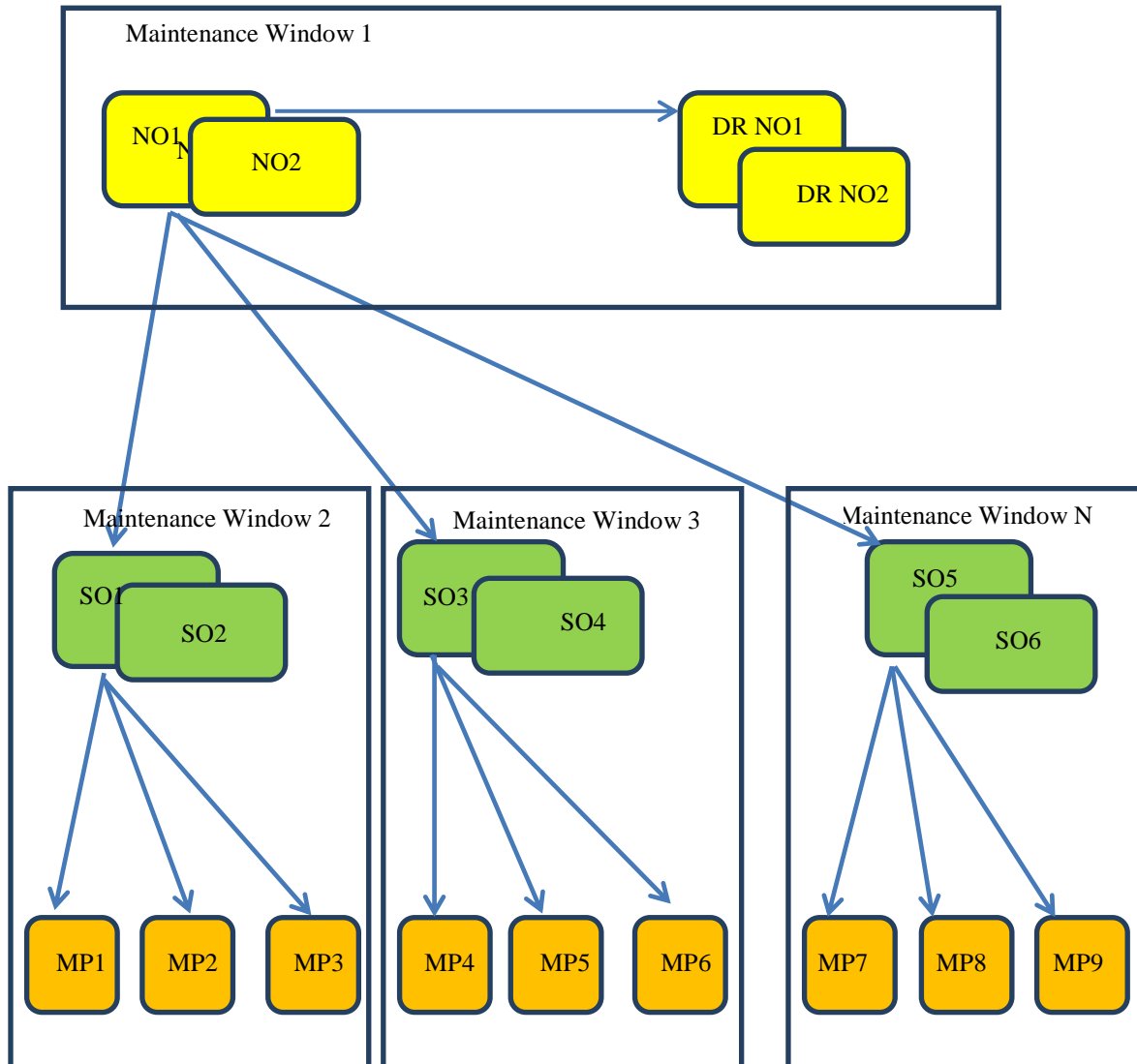
Item	Description	Recorded Value
iLO/LOM	NOAM 1 iLO/LOM IP Address	
	NOAM 2 iLO/LOM IP Address	
	SOAM 1 iLO/LOM IP Address	
	SOAM 2 iLO/LOM IP Address	
	MP 1 iLO/LOM IP Address	
	MP 2 iLO/LOM IP Address	
	
	MP (n) iLO/LOM IP Address	
	IPFE MP iLO/LOM IP Address (optional)	
	IPFE MP iLO/LOM IP Address (optional)	
	
	IPFE MP (n) iLO/LOM IP Address (optional)	
	
	DA MP iLO/LOM IP Address (optional)	
	DA MP iLO/LOM IP Address (optional)	
	
	DA MP(n) iLO/LOM IP Address (optional)	
PM&C	PM&C Management IP Address(Site 1)	
PM&C	PM&C Management IP Address(Site 2)	
Software	Target Release Number	
	ISO Image (.iso) file name	
Misc. ⁴	Miscellaneous additional data	

⁴ As instructed by Oracle CGBU Customer Service.

3.2 Plan Upgrade Maintenance Windows

This section provides a high-level checklist to aid in tracking individual server upgrades. The servers are grouped by maintenance window, and it is expected that all servers in a group can be successfully upgraded in a single maintenance window. Use this high-level checklist together with the detailed procedures that appear later in this document.

Figure 4. Upgrade Maintenance Windows for 3-Tier Upgrade





!! WARNING!! MATED SOAM SITES MUST BE UPGRADED IN SEPARATE MAINTENANCE WINDOWS

3.2.1 Maintenance Window for PM&C and TVOE Upgrades (optional)

This document includes steps to upgrade PM&C and TVOE as an integrated activity with the upgrades of the DSR application. However, it is an **option** to perform these upgrades as separately planned and executed activities.

- PM&C Upgrade procedure is provided in reference [4]
- TVOE Host environment upgrade procedures are included in Appendix J and reference [3].

PM&C and TVOE upgrades are backwards compatible to prior releases of DSR.

These upgrades may be done a site-at-a-time.

3.2.2 Calculating Maintenance Window Requirements

The number of maintenance windows required for DSR setup and upgrade can be calculated by using the Maintenance Window Analysis Tool (see ref [9]).

This Excel spreadsheet takes setup details as input from the user and accordingly calculates the number of maintenance windows required for upgrade. Complete DSR upgrade maintenance window details and timings can be found in Reference [9]. Please see the instructions tab of the spreadsheet for more information and details.

3.2.3 Maintenance Window 1 (NOAM Site Upgrades)

During the first maintenance window, the NOAM servers are upgraded, and possibly also the PM&C, and the TVOE environments supporting these servers. *(Note that PM&C and/or TVOE environments may be upgraded before Maintenance Window 1, as described in Section 2.7.)*

<p>Maintenance Window 1 (NOAM Sites)</p> <p>Date: _____</p> <p>NOTE 1: <i>The NE Name may be viewed from the DSR NOAM GUI under [Main Menu → Configuration → Network Elements].</i></p> <p>* NOTE 2: <i>In order to save time, It is suggested that PM&C servers be upgraded outside/ahead of DSR maintenance window 1 as this activity is seen as non-intrusive to DSR operation.</i></p>	<ol style="list-style-type: none"> 1. Record the Site NE Name of the PM&C, DSR NOAM and the DR Provisioning Site to be upgraded during Maintenance Window 1 in the space provided below: 2. “Check off” the associated Check Box as upgrade is completed for each server. <p><input type="checkbox"/> * DR PM&C (Guest): _____</p> <p><input type="checkbox"/> TVOE for DR NOAM-B: _____</p> <p><input type="checkbox"/> TVOE for DR NOAM-A: _____</p> <p><input type="checkbox"/> * Primary PM&C (Guest): _____</p> <p><input type="checkbox"/> TVOE for Primary NOAM-B: _____</p> <p><input type="checkbox"/> TVOE for Primary NOAM-A: _____</p> <p><input type="checkbox"/> DR Standby NOAM (Guest): _____</p> <p><input type="checkbox"/> DR Active NOAM (Guest): _____</p> <p><input type="checkbox"/> Primary Standby NOAM (Guest): _____</p> <p><input type="checkbox"/> Primary Active NOAM (Guest): _____</p>
---	---

3.2.4 Maintenance Window 2 and beyond (SOAM Site Upgrades)

During maintenance window 2, all servers associated with the first SOAM site are upgraded. All servers associated with the second SOAM site are upgraded during maintenance window 3. For DSRs configured with multiple mated-pair Sites, or DSRs having multiple, distinct sites (e.g. geo-redundant PCA installations), the following form should be copied and used for the subsequent SOAM site upgrades.



It is strongly recommended that mated pair SOAM sites are NOT upgraded in the same maintenance window.

<p>Maintenance Window (SOAM Sites)</p> <p>Date: _____</p> <p>NOTE 1: <i>For 1+1 configuration, only 2 DA-MP(s) will be present, one is Active while the other is Standby.</i></p> <p>* NOTE 2: <i>In order to save time, It is suggested that PM&C servers be upgraded outside/ahead of DSR maintenance window 1 as this activity is seen as non-intrusive to DSR operation.</i></p>	<ol style="list-style-type: none"> Record the Site NE Name of the DSR SOAM and the MP(s) to be upgraded during maintenance window 2 in the space provided. “Check off” the associated Check Box as upgrade is completed for each server. <p>SOAM Site: _____</p> <p><input type="checkbox"/> * PM&C : _____</p> <p><input type="checkbox"/> * TVOE for PM&C: _____</p> <p><input type="checkbox"/> TVOE for SOAM-B: _____</p> <p><input type="checkbox"/> TVOE for SOAM-A: _____</p> <p><input type="checkbox"/> Spare SOAM1 (Guest): _____ (If equipped)</p> <p><input type="checkbox"/> Spare SOAM2 (Guest): _____ (If equipped)</p> <p><input type="checkbox"/> Standby SOAM (Guest): _____</p> <p><input type="checkbox"/> Active SOAM (Guest): _____</p>
---	--

	<ul style="list-style-type: none"><input type="checkbox"/> DA-MP1: _____<input type="checkbox"/> DA-MP2: _____<input type="checkbox"/> DA-MP3: _____<input type="checkbox"/> DA-MP4: _____<input type="checkbox"/> DA-MP5: _____<input type="checkbox"/> DA-MP6: _____<input type="checkbox"/> DA-MP7: _____<input type="checkbox"/> DA-MP8: _____<input type="checkbox"/> DA-MP9: _____<input type="checkbox"/> DA-MP10: _____<input type="checkbox"/> DA-MP11: _____<input type="checkbox"/> DA-MP12: _____<input type="checkbox"/> DA-MP13: _____<input type="checkbox"/> DA-MP14: _____<input type="checkbox"/> DA-MP15: _____<input type="checkbox"/> DA-MP16: _____
	<ul style="list-style-type: none"><input type="checkbox"/> IPFE1: _____<input type="checkbox"/> IPFE2: _____<input type="checkbox"/> IPFE3: _____<input type="checkbox"/> IPFE4: _____
	<ul style="list-style-type: none"><input type="checkbox"/> SS7-MP1: _____<input type="checkbox"/> SS7-MP2: _____<input type="checkbox"/> SS7-MP3: _____<input type="checkbox"/> SS7-MP4: _____<input type="checkbox"/> SS7-MP5: _____<input type="checkbox"/> SS7-MP6: _____<input type="checkbox"/> SS7-MP7: _____<input type="checkbox"/> SS7-MP8: _____

<p>Binding Server Group 1</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 2</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 3</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 4</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 5</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 6</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 7</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p> <p>Binding Server Group 8</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (Mate): _____</p> <p><input type="checkbox"/> Spare SBR2 (Mate): _____ (If equipped)</p>

	<p>Session Server Group 1</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 2</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 3</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 4</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 5</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 6</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 7</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p> <p>Session Server Group 8</p> <p><input type="checkbox"/> Standby SBR: _____</p> <p><input type="checkbox"/> Active SBR: _____</p> <p><input type="checkbox"/> Spare SBR1 (<i>Mate</i>): _____</p> <p><input type="checkbox"/> Spare SBR2 (<i>Mate</i>): _____ (<i>If equipped</i>)</p>
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3.3 Prerequisite Procedures

The pre-upgrade procedures shown in the following table are executed outside a maintenance window, if desired. These steps have no effect on the live system and can save upon maintenance window time, if executed before the start of the maintenance window.

Table 4: Prerequisite Procedures Overview

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cum.		
Procedure 1	0:10-0:30	0:10-0:30	Required Materials Check	None
Procedure 2	0:20-0:30	0:30-1:00	Verification of Configuration Data	None
Procedure 3	0:45-2:00	1:15-3:00	Data Collection for Source Release 6.0, 7.0.x	None
or Procedure 4	0:45-1:00	1:15-2:00	Data Collection for Source Release 7.1.x	None
or Procedure 5	0:15-0:20	0:45-1:20	Data Collection for Source Release 7.2 and later	None
Procedure 6	0:20-3:00 ¹	1:00-6:00	DSR ISO Administration	None
Procedure 7 or Procedure 8	0:10-2:00	1:10-8:00	Full Backup of DB Run Environment for Release 6.0, 7.0.x or Full Backup of DB Run Environment for Release 7.1.x and later	None

¹ The ISO transfer process changed in DSR 7.1. Due to this change, ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the speed of the network. These factors may significantly affect total time needed, and may require the scheduling of multiple maintenance windows to complete the entire upgrade procedure. The ISO transfers to the target systems should be performed prior to, and outside of, the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

3.3.1 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

S T E P #	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, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.	
1 <input type="checkbox"/>	Verify all required materials are present	Materials are listed in Section 3.1: Required Materials. Verify required materials are present.
2 <input type="checkbox"/>	Verify all administration data needed during upgrade	Double-check that all information in Section 3.2 is filled-in and accurate.
3 <input type="checkbox"/>	Contact MOS	It is recommended to contact MOS and inform them of plans to upgrade this system. See Appendix P for instructions. Note that obtaining a new online support account can take up to 48 hours.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

3.3.2 Data Collection - Verification of Global and Site Configuration Data

The procedures in this section are part of Software Upgrade Preparation and are used to collect data required for network analysis, Disaster Recovery, and upgrade verification. Data is collected from both the Active NOAM and various other servers at each site (TVOE, PM&C, etc).

3.3.2.1 Verification of Configuration Data

This procedure checks the configuration data of the system and servers to ensure a successful upgrade.

Procedure 2: Verification of Configuration Data

S T E P #	<p>This procedure checks the configuration data and server status.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>																									
1	<p>Active NOAM VIP:</p> <p>Verify application version</p>	<ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. 2. Verify that the Upgrade path to the target release is supported as documented in Section 2.1 (Supported Upgrade Paths). 3. Select the NOAM Server Group and verify the Application Version <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <p>NO_Ford DRNO_Chevy IPFE11_Mustang IPFE12_Mustang IPFE12_Nova IPFE_Camaro IPFE...</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Max Allowed HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO-FordA</td> <td>Backup Needed</td> <td>Active</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>6.0.0-60.21.0</td> </tr> <tr> <td>NO-FordB</td> <td>Backup Needed</td> <td>Standby</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>6.0.0-60.21.0</td> </tr> </tbody> </table> <p>Backup ISO Cleanup Prepare Initiate Complete Accept Report Report All</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Max Allowed HA Role	Network Element		Upgrade ISO	NO-FordA	Backup Needed	Active	Network OAM&P	OAM&P	6.0.0-60.21.0	NO-FordB	Backup Needed	Standby	Network OAM&P	OAM&P	6.0.0-60.21.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																					
	Server Status	Max Allowed HA Role	Network Element		Upgrade ISO																					
NO-FordA	Backup Needed	Active	Network OAM&P	OAM&P	6.0.0-60.21.0																					
NO-FordB	Backup Needed	Standby	Network OAM&P	OAM&P	6.0.0-60.21.0																					
2	<p>Active NOAM CLI:</p> <p>Check if the setup has customer supplied Apache certificate installed and protected with a passphrase.</p>	<ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active NOAM <pre>ssh admusr@<NOAM_VIP> password: <enter password></pre> <p>(Answer 'yes' if prompted to confirm the identity of the server.)</p> 2. cd to /etc/httpd/conf.d and open the file named ssl.conf. 3. Locate the line beginning with the phrase "SSLCertificateFile" 4. The path that follows "SSLCertificateFile" is the location of the Apache certificate. If the path is /usr/TKLC/appworks/etc/ssl/server.crt, then the certificate is supplied by Oracle and no further action is required. Continue with the next step. 5. If the path is anything other than /usr/TKLC/appworks/etc/ssl/server.crt, then a customer-supplied Apache certificate is likely installed. Rename the certificate to "server.crt-orig", but note the original certificate pathname. During the upgrade, the file 'server.crt' will be overwritten, and will need to be restored in Section 5.6. 																								

Procedure 2: Verification of Configuration Data

<p>3</p> <p><input type="checkbox"/></p>	<p>Check if a new Firmware Release may be required for the system.</p>	<p>This step is not applicable to Software Centric installations/upgrades.</p> <p>It is recommended to contact MOS by referring to Appendix P to determine the minimum supported firmware release required for the target DSR release. NOTE: New Firmware Releases for the DSR platform are typically released every 6 months.</p> <p>Target Firmware Rev: _____</p> <p>Example: FW rev. 2.2.7</p> <p>Acquire the Firmware Release Notes and Firmware Upgrade Pack procedures for the target Firmware Revision.</p> <p>Use the Firmware Upgrade Pack procedures to determine which specific system components (Switches, OAs, Servers, etc.) may require an upgrade.</p> <p>Plan for additional Maintenance Windows if Firmware Upgrade is required. Please note that Firmware Upgrade activity is typically performed before the DSR Upgrade.</p>
<p>4</p> <p><input type="checkbox"/></p>	<p>Check the existing PM&C version and identify if PM&C upgrade is required.</p> <p>NOTE: <i>If required, PM&C upgrade should be performed as a prerequisite to DSR upgrade.</i></p>	<p>This step is not applicable to Software Centric installations/upgrades.</p> <p><i>This step applies to all servers that have a PM&C guest (VM) installed.</i></p> <p>Identify any PM&C servers requiring upgrade.</p> <ol style="list-style-type: none"> 1. Determine the PM&C version installed by logging into PM&C GUI. 2. Refer to the Release Notes to determine the minimum supported PM&C version required for the target DSR release. <p>If a PM&C upgrade is required, obtain the required PM&C upgrade document [4] and plan for additional Maintenance Windows to execute PM&C upgrades.</p>

Procedure 2: Verification of Configuration Data

<p>5</p> <p><input type="checkbox"/></p>	<p>Check the TVOE Host server software version</p>	<p>This step is not applicable to Software Centric installations/upgrades.</p> <p><i>This step applies to all RMS & Blade servers that have TVOE installed.</i></p> <ol style="list-style-type: none"> Find the target DSR release from Table 3. Refer to the Release Notes to determine the minimum supported TVOE OS version required for the target DSR release. <p>Required TVOE Release: _____</p> <p style="padding-left: 40px;">Example: 872-2525-101-2.5.0_82.22.0-TVOE-x86_64.iso</p> <ol style="list-style-type: none"> Verify the current TVOE HOST OS version for each TVOE Hosts by comparing the "Product Release" field from the "appRev" command to the "Required TVOE Release" field shown above. <pre># appRev Install Time: Thu Nov 6 14:31:08 2014 Product Name: TVOE Product Release: 2.7.0.0.0_84.20.0 Base Distro Product: TPD Base Distro Release: 6.7.0.0.1_84.20.0 Base Distro ISO: TPD.install-6.7.0.0.1_84.20.0- OracleLinux6.5-x86_64.iso OS: OracleLinux 6.5</pre> <p>IMPORTANT: If TVOE Hosts are not on the correct release, refer to Section 3.2.1 to plan for TVOE Host upgrades.</p> <p style="text-align: center;">THIS PROCEDURE HAS BEEN COMPLETED.</p>
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The following data collection procedures collect similar data; however, the collection method varies depending on the source release. Only one of the following procedures is to be executed for the pre-upgrade data collection. Refer to Table 5 for guidance on which procedure to use.

Table 5. Release Specific Data Collection Procedures.

If the Source Release is:	Use This Pre-Upgrade Data Collection Procedure:
5,1, 6.0, or 7.0.x	Procedure 3: Data Collection for Source Release 6.0, 7.0.x
7.1.x	Procedure 4: Data Collection for Source Release 7.1.x
7.2 and later	Procedure 5: Data Collection for Source Release 7.2 and later

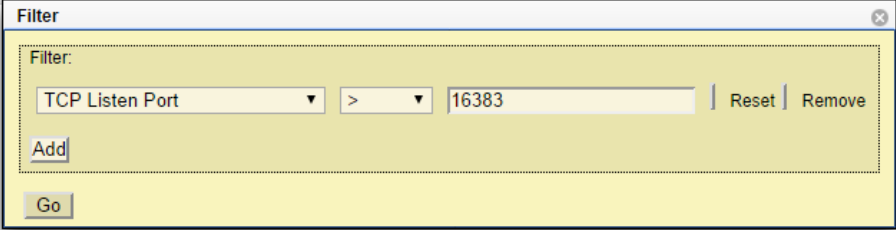
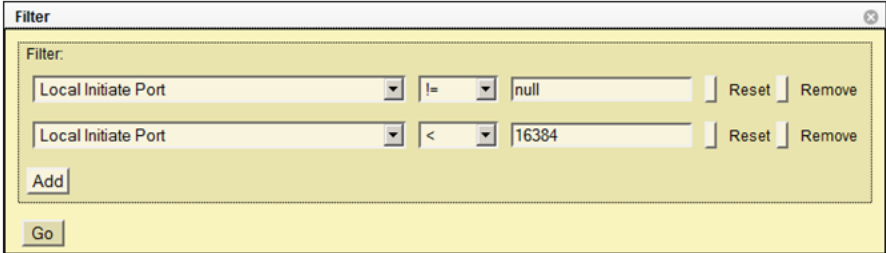
3.3.2.2 Data Collection for Source Release 6.0, 7.0.x

This procedure collects and archives system status data for analysis. Perform this procedure only if the source release is 6.0 or 7.0.x.

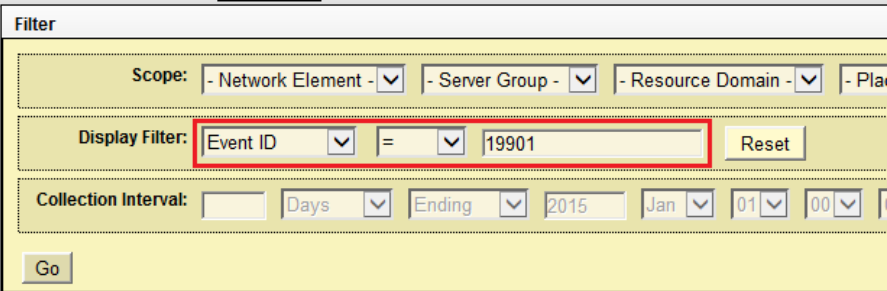
Procedure 3: Data Collection for Source Release 6.0, 7.0.x

S T E P #	This procedure retrieves and retains system status data for analysis and future use. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE	
1 <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>Database consistency check</p>	<p>Check the transport connections tables.</p> <ol style="list-style-type: none"> Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active SOAM <pre>ssh admusr@<SOAM_VIP> password: <enter password></pre> <p>(Answer 'yes' if you are prompted to confirm the identity of the server.)</p> Enter the following commands to count the number of entries in the ConnectionAdmin and TransportConnection tables. <pre>iqt -zhp ConnectionAdmin wc -l iqt -zhp TransportConnection wc -l</pre> <p>Sample output:</p> <pre>[admusr@EVO-SO-1 ~]\$ iqt -zhp ConnectionAdmin wc -l 7196 [admusr@EVO-SO-1 ~]\$ iqt -zhp TransportConnection wc -l 7196</pre> If the entry counts match, proceed to step 2. <p>If the ConnectionAdmin table entry count does not match the TransportConnection table entry count, DO NOT PROCEED WITH THE UPGRADE. It is recommended to consult with MOS before continuing.</p>
2 <input type="checkbox"/>	<p>Server CLI:</p> <p>Verify uptime for each server in the topology</p>	<ol style="list-style-type: none"> Execute the “uptime” command: <pre>[admusr@ipfe-freeport-a1 ~]\$ uptime 02:02:49 up 27 days, 6:48, 1 user, load average:0.87,0.99,0.83 [admusr@ipfe-freeport-a1 ~]\$</pre> Record the hostname of any server with an “uptime” value \geq 200 days. Inform the customer that a “Cold Reboot” will be required for all servers with an “uptime” value \geq 200 days prior to beginning any upgrade activity. <p>NOTE: This is required response due to Red Hat Bug 765720. It is recommended to contact MOS if instruction is needed on how to gracefully perform a “Cold Reboot”.</p>

Procedure 3: Data Collection for Source Release 6.0, 7.0.x

<p>3</p> <p>Verify Local Node port ranges</p> <p>For source release 6.0 only</p>	<p>Active SOAM VIP:</p> <p>Perform this step only if the source release is 6.0; otherwise proceed to step 5.</p> <p>Verify the Local Node port numbers are within the allowed range.</p> <ol style="list-style-type: none"> 1. Login to the SOAM GUI using the VIP. 2. Navigate to Diameter > Configuration > Local Nodes. 3. Click Filter to open the filter selection box. 4. Enter the following values and click Go.  <ol style="list-style-type: none"> 5. Repeat steps 3 and 4 for the following filter values: <ul style="list-style-type: none"> • "TCP Listen Port < 1024" • "SCTP Listen Port > 16383" • "SCTP Listen Port < 1024" <p>If the filters produce no results, then continue with the next step.</p> <p>Otherwise, record the results and report to the customer that the current port configuration is not within recommended best practices. The upgrade may continue if the port settings are not within recommended ranges.</p> <p>NOTE: Only the customer may modify the port configurations. Refer to Reference [10] for further instruction.</p>
<p>4</p> <p>Verify Initiator connection port ranges</p> <p>For source release 6.0 only</p>	<p>Active SOAM VIP:</p> <p>Perform this step only if the source release is 6.0; otherwise proceed to step 5.</p> <p>Verify the Initiator connection port numbers are within the allowed range.</p> <ol style="list-style-type: none"> 1. Navigate to Diameter > Configuration > Connections. 2. Click Filter to open the filter selection box. 3. Enter the following values and click Go.  <ol style="list-style-type: none"> 4. Repeat sub-step 2 and 3 for the following filter values: <ul style="list-style-type: none"> • "Local Initiate Port != null" AND "Local Initiate Port > 24575" <p>If the filters produce no results, continue with the next Step.</p> <p>Otherwise, record the results and report to the customer that the current port configuration is not within recommended best practices. The upgrade may continue if the port settings are not within recommended ranges.</p> <p>NOTE: Only the customer may modify the port configurations. Refer to Reference [10] for further instruction.</p>
<p>5</p> <p>Repeat Port Check</p>	<p>Repeat steps 3 and 4 for each SOAM site in the topology.</p>

Procedure 3: Data Collection for Source Release 6.0, 7.0.x

<p>6</p> <p>Active NOAM VIP:</p> <p>Alarm Check</p>	<p>Check for the presence of alarm 19901 – CFG-DB Validation Error.</p> <ol style="list-style-type: none"> 1. Navigate to Alarms & Events > View Active. 2. Click Filter to open the filter selection box. 3. Enter the following values and click Go.  <ol style="list-style-type: none"> 4. If the filter returns no results, the database is consistent; proceed to the next step. Otherwise, do not proceed with the upgrade until the alarm is cleared. It is recommended to consult with MOS for guidance if the alarm does not clear within 60 minutes.
<p>7</p> <p>Active NOAM VIP:</p> <p>Verify IPFE Server Groups</p>	<p>Verify the IPFE Server Groups are properly configured.</p> <ol style="list-style-type: none"> 1. Login to the NOAM GUI using the VIP. 2. Navigate to Configuration > Server Groups. 3. Examine each IPFE Server Group. Verify that each IPFE Server Group is configured with one, and only one, IPFE server. 4. If any IPFE Server Group contains more than one IPFE server, refer to the Server Group Configuration procedure of ref [5] (DSR 6.0), [6] (DSR 7.0.x/7.1.x), or [7] (DSR 7.2/7.3) to correct the configuration.
<p>8</p> <p>Active NOAM VIP:</p> <p>Verify and collect Network Element Configuration data</p>	<ol style="list-style-type: none"> 1. Select Configuration > Network Elements to view Network Elements Configuration screen. 2. Click Report at the bottom of the table to generate a report for all entries. 3. Verify the configuration data is correct for the network. 4. Save the report and/or print the report. Keep these copies for future reference.
<p>9</p> <p>Active NOAM VIP:</p> <p>Verify and collect Server Group Configuration data</p>	<ol style="list-style-type: none"> 1. Select Configuration > Server Groups to view the Server Group screen. 2. Click Report at the bottom of the table to generate a report for all entries. 3. Verify the configuration data is correct for the network. 4. Save the report and/or print the report. Keep these copies for future reference.
<p>10</p> <p>Active NOAM VIP:</p> <p>Verify and collect Server Configuration data</p>	<ol style="list-style-type: none"> 1. Select Configuration > Servers to view the Server screen 2. Click Report at the bottom of the table to generate a report for all entries. 3. Verify the configuration data is correct for the network. 4. Save the report and/or print the report. Keep these copies for future reference.
<p>11</p> <p>Active NOAM VIP:</p> <p>Verify and collect Services Configuration data</p>	<ol style="list-style-type: none"> 1. Select Configuration > Services to view Services screen. 2. Click Report at the bottom of the table to generate a report for all entries. 3. Verify the configuration data is correct for the network. 4. Save the report and/or print the report. Keep these copies for future reference.
<p>12</p> <p>Active NOAM VIP:</p> <p>Verify and collect Signaling Network Configuration data for DSR</p>	<ol style="list-style-type: none"> 1. Select Configuration > Network to view the Signaling Networks. 2. Click Report at the bottom of the table to generate a report for all entries. 3. Verify the configuration data is correct for the network. 4. Save the report and/or print the report. Keep these copies for future reference. 5. Select Configuration > Network > Devices. 6. Click Report All at the bottom of the table to generate a report for all entries. 7. Save the report and/or print the report. Keep these copies for future reference. 8. Select Configuration > Network > Routes. 9. Click Report All at the bottom of the table to generate a report for all entries. Save the report and/or print the report. Keep these copies for future reference.

Procedure 3: Data Collection for Source Release 6.0, 7.0.x

13 <input type="checkbox"/>	<p><u>Active NOAM VIP:</u> Verify Server Status is Normal</p>	<ol style="list-style-type: none"> 1. Select Status & Manage > Server. The Server Status screen is displayed. 2. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). 3. Do not proceed with the upgrade if any server status displayed is not Norm. 4. Do not proceed if there are any Major or Critical alarms.
14 <input type="checkbox"/>	<p><u>Active NOAM VIP:</u> Log all current alarms at NOAM.</p>	<ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Click the Report button to generate an Alarms report. 3. Save the report and/or print the report. Keep these copies for future reference. <p>NOTE: It is not recommended to continue with the upgrade if any server status has unexpected values. An upgrade should only be executed on a server with unexpected alarms if the upgrade is specifically intended to clear those alarm(s). This would mean that the target release software contains a fix to clear the “stuck” alarm(s) and upgrading is the ONLY method to clear the alarm(s). Do not continue otherwise.</p>
15 <input type="checkbox"/>	<p><u>Active NOAM VIP:</u> View Communication Agent status</p>	<ol style="list-style-type: none"> 1. Select Communication Agent > Maintenance > Connection Status; The Communication Agent > Connection Status screen is displayed. 2. Verify the Connection Status of each connection is InService.
16 <input type="checkbox"/>	<p><u>Active NOAM VIP:</u> View SBR status (if equipped)</p>	<p>View SBR status if PDRA/PCA is enabled.</p> <p>If the Active NOAM is on release 6.0:</p> <ol style="list-style-type: none"> 1. Select Policy DRA > Maintenance > Policy SBR Status The Policy SBR Status screen is displayed. 2. Expand each Server Group. Verify Congestion Level is ‘Normal’ for all servers. <p>If the Active NOAM is on release 7.0.x, 7.1.x:</p> <ol style="list-style-type: none"> 1. Select Policy and Charging > Maintenance > SBR Status The SBR Status screen is displayed. 2. Select the Binding tab. 3. Expand each Server Group. 4. Verify Congestion Level is ‘Normal’ for all servers. 5. Repeat sub-steps 3 and 4 for the PDRA Mated Triplet tab. <p>If the Active NOAM is on release 7.2 and later:</p> <ol style="list-style-type: none"> 1. Select SBR > Maintenance > SBR Status The SBR Status screen is displayed. 2. Select the Binding tab. 3. Expand each Server Group. 4. Verify Congestion Level is ‘Normal’ for all servers. 5. Repeat sub-steps 3 and 4 for the PCA Mated Triplet tab
17 <input type="checkbox"/>	<p>Analyze and plan MP upgrade sequence</p>	<p>From the collected data, analyze system topology and plan for any DA-MP/IPFE/SBR/PCA which will be out-of-service during the upgrade sequence.</p> <ol style="list-style-type: none"> 1. Analyze system topology data gathered in Section 3.3.2 and steps 1 through 16 of this procedure. 2. It is recommended to plan for MP upgrades by consulting MOS to assess the impact of out-of-service MP servers 3. Determine the exact sequence in which MP servers will be upgraded for each site.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

3.3.2.3 Data Collection for Source Release 7.1.x

This procedure collects and archives system status data for analysis. Perform this procedure only if the source release is 7.1.x.

Procedure 4: Data Collection for Source Release 7.1.x

<p>S T E P #</p>	<p>This procedure retrieves and retains system status data for analysis and future use.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
<p>1</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 5px;"></div>	<p>Active NOAM VIP:</p> <p>Verify IPFE Server Groups</p>	<p>Verify the IPFE Server Groups are properly configured.</p> <ol style="list-style-type: none"> 1. Login to the NOAM GUI using the VIP. 2. Navigate to Configuration > Server Groups. 3. Examine each IPFE Server Group. Verify that each IPFE Server Group is configured with one, and only one, IPFE server. <p>If any IPFE Server Group contains more than one IPFE server, DO NOT PROCEED WITH THE UPGRADE. It is recommended to consult with MOS before continuing.</p>
<p>2</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 5px;"></div>	<p>Active NOAM VIP:</p> <p>Alarm Check</p>	<p>Check for the presence of alarm 19901 – CFG-DB Validation Error.</p> <ol style="list-style-type: none"> 1. Navigate to Alarms & Events > View Active. 2. Click Filter to open the filter selection box. 3. Enter the following values and click Go. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Filter</p> <p>Scope: [- Network Element -] [- Server Group -] [- Resource Domain -] [- Pla</p> <p>Display Filter: Event ID [=] 19901 [Reset]</p> <p>Collection Interval: [] [Days] [Ending] [2015] [Jan] [01] [00]</p> <p>[Go]</p> </div> <ol style="list-style-type: none"> 4. If the filter returns no results, the database is consistent; proceed to the next step. Otherwise, do not proceed with the upgrade until the alarm is cleared. It is recommended to consult with MOS for guidance if the alarm does not clear within 60 minutes.

Procedure 4: Data Collection for Source Release 7.1.x

<p>3</p> <p>Verify NOAM pre-Upgrade Status</p>	<p>Active NOAM CLI:</p>	<p>Execute the following commands on the Active DSR NOAM and Active DR NOAM servers.</p> <ol style="list-style-type: none"> 1. Use an SSH client to connect to the Active NOAM: <pre>ssh admusr@<NOAM XMI IP address> password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> 2. Enter the command: <pre>\$ upgradeHealthCheck preUpgradeHealthCheck</pre> <p>This command creates files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:</p> <pre><NOServer_name>_ServerStatusReport_<date-time>.xml <NOServer_name>_ComAgentConnStatusReport_<date-time>.xml</pre> <p>If there are alarms on the system:</p> <pre><NOServer_name>_AlarmStatusReport_<date-time>.xml</pre> <p>If the system is PDRA:</p> <pre><NOServer_name>_SBRStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 3. If the message “Server <hostname> needs operator attention before upgrade” is output, inspect the Server Status Report to determine the reason for the message. If the following message appears in the Server Status Report, the alert can be ignored: Server <hostname> has no alarm with DB State as Normal and Process state as Kill. <p>Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p> <ol style="list-style-type: none"> 4. Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.
<p>4</p> <p>Verify uptime for each server in the topology</p>	<p>Server CLI:</p>	<ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems - or putty if running on windows) to login to each physical server in the topology using the server XMI IP Address. <p>NOTE: The user is only required to login to the TVOE host for any OAM server (A / B level) but must log into all C level servers directly (MP, IPFE, etc.).</p> <pre>ssh admusr@<target_server_XMI_IP></pre> <p>(Answer 'yes' if you are prompted to confirm the identity of the server.)</p> 2. Execute the “uptime” command: <pre>[admusr@ipfe-freeport-a1 ~]\$ uptime 02:02:49 up 27 days, 6:48, 1 user, load average:0.87,0.99,0.83 [admusr@ipfe-freeport-a1 ~]\$</pre> 3. Record the hostname of any server with an “uptime” value ≥ 200 days. 4. Inform the customer that a “Cold Reboot” will be required for all servers with an “uptime” value ≥ 200 days prior to beginning any upgrade activity. <p>NOTE: This is required response due to Red Hat Bug 765720. It is recommended to contact MOS if instruction is needed on how to gracefully perform a “Cold Reboot”.</p>

Procedure 4: Data Collection for Source Release 7.1.x

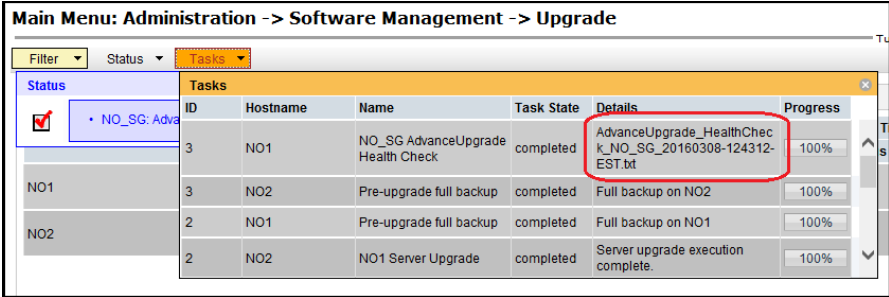
<p>5</p> <p>Database consistency check</p>	<p>Active SOAM CLI:</p>	<p>Check the transport connections tables.</p> <ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active SOAM <pre>ssh admusr@<SOAM_VIP></pre> <p>(Answer 'yes' if you are prompted to confirm the identity of the server.)</p> 2. Enter the following commands to count the number of entries in the ConnectionAdmin and TransportConnection tables. <pre>igt -zhp ConnectionAdmin wc -l igt -zhp TransportConnection wc -l</pre> <p>Sample output:</p> <pre>[admusr@EVO-SO-1 ~]\$ igt -zhp ConnectionAdmin wc -l 7196 [admusr@EVO-SO-1 ~]\$ igt -zhp TransportConnection wc -l 7196</pre> 3. If the entry counts match, proceed to step 6. <p>If the ConnectionAdmin table entry count does not match the TransportConnection table entry count, DO NOT PROCEED WITH THE UPGRADE. It is recommended to consult with MOS before continuing.</p>
<p>6</p> <p>Log SOAM Alarm Status</p>	<p>Active SOAM CLI:</p>	<ol style="list-style-type: none"> 1. Use an SSH client to connect to the Active SOAM: <pre>ssh <SOAM XMI IP address> login as: admusr password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> 2. Enter the command: <pre>\$ upgradeHealthCheck preUpgradeHealthCheckOnSoam</pre> <p>This command creates files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:</p> <pre><SOserver_name>_ServerStatusReport_<date-time>.xml</pre> <p>If there are alarms on the system:</p> <pre><SOserver_name>_AlarmStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored. If the following message appears in the Server Status Report, the alert can be ignored: Server <hostname> has no alarm with DB State as Normal and Process state as Kill.</p> 3. Verify all Peer MPs are available 4. Note the number of Total Connections Established _____ 5. Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.

Procedure 4: Data Collection for Source Release 7.1.x

7 <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>Verify PCA status (if equipped)</p>	<ol style="list-style-type: none"> 1. Enter the command: <pre>\$ upgradeHealthCheck pcaStatus</pre> <p>This command outputs status to the screen for review.</p> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 2. Verify Operational Status is ‘Available’ for all applications
8 <input type="checkbox"/>	Repeat for each Network Element	Repeat Steps 5 - 7 for each SOAM site in the topology.
9 <input type="checkbox"/>	Analyze and plan MP upgrade sequence	<p>From the collected data, analyze system topology and plan for any DA-MP/IPFE/SBR/PCA which will be out-of-service during the upgrade sequence.</p> <ol style="list-style-type: none"> 1. Analyze system topology data gathered in Section 3.3.2.1 and steps 1 through 10 of this procedure. 2. It is recommended to plan for MP upgrades by consulting MOS to assess the impact of out-of-service MP servers 3. Determine the exact sequence in which MP servers will be upgraded for each site.

THIS PROCEDURE HAS BEEN COMPLETED.

Procedure 5: Data Collection for Source Release 7.2 and later

<p>2</p> <p><u>Active NOAM VIP:</u></p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <NOServerGroup> AdvanceUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results. 	 <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>NO1</td> <td>NO_SG AdvanceUpgrade Health Check</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_NO_SG_20160308-124312-EST.bt</td> <td>100%</td> </tr> <tr> <td>3</td> <td>NO2</td> <td>Pre-upgrade full backup</td> <td>completed</td> <td>Full backup on NO2</td> <td>100%</td> </tr> <tr> <td>2</td> <td>NO1</td> <td>Pre-upgrade full backup</td> <td>completed</td> <td>Full backup on NO1</td> <td>100%</td> </tr> <tr> <td>2</td> <td>NO2</td> <td>NO1 Server Upgrade</td> <td>completed</td> <td>Server upgrade execution complete.</td> <td>100%</td> </tr> </tbody> </table>	ID	Hostname	Name	Task State	Details	Progress	3	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-124312-EST.bt	100%	3	NO2	Pre-upgrade full backup	completed	Full backup on NO2	100%	2	NO1	Pre-upgrade full backup	completed	Full backup on NO1	100%	2	NO2	NO1 Server Upgrade	completed	Server upgrade execution complete.	100%
ID	Hostname	Name	Task State	Details	Progress																											
3	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-124312-EST.bt	100%																											
3	NO2	Pre-upgrade full backup	completed	Full backup on NO2	100%																											
2	NO1	Pre-upgrade full backup	completed	Full backup on NO1	100%																											
2	NO2	NO1 Server Upgrade	completed	Server upgrade execution complete.	100%																											
<p>3</p> <p><u>Active NOAM VIP:</u></p> <p>Analyze any Health Check failure</p>	<p>If the Health Check report status is anything other than "Pass", the Health Check logs can be analyzed to determine if the upgrade can proceed.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the file named "UpgradeHealthCheck.log" and click View. 3. Locate the log entries for the most recent health check. 4. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. 																															

Procedure 5: Data Collection for Source Release 7.2 and later

4

Active NOAM VIP:

This procedure will run the automated Health Checks on the Active SOAM.

1. Select **Administration > Software Management > Upgrade**.
The Upgrade screen is displayed.
2. Select the SOAM server group tab.
3. Select the Active SOAM.

Main Menu: Administration -> Software Management -> Upgrade

SO_SG	IPFE_SG	MP_SG	NO_SG
SO2	Ready	Err	Active
SO1	Ready	Norm	Standby

Buttons: Backup, Backup All, **Checkup**, Checkup All, Upgrade Server, Accept, Report, Report All

4. Click the **Checkup** button.
The Upgrade [Checkup] screen is displayed.
5. In the 'Health check options' section, select the **Advance Upgrade** option.
6. For a major upgrade, use the Upgrade ISO pulldown to select the target release ISO. Do not select an ISO for an incremental upgrade.
7. Click **Ok**. Control returns to the Upgrade screen.

Main Menu: Administration -> Software Management -> Upgrade [Checkup]

Hostname	Action	Status
SO2	Health Check	Active

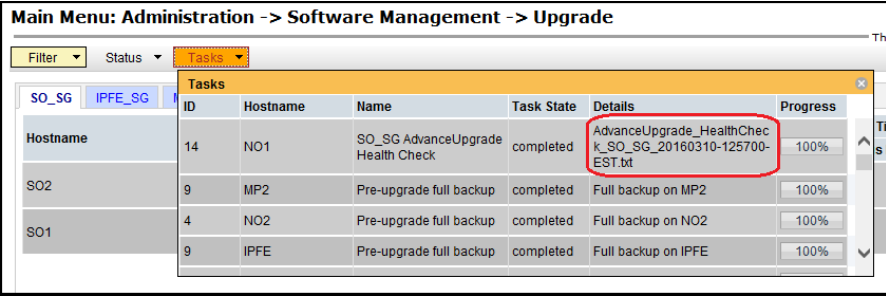
Health check options

Checkup Type: Advance Upgrade, Pre Upgrade, Post Upgrade

Upgrade ISO: **DSR-7.2.0.0.0_72.16.5-x86_64.iso**

Buttons: Ok, Cancel

Procedure 5: Data Collection for Source Release 7.2 and later


<p>5</p> <p><u>Active NOAM VIP:</u></p>	<p>Monitor for the completion of the Health Check.</p>	<ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <SO_SG> AdvanceUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results. 
<p>6</p> <p><u>Active NOAM VIP:</u></p> <p>Analyze Health Check failure</p>	<p>If the Health Check report status is anything other than “Pass”, the Health Check logs can be analyzed to determine if the upgrade can proceed.</p>	<ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the Active SOAM tab. 3. Select the file named “UpgradeHealthCheck.log” and click View. 4. Locate the log entries for the most recent health check. 5. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. <p>If the health check log contains the message “Unable to execute Health Check on <Active SOAM hostname>”, perform health checks in accordance with Procedure 4.</p>
<p>7</p> <p>Analyze and plan MP upgrade sequence</p>	<p>From the collected data, analyze system topology and plan for any DA-MP / IPFE / SBR / PCA which will be out-of-service during the upgrade sequence.</p>	<ol style="list-style-type: none"> 1. Analyze system topology data gathered in Section 3.3.2.1 and steps 1 through 6 of this procedure. The Health Check reports from steps 3 and 6 can be found in Status & Manage > Files on the Active NOAM. 2. It is recommended to plan for MP upgrades by consulting MOS to assess the impact of out-of-service MP servers 3. Determine the manner in which the MP servers will be upgraded: Manually or Automated Server Group Upgrade. If the MPs will be upgraded manually, determine the exact sequence in which MP servers will be upgraded for each site.
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

3.3.3 DSR ISO Administration

This section provides the steps to upload the new DSR ISO to the NOAMs and then transfer the ISO to all servers to be upgraded.

NOTE: ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the speed of the network. These factors may significantly affect total time needed and require the scheduling of multiple maintenance windows to complete the entire upgrade procedure. The ISO transfers to the target systems should be performed prior to, and outside of, the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

Procedure 6: DSR ISO Administration

S T E P #	<p>This procedure transfers the target ISO to all servers in the topology.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
1	<p>Active NOAM VIP:</p> <p>Upload ISO to Active NOAM server</p>	<p>There are two methods to upload the application ISO to the Active NOAM based on the type of the media: Execute either:</p> <p>Option 1 (Use NOAM GUI Upload function for ISO file transfer over the network) Proceed to step 2.</p> <p>OR</p> <p>Option 2 (Local site media ISO transfer, using PM&C). Proceed to step 6.</p>
2	<p>Active NOAM VIP:</p> <p>Option 1 - Transfer via NOAM GUI</p>	<p>OPTION 1: Use the NOAM GUI Upload function for ISO file transfer over the network</p> <p>Upload the target release ISO image file to the File Management Area of the Active NOAM server:</p> <ol style="list-style-type: none"> 1. Log into the Active NOAM GUI. 2. Select Status & Manage > Files The Files menu is displayed 3. Click the Active NOAM tab to display all files stored in the file management storage area of this server. 4. Ensure that this is actually the Active NOAM server in the network by comparing the hostname in the screen title vs. the hostname in the session banner in the GUI. Verify that they are the same and the status is ACTIVE in the session banner. 5. Click the Upload button. The Browse window will open: <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  </div>

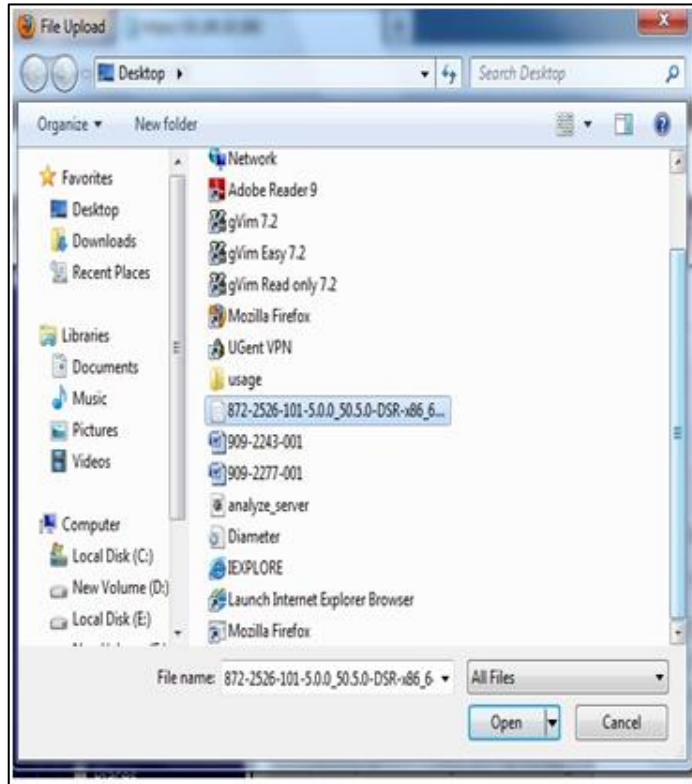
Procedure 6: DSR ISO Administration

3

Active NOAM VIP:

Option 1 (cont)

1. Click **Browse** to select the file to upload.
2. The Choose File window displays, allowing selection of the file to upload.



3. Select the target release ISO image file and click **Open**.
4. The selected file and its path display on the screen.



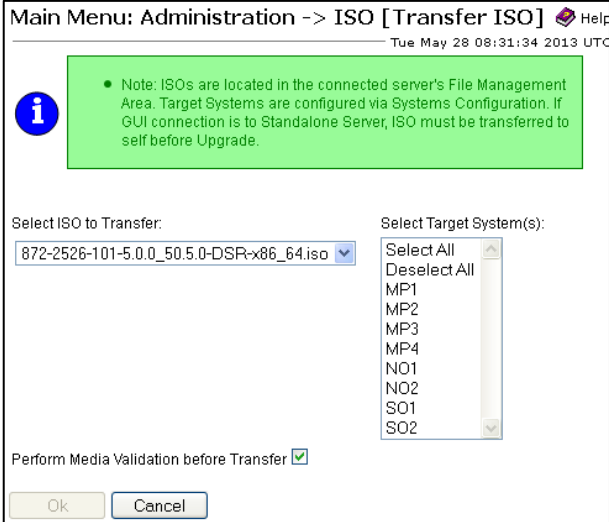
5. Click **Upload**.
The ISO file begins uploading to the file management storage area.
6. Wait for the screen to refresh and display the uploaded ISO filename in the files list.
This will usually take between 2 to 10 minutes, but more if the network upload speed is slow.

Procedure 6: DSR ISO Administration

<p>4</p> <p>Active NOAM VIP:</p> <p>Option 1 (cont)</p>	<ol style="list-style-type: none"> 1. Wait for the screen to refresh and display the uploaded ISO filename in the files list. This will usually take between 2 to 10 minutes, but more if the network upload speed is slow. 2. To back up the ISO file to the PM&C, SSH to the Active NOAM and execute the following command. Refer to [4] for creating space on PM&C if desired space is not available on the PM&C: <ol style="list-style-type: none"> 1) cd to the directory on the Active NOAM where the ISO image is located <pre>\$ cd /var/TKLC/db/filemgmt</pre> 2) Using sftp, connect to the PM&C management server <pre>\$ sftp pmacftpusr@<pmac_management_network_ip> \$ put <image>.iso</pre> 3) After the image transfer is 100% complete, close the connection <pre>\$ quit</pre> <p>NOTE: <i>UserId and password should already be recorded in Table 3.</i></p>
<p>5</p> <p>Active NOAM VIP:</p> <p>Option 1 (cont) - Copy ISO to the Standby NOAM</p> <p>For an Active NOAM on release 6.0 or 7.0.x</p>	<p>If the Active NOAM is on release 6.0 or 7.0.x, perform this step; otherwise, proceed to step 11.</p> <p>Copy the ISO file to the Standby NOAM.</p> <ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active NOAM: <pre>ssh admusr@<NOAM_VIP> password: <enter password></pre> 2. Copy the ISO file to the Standby NOAM <pre>scp -p /var/TKLC/db/filemgmt/<DSR_ISO_Filename> admusr@<Standby_NOAM_IP>:/var/TKLC/db/filemgmt</pre> 3. Execute Steps 3 to 7 of Appendix F to add the ISO image to the PM&C software inventory. <p>Proceed to step 8 to complete this procedure</p>
<p>6</p> <p>PM&C Guest:</p> <p>Option 2 - Transfer via PM&C</p>	<p>OPTION 2 (Local site media ISO transfer, using PM&C):</p> <p>Using a Media containing the application (recommended for slow network connections between the client computer and the DSR frame)</p> <ol style="list-style-type: none"> 1. Execute Appendix F to load the ISO onto the PM&C server at the site. 2. SSH into the PM&C server and SCP the ISO to the Active NOAM using the following commands: <pre>scp -p /var/TKLC/smac/image/repository/ <DSR_ISO_Filename> admusr@<Active_NOAM_IP>:/var/TKLC/db/filemgmt</pre>
<p>7</p> <p>Active NOAM CLI:</p> <p>Option 2 (cont) - Copy ISO to Standby NOAM</p>	<ol style="list-style-type: none"> 1. Log into the Active NOAM and execute the following command : <pre>sudo chmod 644 /var/TKLC/db/filemgmt/<DSR_ISO_Filename></pre> 2. Copy the ISO file to the Standby NOAM using the following command: <pre>scp -p /var/TKLC/db/filemgmt/<DSR_ISO_Filename> admusr@<Standby_NOAM_IP>:/var/TKLC/db/filemgmt</pre>

Procedure 6: DSR ISO Administration

<p>8</p> <p>Active NOAM VIP:</p> <p>Using NOAM GUI, transfer ISO to all servers to be upgraded.</p> <p>For Active NOAM on release 6.0 or 7.0.x</p>	<p>Transfer the target release ISO image file from the Active NOAM to all other DSR servers.</p> <ol style="list-style-type: none"> 1. Navigate to Administration >Software Management > ISO Deployment 2. Click "Transfer ISO"
<p>9</p> <p>Active NOAM VIP:</p> <p>Using NOAM GUI, transfer ISO to all servers to be upgraded.</p> <p>For Active NOAM on release 6.0 or 7.0.x</p>	<ol style="list-style-type: none"> 1. Under Select ISO to Transfer: drop down menu, select the DSR 7.3 ISO. Under Select Target System(s): click Select All. 2. Select the checkbox next to Perform Media Validation before Transfer.



Procedure 6: DSR ISO Administration

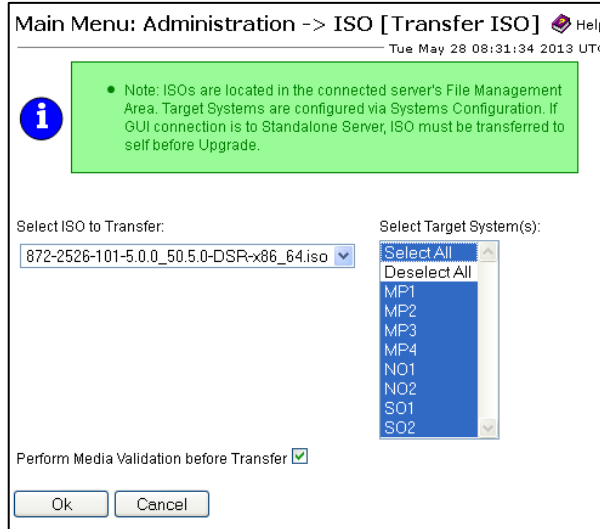
10

Active NOAM VIP:

ISO transfer continued

For Active NOAM on release 6.0 or 7.0.x

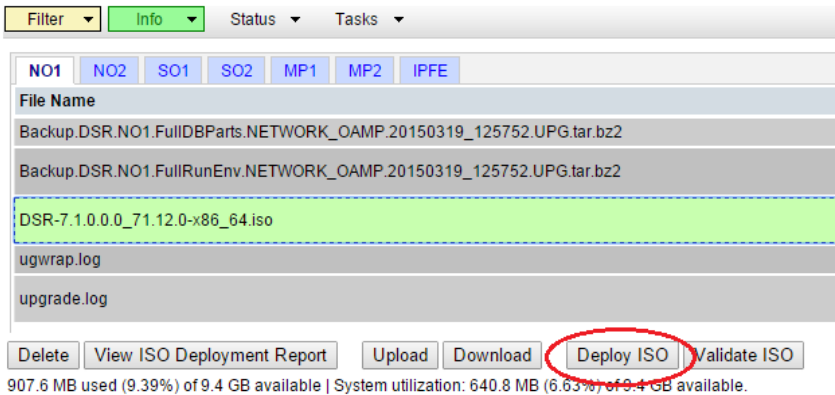
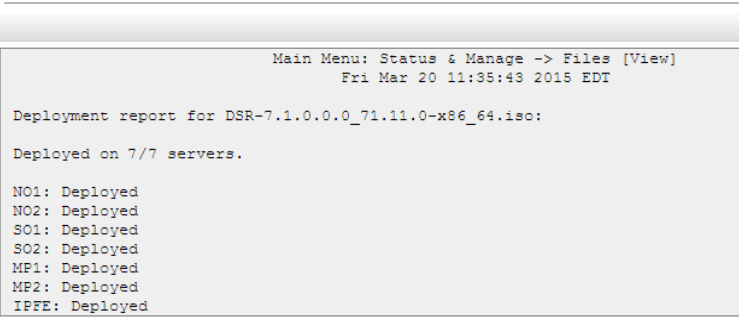
1. Click **Ok**
2. Control will return to the ISO screen. Monitor the progress until all file transfers have completed. Click **Refresh** to update the status of the transfer. If a file transfer fails, it must be retried.



NOTE: In the unlikely event that an ISO file transfer fails, repeat the transfer selecting only the specific system to which the transfer failed. If file transfers fail repeatedly, it is recommended to contact MOS for assistance.

THIS PROCEDURE HAS BEEN COMPLETED.

Procedure 6: DSR ISO Administration

<p>11</p> <p>Active NOAM VIP:</p> <p>Using NOAM GUI, deploy ISO to all servers to be upgraded.</p> <p>For Active NOAM on release 7.1.x and later</p>	<p>This step is for an Active NOAM on release 7.1.x and later.</p> <p>Deploy ISO to all servers.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files The Files menu is displayed 2. Click the Active NOAM server tab. All files stored in the file management storage area of this server display on the screen. 3. Select the DSR 7.3 ISO, and click the View ISO Deployment Report button. 4. In the resulting report, determine if the ISO has been deployed to all servers in the system. 5. If the ISO has been deployed to all servers, proceed to the next procedure; otherwise, complete the remaining steps in this procedure. 6. Select the 7.3 DSR ISO in the file list, and click the Validate ISO button. Click Ok on the resulting confirmation dialog box. 7. Verify the ISO status is valid. If the ISO is not valid, repeat this procedure beginning with step 1. If the ISO fails validation more than once, it is recommended to contact MOS. 8. If the ISO is valid, select the ISO, and click the Deploy ISO button. Click Ok on the resulting confirmation dialog box. <p>Main Menu: Status & Manage -> Files</p>  <p>The screenshot shows a web interface with a top navigation bar containing 'Filter', 'Info', 'Status', and 'Tasks' dropdown menus. Below this is a tabbed interface with tabs for 'NO1', 'NO2', 'SO1', 'SO2', 'MP1', 'MP2', and 'IPFE'. The 'NO1' tab is active. A file list is displayed with columns for 'File Name'. The file 'DSR-7.1.0.0.0_71.12.0-x86_64.iso' is highlighted in green. Below the file list are buttons for 'Delete', 'View ISO Deployment Report', 'Upload', 'Download', 'Deploy ISO', and 'Validate ISO'. The 'Deploy ISO' button is circled in red. At the bottom of the interface, system utilization information is shown: '907.6 MB used (9.39%) of 9.4 GB available System utilization: 640.8 MB (6.63%) of 9.4 GB available.'</p>
<p>12</p> <p>Active NOAM VIP:</p> <p>Monitor ISO deployment</p> <p>For Active NOAM on release 7.1.x and later</p>	<p>The deployment progress can be monitored by viewing the tasks dropdown list on the Status & Manage > Files screen.</p> <ol style="list-style-type: none"> 1. Select the target release ISO, and click the View ISO Deployment Report button. Monitor deployment progress until the ISO has been deployed to all servers in the system. <p>Main Menu: Status & Manage -> Files [View]</p>  <p>The screenshot shows a terminal-style output window titled 'Main Menu: Status & Manage -> Files [View]'. The text inside reads: 'Main Menu: Status & Manage -> Files [View]', 'Fri Mar 20 11:35:43 2015 EDT', 'Deployment report for DSR-7.1.0.0.0_71.11.0-x86_64.iso:', 'Deployed on 7/7 servers.', and a list of server statuses: 'NO1: Deployed', 'NO2: Deployed', 'SO1: Deployed', 'SO2: Deployed', 'MP1: Deployed', 'MP2: Deployed', and 'IPFE: Deployed'.</p>

THIS PROCEDURE HAS BEEN COMPLETED.

3.3.4 Full Backup of DB Run Environment at Each Server

The procedures in this section are part of software upgrade preparation and are used to conduct a full backup of the run environment on each server, to be used in the event of a backout of the new software release. The backup procedure to be executed is dependent on the software release that is running on the Active NOAM.

NOTE: Do not perform this procedure until the ISO Deployment is completed to all servers in the topology. Failure to complete the ISO may disrupt ISO deployment/undeployment in the event of a partial backout (e.g. backout of one site).



!! WARNING!!

IF BACKOUT IS NEEDED, ANY CONFIGURATION CHANGES MADE AFTER THE DB IS BACKED UP AT EACH SERVER WILL BE LOST

3.3.4.1 Full Backup of DB Run Environment for Release 6.0, 7.0.x

This procedure is used to backup the DB run environment when the Active NOAM is on release 6.0 or 7.0.x.

Procedure 7: Full Backup of DB Run Environment for Release 6.0, 7.0.x

S T E P #	<p>This procedure (executed from the Active NOAM server) conducts a full backup of the run environment on each server, so that each server has the required data to perform a backout.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE</u></p>	
1 <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Log into the Active NOAM</p>	<p>Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active NOAM:</p> <pre>ssh admusr@<NOAM_VIP></pre>
2 <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Start a screen session.</p>	<p>Enter the following commands:</p> <pre>\$ screen</pre> <p>(The screen tool will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p>

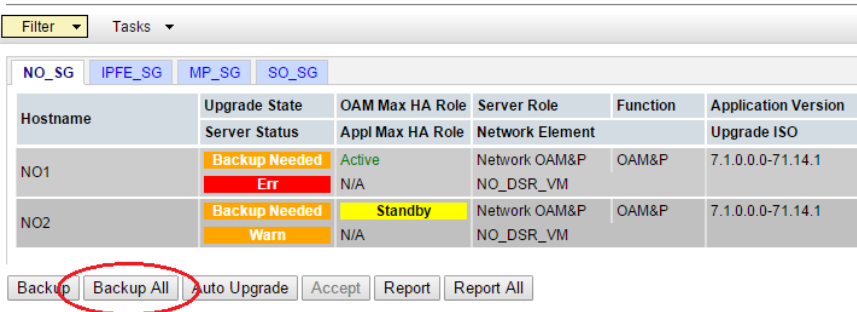
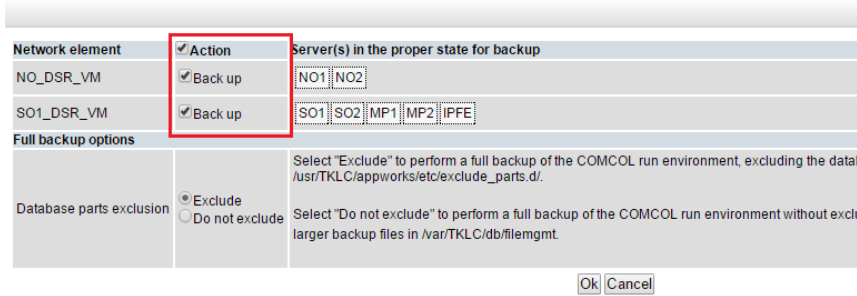
<p>3</p> <p>Active NOAM CLI:</p> <p>Execute Full Backup for all servers (managed from this NOAM)</p>	<p>Execute the backupAllHosts utility on the Active NOAM. This utility will remotely access each server managed by the NOAM, and run the backup command for that server.</p> <pre>\$ /usr/TKLC/dpi/bin/backupAllHosts Do you want to remove the old backup files (if exists) from all the servers (y/[n])?y</pre> <p>It may take from 10 to 30 minutes for this command to complete, depending upon the number of servers and the data in the database. Do not proceed until the backup on each server is completed.</p> <p>Output similar to the following will indicate successful completion:</p> <pre>Script Completed. Status: HOSTNAME STATUS ----- HPC3blade02 PASS HPC3blade01 PASS HPC3blade03 PASS HPC3blade04 PASS</pre> <p>(Errors will also report back to the command line.)</p> <p>NOTE: There is no progress indication for this command; only the final report when it completes.</p>
<p>4</p> <p>Active NOAM CLI:</p> <p>Exit the screen session.</p>	<pre>\$ exit</pre> <p>[screen is terminating]</p> <p>NOTE: "screen -ls" is used to show active screen sessions on a server, and "screen -dr" is used to re-enter a disconnected screen session.</p>
<p>5</p> <p>ALTERNATIVE METHOD (Optional)</p> <p>Server CLI:</p> <p>If needed, the alternative backup method can be executed on each individual server instead of using the "backupAllHosts" script.</p>	<p>ALTERNATIVE: A manual back up can be executed on each server individually, rather than using the CLI method above. To do this, log into each server in the site individually, and execute the following command to manually generate a full backup on that server:</p> <pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup</pre> <p>Output similar to the following will indicate successful completion:</p> <pre>Success: Full backup of COMCOL run env has completed. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullDBParts. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullRunEnv. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt.</pre>
<p>6</p> <p>Active NOAM VIP:</p> <p>Verify that backup files are present on each server.</p>	<ol style="list-style-type: none"> 1. Log into the Active NOAM. 2. Select Status & Manage > Files The Files menu is displayed 3. Click on each server tab, in turn 4. For each server, verify that the following (2) files have been created: <pre>Backup.DSR.<server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>. UPG.tar.bz2 Backup.DSR.<server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.U PG.tar.bz2</pre>

THIS PROCEDURE HAS BEEN COMPLETED.

3.3.4.2 Full Backup of DB Run Environment for Release 7.1.x and later

This procedure is used to backup the DB run environment when the Active NOAM is on release 7.1.x and later.

Procedure 8: Full Backup of DB Run Environment for Release 7.1.x and later

S T E P #	<p>This procedure (executed from the Active NOAM server) conducts a full backup of the run environment on each server, so that each server has the required data to perform a backout.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
1	<p>Active NOAM VIP:</p> <p>Start backup of all servers</p>	<ol style="list-style-type: none"> 1. Login to the NOAM GUI using the VIP. 2. Navigate to Administration > Software Management > Upgrade. 3. Click the Backup All button. <p>Main Menu: Administration -> Software Management -> Upgrade</p> 
2	<p>Active NOAM VIP:</p> <p>Select network elements to backup</p>	<p>The Upgrade [Backup All] screen is displayed. This screen displays the various Network Elements, and identifies which servers are ready for backup.</p> <ol style="list-style-type: none"> 1. In the Action column, select the Back up checkbox for each Network Element. 2. Ensure the 'Exclude' radio button is selected. 3. Click the Ok button. This initiates a full backup on each eligible server. <p>Main Menu: Administration -> Software Management -> Upgrade [Backup All]</p> 

Procedure 8: Full Backup of DB Run Environment for Release 7.1.x and later

<p>S T E P #</p>	<p>This procedure (executed from the Active NOAM server) conducts a full backup of the run environment on each server, so that each server has the required data to perform a backout.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>																																					
<p>3</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Monitor backup progress</p>	<p>Monitor the upgrade progress.</p> <ol style="list-style-type: none"> Select each server group tab and verify that each server transitions from 'Backup in Progress' to 'Ready'. Refresh the page as each tab is selected to ensure the latest status is displayed. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Tasks <input type="text"/></p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td style="background-color: yellow;">Backup In Progress</td> <td>Active</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.1.0.0-71.31.0</td> </tr> <tr> <td></td> <td>Norm</td> <td>N/A</td> <td>NO_DSR_VM</td> <td></td> <td></td> </tr> <tr> <td>NO2</td> <td style="background-color: yellow;">Backup In Progress</td> <td>Standby</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.1.0.0-71.31.0</td> </tr> <tr> <td></td> <td>Norm</td> <td>N/A</td> <td>NO_DSR_VM</td> <td></td> <td></td> </tr> </tbody> </table> <p>Backup Backup All Auto Upgrade Accept Report Report All</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	NO1	Backup In Progress	Active	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0		Norm	N/A	NO_DSR_VM			NO2	Backup In Progress	Standby	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0		Norm	N/A	NO_DSR_VM		
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																																	
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																																	
NO1	Backup In Progress	Active	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0																																	
	Norm	N/A	NO_DSR_VM																																			
NO2	Backup In Progress	Standby	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0																																	
	Norm	N/A	NO_DSR_VM																																			
<p>4</p> <p><input type="checkbox"/></p>	<p>ALTERNATIVE METHOD (Optional)</p> <p>Server CLI:</p> <p>If needed, the alternative backup method can be executed on each individual server instead of using the "backupAllHosts" script.</p>	<p>ALTERNATIVE: A manual back up can be executed on each server individually, rather than using the GUI method above. To do this, log into each server in the site individually, and execute the following command to manually generate a full backup on that server:</p> <pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup</pre> <p>Output similar to the following will indicate successful completion:</p> <pre>Success: Full backup of COMCOL run env has completed. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullDBParts. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullRunEnv. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt.</pre>																																				
<p>5</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify that backup files are present on each server.</p>	<ol style="list-style-type: none"> Log into the Active NOAM. Select Status & Manage > Files The Files menu is displayed Click on each server tab, in turn For each server, verify that the following (2) files have been created: <pre>Backup.DSR.<server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>.UPG. tar.bz2 Backup.DSR.<server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.UPG.t ar.bz2</pre>																																				
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>																																						

3.3.5 Upgrade TVOE Hosts at a Site

This procedure applies if the TVOE Hosts at a site will be upgraded BEFORE the start of the DSR 7.3 upgrade. Performing the TVOE upgrade BEFORE reduces the time required for DSR and IDIH Application Upgrade procedures during the maintenance window.

NOTE: *If the TVOE Hosts will be upgraded in the same maintenance windows as the DSR and IDIH servers, then this procedure does not apply.*

PRECONDITION: *The PM&C application at each site (and the TVOE Host running the PM&C virtual server, must be upgraded before performing TVOE Host OS upgrade for servers that are managed by this PM&C.*

IMPACT: *TVOE Host upgrades require that the DSR, SDS, or IDIH applications running on the host be shut down for up to 30 minutes during the upgrade.*

Table 6: TVOE Upgrade Execution Overview

Procedure	This Step	Cum.	Procedure Title	Impact
Procedure 9	60 min per TVOE Host*	1:00-16:00	Upgrade TVOE Hosts	DSR and IDIH servers running as virtual guests on the TVOE host will be stopped and unable to perform their role while the TVOE Host is being upgraded.

* **WARNING:** Depending on the risk tolerance of the customer, it is possible to execute multiple TVOE Upgrades in parallel. Detailed steps are shown in the procedure on the next page.

Procedure 9: Upgrade TVOE Hosts

S T E P #	This procedure upgrades the TVOE Hosts for a site.	
	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE .	
	1. <input type="checkbox"/>	Record site Record Site to be upgraded _____
2. <input type="checkbox"/>	Select order of TVOE server upgrades	Record the TVOE Hosts to be upgraded, in order: (It is best to upgrade Standby servers before Active servers, to minimize failovers. Otherwise, any order is OK.) _____ _____ _____ _____ NOTE: <i>The site PM&C, "Software Inventory" form, will typically list the TVOE Hosts at a site, and their versions.</i>
3. <input type="checkbox"/>	Upload TVOE ISO to PM&C	Execute Appendix F to add the TVOE ISO to the PM&C software inventory.

Procedure 9: Upgrade TVOE Hosts

<p>4.</p> <p><input type="checkbox"/></p>	<p>Determine if there are SDS Applications on the TVOE Hosts</p>	<p>Log into the TVOE Hosts and display the guests.</p> <p>1. SSH to the TVOE and log in.</p> <p>If the TVOE version is 2.5.2: <code>ssh root@<TVOE_ip></code> <code>password: <enter password></code></p> <p>If the TVOE version is 2.7 or later: <code>ssh admsur@<TVOE_ip></code> <code>password: <enter password></code></p> <p>2. Execute the following command to display all the VM guests running:</p> <p>If the TVOE version is 2.5.2: <code># virsh list --all</code></p> <p>If the TVOE version is 2.7 or later: <code>\$ sudo virsh list --all</code></p> <p>If the application list includes SDS SOAM applications, then make this team aware of possible failovers, and expected alarms due to running in simplex mode during the TVOE upgrade.</p>
<p>5.</p> <p><input type="checkbox"/></p>	<p>Upgrade the TVOE hosting a DSR or IDIH server</p>	<p>Upgrade the TVOE Host of the first server.</p> <p>Execute Appendix J</p> <p>NOTE: This step may cause a failover of the DSR or other active applications on the TVOE.</p>
<p>6.</p> <p><input type="checkbox"/></p>	<p>Repeat for other TVOE Hosts at a site</p>	<p>Repeat step 5 for each TVOE Host at the site requiring upgrade.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>		

3.3.6 IDIH Pre-Upgrade

If IDIH is a component of a Network Element, it may be upgraded either before or after the DSR. The order of upgrade will not impact the functionality of either component. However, it should be noted that certain compatibility limitations may exist while the two components are not on the same release.

The IDIH upgrade procedures are provided in Appendix K and may be performed at any time after Procedure 10.

Table 7. IDIH Upgrade Preparation Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 10	0:15-0:30	0:15-0:30	IDIH Upgrade Preparation	None

3.3.6.1 IDIH Upgrade Preparation

This procedure prepares the FD config scripts for the Mediation and Application guests.

Procedure 10: IDIH Upgrade Preparation

S T E P #	This procedure prepares the FD config scripts that will be used to create the Mediation and Application guests. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE	
	1	<p>PM&C CLI:</p> <p>Login to the PM&C server</p> <pre>ssh <PM&C IP address> login as: admusr password: <enter password></pre>
2	<p>PM&C CLI:</p> <p>Copy the ISOs to PM&C</p> <p>1. Add the Application ISO images (Mediation, Application, and Oracle) and the TPD ISO to the PM&C, this can be done in one of three ways:</p> <ol style="list-style-type: none"> a. Insert the Application CD required by the application into the removable media drive. b. Attach the USB device containing the ISO image to a USB port. c. Copy the Application iso file to the PM&C server into the /var/TKLC/smac/image/isoimages/home/smacftpusr/ directory as pmacftpusr user: cd into the directory where your ISO image is located on the TVOE Host (not on the PM&C server) Using sftp, connect to the PM&C server: <pre>\$ sftp pmacftpusr@<pmac_management_network_ip> \$ put <image>.iso</pre> <p>2. Execute Appendix F to add the ISO to the PM&C software inventory.</p> <p>3. Repeat the above steps for the Application, Mediation, Oracle and TPD ISOs.</p> <p>4. After the all images are transferred, close the connection:</p> <pre>\$ quit</pre> <p>Note: If there is insufficient disk space in the PMAC pmacftpuser local directory, refer to section "Configure PM&C Application Guest isoimages Virtual Disk" of [14] to increase the storage allocation.</p>	

Procedure 10: IDIH Upgrade Preparation

<p>3</p> <p>IDIH CLI:</p> <p>Perform a system health check on the guest</p>	<p>Perform a system health check.</p> <ol style="list-style-type: none"> 1. Login in to the Oracle guest as the admusr user. <pre>ssh <IDIH IP address> login as: admusr password: <enter password></pre> 2. Execute the analyze_server.sh script. <pre>\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i</pre> <p>Sample output:</p> <pre>[admusr@cat-ora ~]\$ /usr/TKLC/xIH/plat/bin/analyze_server.sh -i 13:24:52: STARTING HEALTHCHECK PROCEDURE 13:24:52: date: 03-17-15, hostname: cat-ora 13:24:52: TPD VERSION: 7.0.0.0.0-86.14.0 13:24:52: ----- 13:24:52: Checking disk free space 13:24:52: No disk space issues found : : 13:25:02: All tests passed! 13:25:02: ENDING HEALTHCHECK PROCEDURE WITH CODE 0</pre> <p>If the output indicates a status failure, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p>
--	--

THIS PROCEDURE HAS BEEN COMPLETED

3.4 Software Upgrade Execution Overview

It is recommended to contact MOS as described in Appendix P *prior* to executing this upgrade to ensure that the proper media are available for use.

Before upgrade, users must have performed the data collection and system health check instructions in Section 3.3. 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 a Normal state, these servers should be brought to the Normal or 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.

If alarms are present on the server, it is recommended to contact MOS to diagnose those alarms and determine whether they need to be addressed, or if it is safe to proceed with the upgrade.

Please read the following notes on upgrade procedures:

- All procedure completion times shown in this document are estimates. Times may vary due to differences in database size, user experience, and user preparation.
- The shaded area within response steps must be verified in order to successfully complete that step.
- 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 initial each step. A check box is provided. For procedures which are executed multiple times, the check box can be skipped, but the technician must initial each iteration the step is executed. The space on either side of the step number can be used (margin on left side or column on right side).
- Captured data is required for future support reference if an MOS representative is not present during the upgrade.
- Answer these questions, and record:

What is the DSR Application version to be upgraded? _____

What is the DSR Application new version to be applied? _____

Is this a Major or Incremental Upgrade? _____

Are there IPFE servers to upgrade? _____

What DSR applications are running in a TVOE Host environment? _____

Is SDS also deployed (co-located) at the DSR site? _____

Note: SDS does not need to be upgraded at the same time.

Is IDIH also deployed (co-located) at the DSR site? _____

3.4.1 Accepting the Upgrade

After the upgrade of **ALL** servers in the topology has been completed, and following an appropriate soak time, the Post-Upgrade procedures in **Section 5.6** are performed in a separate Maintenance Window to finalize the upgrade. Procedure 45 “Accepts” the upgrade and performs a final health check of the system to monitor alarms and server status. Accepting the upgrade is the last step in the upgrade. Once the upgrade is accepted, the upgrade is final and cannot be backed out.

4 NOAM UPGRADE EXECUTION

NOAM UPGRADE

The NOAM upgrade section is common to all topologies. This section must be completed before executing the site upgrade procedures.

Procedures for the NOAM upgrade include steps for the upgrade of the Disaster Recovery NOAM (DR NOAM) servers also. If no DR NOAM is present in the customer deployment, then the DR NOAM-related steps can be safely ignored.

Global Provisioning will be disabled before upgrading the NOAM servers. Provisioning activities at the NOAM and SOAM servers will have certain limitations during the period where the NOAMs are upgraded and the sites are not yet upgraded.

The Elapsed Time mentioned in table below specifies the time with and without TVOE upgrade. If the TVOE Host upgrades are not needed, or were previously performed, then the time estimates without TVOE upgrade will apply. All times are estimates.

Table 8: NOAM Upgrade Execution Overview

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 11	0:05	0:05	NOAM Pre-Upgrade Health Checks	None
Procedure 12	0:30-1:00	0:35-1:05	NOAM Health Check for Source Release 6.0	None
or Procedure 13	0:30-0:45	0:35-0:50	NOAM Health Check for Source Release 7.0.x, 7.1.x	None
or Procedure 14	0:20-0:30	0:25-0:35	NOAM Health Check for Source Release 7.2 and later	None
Procedure 15	0:05-0:10	0:30-1:15	NOAM Pre-Upgrade Backup	None
Procedure 16	0:01-0:05	0:31-1:20	Disable Global Provisioning	Global Provisioning Disabled
Procedure 17 ¹	0:40-1:20	1:11-2:40	NOAM Upgrade	No Traffic Impact
Procedure 18	0:01-0:05	1:12-2:45	PCA Topology Hiding Configuration	No Traffic Impact
Procedure 19	0:05-0:15	1:17-3:00	Verify NOAM Post Upgrade Status	None
Procedure 20	0:05-0:10	1:22-3:10	Allow Provisioning	Global Provisioning Enabled

¹ **NOTE:** It is highly recommended that TVOE Hosts at a site be upgraded in a MW prior to the start of the DSR 7.3 Application upgrade. If TVOE host are to be upgraded during the same MW as the DSR 7.3 Application upgrade, then see [Table 6] for additional time estimates associated with TVOE upgrade.

4.1 NOAM Pre-Upgrade Checks and Backup

The procedures in this section perform health checks and backups to prepare the NOAM NE for upgrade. These procedures must be executed on the Active NOAM.

Note: These procedures may be executed outside of the maintenance window, but should be executed within 6 to 8 hours prior to Procedure 17.

4.1.1 NOAM Pre-Upgrade Health Checks


This procedure performs the pre-upgrade health checks that are common to all source releases.

Procedure 11: NOAM Pre-Upgrade Health Checks

S T E P #	<p>This procedure makes a record of the TVOE software versions and verifies that a recent backup exists for all servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<p>Verify that NOAM TVOE Host upgrades have been completed (before starting DSR upgrade).</p>	<p>IMPORTANT: Verify the revision level of the TVOE Host systems for the NOAM and DR-NOAM servers. If they are not on the required release, then the optional steps in this procedure to upgrade the TVOE Hosts will be required.</p> <p>See Appendix J for the steps to verify the TVOE Host revision level. (This can also be done from the PM&C Software Inventory screen.)</p> <p>Complete this information:</p> <p>NOAM-A TVOE Host Rev _____ NOAM-B TVOE Host Rev _____ DR-NOAM-A TVOE Host Rev _____ DR-NOAM-B TVOE Host Rev _____</p> <p>Will TVOE Upgrades be performed during the DSR Application Upgrades? _____</p>
2. <input type="checkbox"/>	<p>Active NOAM VIP: Verify that backups are created for all servers</p>	<p>Verify that a recent COMCOL Environment backup has been performed.</p> <ol style="list-style-type: none"> 1. Select Status and Manage > Files. 2. Select each server tab, in turn. 3. Verify the following two files have been created and have a current timestamp: <code>Backup.DSR.<hostname>.FullRunEnv.NETWORK_OAMP.<timestamp>.UPG.tar.bz2</code> <code>Backup.DSR.<hostname>.FullDBParts.NETWORK_OAMP.<timestamp>.UPG.tar.bz2</code> <p>See Section 3.3.4 to perform (or repeat) a full Backup, if needed.</p> <ol style="list-style-type: none"> 4. Repeat sub-steps 1 through 3 for each site.
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

4.1.2 NOAM Health Check for Source Release 6.0

This procedure is used to determine the health and status of the network and servers when the NOAM is on source release 6.0. This procedure must be executed on the Active NOAM.




!WARNING!

THE NOAM AND DR-NOAM SITES MUST BE UPGRADED IN THE SAME MAINTENANCE WINDOW.

SOAM SITE(S) SHOULD BE UPGRADED SUBSEQUENTLY, WITH MATED SITES IN SEPARATE MAINTENANCE WINDOWS.

Procedure 12: NOAM Health Check for Source Release 6.0

S T E P #	<p>This procedure performs a Health Check of the system prior to upgrading the NOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>																								
1	<div style="border: 1px solid black; padding: 5px;"> <p>Active NOAM VIP:</p> <p>Verify ISO for Upgrade has been deployed</p> </div> <p>Verify the DSR ISO file has been transferred to all servers.</p> <ol style="list-style-type: none"> 1. Navigate to Administration > Software Management > ISO Deployment 2. Verify the "Transfer Status" is "Complete" for each server in the topology. 3. If any server shows "Not Complete", perform Section 3.3.3 DSR ISO Administration <p>Main Menu: Administration -> ISO</p> <hr/> <p>Display Filter: <input type="text" value="- None -"/> = <input type="text" value=""/> <input type="button" value="Go"/> (LIKE wildcard: "**")</p> <div style="border: 1px solid green; background-color: #e0ffe0; padding: 5px; margin: 10px 0;"> <p> • Transfer ISO Complete. ISO: DSR-7.1.1.0.0_71.27.0-x86_64.iso</p> <p>7 of 7 Transfers Successful. 0 of 7 Transfers Failed.</p> </div> <p>Table description: List of Systems for ISO transfer.</p> <p>Displaying Records 1-7 of 7 total First Prev Next Last </p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: left;"> <thead> <tr> <th style="text-decoration: underline;">System Name / Hostname</th> <th style="text-decoration: underline;">ISO</th> <th style="text-decoration: underline;">Transfer Status</th> </tr> </thead> <tbody> <tr><td>IPFE</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>MP1</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>MP2</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>NO1</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>NO2</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>SO1</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> <tr><td>SO2</td><td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td><td>Complete</td></tr> </tbody> </table> <p>Displaying Records 1-7 of 7 total First Prev Next Last </p> <p>[Transfer ISO]</p>	System Name / Hostname	ISO	Transfer Status	IPFE	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	MP1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	MP2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	NO1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	NO2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	SO1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	SO2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete
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SO2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete																							

Procedure 12: NOAM Health Check for Source Release 6.0

2	<p>Active NOAM VIP:</p> <p>Verify Server Status is Normal - NOAM</p>	<p>Verify server status is normal for all servers.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Server. The Server Status screen is displayed. 2. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). 3. Do not proceed with the upgrade if any server status displayed is not Norm. 4. Do not proceed if there are any Major or Critical alarms. <p>The following expected alarm will occur after the first NOAM upgrade, and will clear after the second NOAM is upgraded:</p> <p style="text-align: center;">Alarm ID = 31233 (HA Secondary Path Down)</p> <p>NOTE: It is not recommended to continue with the upgrade if any server status has unexpected values. An upgrade should only be executed on a server with unexpected alarms if the upgrade is specifically intended to clear those alarm(s). This would mean that the target release software contains a fix to clear the "stuck" alarm(s) and upgrading is the ONLY method to clear the alarm(s). Do not continue otherwise.</p>
3	<p>Active NOAM VIP:</p> <p>Log all current alarms at NOAM</p>	<p>View active alarms.</p> <ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Click the Report button to generate an Alarms report. 3. Save the report and/or print the report. Keep these copies for future reference.
4	<p>Active NOAM VIP:</p> <p>View Communication Agent status</p>	<p>View ComAgent connection status.</p> <ol style="list-style-type: none"> 1. Select Communication Agent > Maintenance > Connection Status; The Communication Agent > Connection Status screen is displayed. 2. Expand each server entry. Verify the Connection Status of each connection is InService.
5	<p>Active NOAM VIP:</p> <p>View SBR status (if equipped)</p>	<p>View SBR status if PDRA/PCA is enabled.</p> <p>If the Active NOAM is on release 6.0:</p> <ol style="list-style-type: none"> 1. Select Policy DRA > Maintenance > Policy SBR Status The Policy SBR Status screen is displayed. 2. Expand each Server Group. Verify Congestion Level is 'Normal' for all servers. <p>If the Active NOAM is on release 7.0.x, 7.1.x:</p> <ol style="list-style-type: none"> 1. Select Policy and Charging > Maintenance > SBR Status The SBR Status screen is displayed. 2. Select the Binding tab. 3. Expand each Server Group. 4. Verify Congestion Level is 'Normal' for all servers. 5. Repeat sub-steps 3 and 4 for the PDRA Mated Triplet tab. <p>If the Active NOAM is on release 7.2 and later:</p> <ol style="list-style-type: none"> 1. Select SBR > Maintenance > SBR Status The SBR Status screen is displayed. 2. Select the Binding Region tab. 3. Expand each Server Group. 4. Verify Congestion Level is 'Normal' for all servers. 5. Repeat sub-steps 3 and 4 for the Mated Site tab.

Procedure 12: NOAM Health Check for Source Release 6.0

6	<p>Active NOAM VIP:</p> <p>Export and archive configuration data</p>	<p>Export configuration data.</p> <ol style="list-style-type: none"> 1. Select Main Menu > Diameter Common > Export 2. Capture and archive configuration data by choosing the Export Application drop down entry labeled "ALL". 3. If SCP will be used to retrieve the export files in substep 6, select the Export Directory - File Management Directory radio button. 4. Click the 'Ok' button to confirm. 5. Verify the data export is complete using the tasks button at the top of the screen. 6. Browse to Main Menu > Status & Manage > Files and download all the exported files to the client machine, or use the SCP utility to download the files from the Active NOAM to the client machine.
7	<p>Active NOAM VIP:</p> <p>Export and archive Configuration Places data</p>	<p>Export the Configuration Places data.</p> <ol style="list-style-type: none"> 1. Main Menu > Configuration > Places 2. Click the Report at the bottom of the table to generate a report for all entries. 3. Save the report and/or print the report. Keep these copies for future reference.
8	<p>Active SOAM VIP:</p> <p>Log all current alarms at SOAM</p>	<p>Log active site alarms.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 3. Click the Report button to generate an Alarms report. 4. Save the report and/or print the report. Keep these copies for future reference.
9	<p>Active SOAM VIP:</p> <p>View DA-MP Status</p>	<p>View DA-MP status.</p> <ol style="list-style-type: none"> 1. Select Diameter > Maintenance > DA-MPs. The DA-MP status screen is displayed. 2. Select the Peer DA-MP Status tab. 3. Verify all Peer MPs are available 4. Select the DA-MP Connectivity tab. 5. Note the number of Total Connections Established
10	<p>Active SOAM VIP:</p> <p>Verify application status</p>	<p>Verify application status</p> <ol style="list-style-type: none"> 1. Select Diameter > Maintenance > Applications 2. Verify Operational Status is 'Available' for all applications
11	<p>Repeat for each Network Element</p>	<p>Repeat Steps 8 - 10 for each SOAM site in the topology.</p>
THIS PROCEDURE HAS BEEN COMPLETED.		

4.1.3 NOAM Health Check for Source Release 7.0.x, 7.1.x

This procedure is used to determine the health and status of the network and servers when the NOAM is on source release 7.0.x or 7.1.x. This procedure must be executed on the Active NOAM.

Procedure 13: NOAM Health Check for Source Release 7.0.x, 7.1.x

S T E P #	<p>This procedure performs a Health Check of the system prior to upgrading the NOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>																									
1	<p>Active NOAM VIP:</p> <p>Verify upgrade ISO has been deployed</p> <p>For Active NOAM on release 7.0.x only</p>	<p>This step is for an Active NOAM on release 7.0.x. If the Active NOAM is on release 7.1.x, proceed to step 2.</p> <p>Verify the DSR ISO file has been transferred to all servers.</p> <ol style="list-style-type: none"> Navigate to Administration > Software Management > ISO Deployment Verify the Transfer Status is “Complete” for each server in the topology. If any server shows “Not Complete”, perform Section 3.3.3 DSR ISO Administration <p>Main Menu: Administration -> ISO</p> <hr/> <p>Display Filter: <input type="text" value="- None -"/> = <input type="text" value=""/> <input type="button" value="Go"/> (LIKE wildcard: **)</p> <div style="border: 1px solid green; background-color: #e0ffe0; padding: 5px; margin: 10px 0;"> <p> Transfer ISO Complete. ISO: DSR-7.1.1.0.0_71.27.0-x86_64.iso</p> <p>7 of 7 Transfers Successful. 0 of 7 Transfers Failed.</p> </div> <p>Table description: List of Systems for ISO transfer.</p> <p>Displaying Records 1-7 of 7 total First Prev Next Last </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">System Name / Hostname</th> <th style="text-align: left;">ISO</th> <th style="text-align: left;">Transfer Status</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>MP1</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>MP2</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>NO1</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>NO2</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>SO1</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> <tr> <td>SO2</td> <td>DSR-7.1.1.0.0_71.27.0-x86_64.iso</td> <td>Complete</td> </tr> </tbody> </table> <p>Displaying Records 1-7 of 7 total First Prev Next Last </p> <p>[Transfer ISO]</p> <p>Proceed to step 3 to complete this procedure.</p>	System Name / Hostname	ISO	Transfer Status	IPFE	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	MP1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	MP2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	NO1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	NO2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	SO1	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete	SO2	DSR-7.1.1.0.0_71.27.0-x86_64.iso	Complete
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2	<p>Active NOAM VIP:</p> <p>Verify ISO for upgrade has been deployed</p> <p>For Active NOAM on release 7.1.x only</p>	<p>This step is for an Active NOAM on release 7.1.x.</p> <p>Verify the DSR ISO file has been transferred to all servers.</p> <ol style="list-style-type: none"> Navigate to Status & Manage > Files Select the target release DSR ISO and click “View ISO Deployment Report”. Review the report to ensure the ISO is deployed to all servers in the topology <p>Sample report:</p> <pre>Deployment report for DSR-7.3.0.0.0_73.27.0-x86_64.iso: Deployed on 7/7 servers. NO1: Deployed NO2: Deployed SO1: Deployed SO2: Deployed MP1: Deployed MP2: Deployed IPFE: Deployed</pre>																								

Procedure 13: NOAM Health Check for Source Release 7.0.x, 7.1.x

<p>3</p> <p>Verify NOAM pre-Upgrade Status</p>	<p>Active NOAM CLI:</p>	<p>Execute the following commands on the Active DSR NOAM and Active DR NOAM servers.</p> <ol style="list-style-type: none"> Use an SSH client to connect to the Active NOAM: <pre>ssh <NOAM XMI IP address> login as: admusr password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> Enter the command: <pre>\$ upgradeHealthCheck preUpgradeHealthCheck</pre> <p>This command creates two files in /var/TKLC/db/filemgmt/UpgradeHealthCheck/ with the filename format:</p> <pre><NOserver_name>_ServerStatusReport_<date-time>.xml <NOserver_name>_ComAgentConnStatusReport_<date-time>.xml</pre> <p>If any alarms are present in the system: <pre><NOserver_name>_AlarmStatusReport_<date-time>.xml</pre> <p>If the system is PDRA, one additional file is generated: <pre><NOserver_name>_SBRStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> </p></p> If the message “Server <hostname> needs operator attention before upgrade” is output, inspect the Server Status Report to determine the reason for the message. If the following message appears in the Server Status Report, the alert can be ignored: Server <hostname> has no alarm with DB State as Normal and Process state as Kill. <p>Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p> Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.
<p>4</p> <p>Export and archive configuration data</p>	<p>Active NOAM VIP:</p>	<p>Export configuration data.</p> <ol style="list-style-type: none"> Select Main Menu > Diameter Common > Export Capture and archive configuration data by choosing the Export Application drop down entry labeled “ALL”. If SCP will be used to retrieve the export files in substep 6, select the Export Directory - File Management Directory radio button. Click Ok to confirm. Verify the data export is complete using the tasks button at the top of the screen. Browse to Main Menu > Status & Manage > Files and download all the exported files to the client machine, or use the SCP utility to download the files from the Active NOAM to the client machine.

Procedure 13: NOAM Health Check for Source Release 7.0.x, 7.1.x

5	<p>Active SOAM CLI:</p> <p>Pre-upgrade health checks</p>	<p>Execute SOAM pre-upgrade alarm status health checks.</p> <ol style="list-style-type: none"> 1. Use an SSH client to connect to the Active SOAM: <pre>ssh <SOAM XMI IP address> login as: admusr password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> 2. Enter the command: <pre>\$ upgradeHealthCheck alarmStatusOnSoam</pre> <p>If any alarms are present in the system, this command creates a file in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:</p> <pre><SOserver_name>_AlarmStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 3. Keep this report for future reference. This report will be compared to alarm and status reports after the upgrade is complete.
6	<p>Active SOAM CLI:</p> <p>Pre-upgrade health checks</p>	<p>Execute SOAM pre-upgrade DA-MP status health checks.</p> <ol style="list-style-type: none"> 1. Enter the command: <pre>\$ upgradeHealthCheck daMpStatus</pre> <p>This command outputs status to the screen for review.</p> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 2. Verify all Peer MPs are available 3. Note the number of Total Connections Established _____
7	<p>Active SOAM CLI:</p> <p>Verify PCA status (if equipped)</p>	<p>Execute SOAM pre-upgrade PCA status health checks, if equipped.</p> <ol style="list-style-type: none"> 1. Enter the command: <pre>\$ upgradeHealthCheck pcaStatus</pre> <p>This command outputs status to the screen for review.</p> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 2. Verify Operational Status is ‘Available’ for all applications
8	<p>Repeat for each Network Element</p>	<p>Repeat Steps 5 - 7 for each SOAM site in the topology.</p>

THIS PROCEDURE HAS BEEN COMPLETED.

4.1.4 NOAM Health Check for Source Release 7.2 and later

This procedure is used to determine the health and status of the network and servers when the NOAM is on source release 7.2 or later. This procedure must be executed on the Active NOAM.

Procedure 14: NOAM Health Check for Source Release 7.2 and later

<p>S T E P #</p>	<p>This procedure performs a Health Check of the system prior to upgrading the NOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1</p> <div style="background-color: white; width: 20px; height: 20px; margin: 5px;"></div>	<p><u>Active NOAM VIP:</u></p> <p>Verify Upgrade ISO has been deployed</p>	<p>Verify the DSR ISO file has been transferred to all servers.</p> <ol style="list-style-type: none"> 1. Navigate to Status & Manage > Files 2. Select the target release DSR ISO and click "View ISO Deployment Report". 3. Review the report to ensure the ISO is deployed to all servers in the topology <p>Sample report:</p> <pre style="font-family: monospace;"> Deployment report for DSR-7.3.0.0.0_73.27.0-x86_64.iso: Deployed on 7/7 servers. NO1: Deployed NO2: Deployed SO1: Deployed SO2: Deployed MP1: Deployed MP2: Deployed IPFE: Deployed </pre>
<p>2</p> <div style="background-color: white; width: 20px; height: 20px; margin: 5px;"></div>	<p><u>Active NOAM VIP:</u></p> <p>Export and archive configuration data</p>	<p>Export configuration data.</p> <ol style="list-style-type: none"> 1. Select Main Menu > Diameter Common > Export 2. Capture and archive configuration data by choosing the Export Application drop down entry labeled "ALL". 3. If SCP will be used to retrieve the export files in substep 6, select the Export Directory - File Management Directory radio button. 4. Click Ok to confirm. 5. Verify the data export is complete using the tasks button at the top of the screen. 6. Browse to Main Menu > Status & Manage > Files and download all the exported files to the client machine, or use the SCP utility to download the files from the Active NOAM to the client machine.

Procedure 14: NOAM Health Check for Source Release 7.2 and later

3

Active NOAM VIP:

Initiate NOAM health checks

This procedure runs the automated pre-upgrade Health Checks.

1. Select **Administration > Software Management > Upgrade**.
The Upgrade screen is displayed.
2. Select the Active NOAM.

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

NO_SG IPFE_SG MP_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
NO1	Ready Norm	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.2.0.0.0-72.16.5
NO2	Ready Norm	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.2.0.0.0-72.16.5

Backup Backup All **Checkup** Checkup All Upgrade Server Accept Report Report All

3. Click the **Checkup** button.
The Upgrade [Checkup] screen is displayed.
4. Under Health check options, select the **Pre Upgrade** option.
5. Use the **Upgrade ISO** pulldown to select the target release ISO.
6. Click **Ok**. Control returns to the Upgrade screen.

Main Menu: Administration -> Software Management -> Upgrade [Checkup]

Info

Hostname	Action	Status
NO1	Health Check	OAM Max HA Role: Active Network Element: NO_DSR_VM

Health check options

Checkup Type: Pre Upgrade Advance Upgrade Post Upgrade

Upgrade ISO: DSR-7.2.0.0.0_72.16.5-x86_64.iso

Ok Cancel

Procedure 14: NOAM Health Check for Source Release 7.2 and later

4	<p>Active NOAM VIP:</p> <p>Monitor health check progress</p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <NOServerGroup> PreUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>NO1</td> <td>NO_SG PreUpgrade Health Check</td> <td>completed</td> <td>PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.txt</td> <td>100%</td> </tr> <tr> <td>4</td> <td>NO1</td> <td>NO_SG AdvanceUpgrade Health Check</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_NO_SG_20160308-125508-EST.txt</td> <td>100%</td> </tr> <tr> <td>3</td> <td>NO1</td> <td>NO_SG AdvanceUpgrade Health Check</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_NO_SG_20160308-124312-EST.txt</td> <td>100%</td> </tr> </tbody> </table> </div>	ID	Hostname	Name	Task State	Details	Progress	6	NO1	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.txt	100%	4	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-125508-EST.txt	100%	3	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-124312-EST.txt	100%
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5	<p>Active NOAM VIP:</p> <p>Analyze health check results</p>	<p>Analyze Health Check report for failures. If the Health Check report status is anything other than "Pass", the Health Check logs must be analyzed to determine if the upgrade can proceed.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the file named "UpgradeHealthCheck.log" and click View. 3. Locate the log entries for the most recent health check. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. <p style="margin-top: 20px;">If the health check log contains the message "Unable to execute Health Check on <Active NOAM hostname>", perform health checks in accordance with Procedure 12 or Procedure 13.</p>																								

THIS PROCEDURE HAS BEEN COMPLETED.

4.1.5 NOAM Pre-Upgrade Backup

This procedure takes a backup of the NOAM servers just prior to the upgrade.

Procedure 15: NOAM Pre-Upgrade Backup

S T E P #	This procedure takes a backup of the NOAM. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.	
	1 <input type="checkbox"/>	Active NOAM VIP: Backup all global configuration databases for NOAM IMPORTANT: Required for Disaster Recovery
2 <input type="checkbox"/>	Active NOAM VIP: Save database backups for NOAM IMPORTANT: Required for Disaster Recovery	Download database files from the NOAM. <ol style="list-style-type: none"> 1. Select Status & Manage > Files The Files menu is displayed. 2. Click on the Active NOAM server tab. 3. Select the configuration database backup file and click the Download button. 4. If a confirmation window is displayed, click Save. 5. If the Choose File window is displayed, select a destination folder on the local workstation to store the backup file. Click Save. 6. If a Download Complete confirmation is displayed, click Close.
THIS PROCEDURE HAS BEEN COMPLETED.		

4.2 Disable Global Provisioning

The following procedure disables provisioning on the NOAM. This step ensures that no changes are made to the database while the NOAMs are upgraded. Provisioning will be re-enabled once the NOAM upgrade is complete.

Procedure 16: Disable Global Provisioning

<p>S T E P #</p>	<p>This procedure disables provisioning for the NOAM (and DR-NOAM) servers, prior to upgrade.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1.</p> <div style="border: 1px solid white; width: 20px; height: 20px; margin: 5px 0;"></div>	<p><u>Active NOAM VIP:</u></p> <p>Disable global provisioning and configuration.</p>	<p>Disable global provisioning and configuration updates on the entire network:</p> <ol style="list-style-type: none"> 1. Log into the Active NOAM GUI using the VIP. 2. Select Status & Manage > Database. The Database Status screen is displayed 3. Click the Disable Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Enable Provisioning; a yellow information box should also be displayed at the top of the view screen which states: [Warning Code 002] - Global provisioning has been manually disabled. <p>The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>
<p><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>		

4.3 NOAM Upgrade

This procedure is used to upgrade the NOAM and DR NOAM servers, including the TVOE host if TVOE was not upgraded previously, as recommended in Section 3.3.5 - Upgrade TVOE Hosts at a Site.

Procedure 17: NOAM Upgrade

S T E P #	<p>This procedure upgrades the TVOE host of the NOAM servers (optional) and upgrades NOAM servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	RMS Check	<p>If the Active DSR NOAM or Standby DSR NOAM is a guest on RMS servers, perform Appendix C to update the NOAM guest VM configuration.</p> <p>Note: This step is not applicable to VE-DSR systems.</p> <p>WARNING: Appendix C is mandatory and also depends on the amount of physical RAM deployed on the server. The appendix can be run on any server type if the physical RAM is available.</p>
2. <input type="checkbox"/>	TVOE Upgrade (if applicable)	<p>Before proceeding with the Standby NOAM upgrade, execute Appendix J to upgrade the TVOE Host if the Standby NOAM is a TVOE guest.</p>
3. <input type="checkbox"/>	Upgrade Standby DSR NOAM	<ol style="list-style-type: none"> Upgrade the Standby DSR NOAM server using the Upgrade Single Server procedure: Execute Appendix G -- Single Server Upgrade Procedure After successfully completing the procedure in Appendix G, return to this point and continue with the next step. <p>The Active NOAM server may have some or all of the following expected alarms: Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10073 (Server Group Max Allowed HA Role Warning) Alarm ID = 31101 (DB Replication to slave DB has failed) Alarm ID = 31106 (DB Merge to Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31226 (HA Availability Status Degraded) Alarm ID = 31233 (HA Path Down) Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</p> <p>After being upgraded, the Standby DR NOAM will display the following expected alarm: Alarm ID = 31225 (HA Service Start Failure)</p> <p>If the Active NOAM is on release 7.1.x and later, proceed to step 5.</p>

Procedure 17: NOAM Upgrade

<p>4.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Prepare the Active NOAM for upgrade</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>Prepare the Active NOAM for Upgrade.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade The Upgrade Administration screen is displayed 2. Select the NOAM Server Group: 3. Select the Active NOAM. 4. On the upgrade form, make the Active NOAM 'Upgrade Ready', by selecting the Prepare button. 5. On the Upgrade [Prepare] form, select 'Prepare' in the Action dropdown list. Click the Ok button. This starts the Prepare action on the Active NOAM and forces an HA failover. 6. Log out of the GUI, clear the browser cache, and log back into the Active NOAM via the VIP before continuing. <p>Clear the 'Prepared' state for the now-standby NOAM. This is required due to the transition from the source release to release 7.3.</p> <ol style="list-style-type: none"> 7. Select Status & Manage > HA. The HA status screen is displayed. 8. Click the Edit button. 9. For the NOAM to be upgraded (now the Standby), set the Max Allowed HA Role to Active, and click Ok. 10. Select Status & Manage > Server. The server status screen is displayed. 11. Select the Standby NOAM and click the Restart button. 12. Click Ok and verify the Appl State changes to Enabled.
<p>5.</p> <p><input type="checkbox"/></p>	<p>TVOE Upgrade (if applicable)</p>	<p>Before proceeding with the NOAM upgrade, execute Appendix J to upgrade the TVOE Host if the NOAM is a TVOE guest.</p>
<p>6.</p> <p><input type="checkbox"/></p>	<p>Upgrade Active DSR NOAM</p>	<p>Upgrade the second NOAM server using the Upgrade Single Server procedure:</p> <p>Execute Appendix G -- Single Server Upgrade Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point and continue with the next step.</p>
<p>7.</p> <p><input type="checkbox"/></p>	<p>RMS Check</p>	<p>If the Active DR NOAM or Standby DR NOAM is a guest on RMS servers, perform Appendix C to update the NOAM guest VM configuration.</p> <p>Note: This step is not applicable to VE-DSR systems.</p> <p>WARNING: Appendix C is mandatory and also depends on the amount of physical RAM deployed on the server. The appendix can be run on any server type if the physical RAM is available.</p>
<p>8.</p> <p><input type="checkbox"/></p>	<p>TVOE Upgrade (if applicable)</p>	<p>Before proceeding with the Standby DR NOAM upgrade, execute Appendix J to upgrade the TVOE Host if the Standby DR NOAM is a TVOE guest.</p>
<p>9.</p> <p><input type="checkbox"/></p>	<p>Upgrade Standby DR NOAM</p>	<p>Upgrade the Standby DR NOAM server using the Upgrade Single Server procedure:</p> <p>Execute Appendix G -- Single Server Upgrade Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point and continue with the next step.</p>
<p>10.</p> <p><input type="checkbox"/></p>	<p>TVOE Upgrade (if applicable)</p>	<p>Before proceeding with the DR NOAM upgrade, execute Appendix J to upgrade the TVOE Host if the DR NOAM is a TVOE guest.</p>

Procedure 17: NOAM Upgrade

11. <input type="checkbox"/>	Upgrade Active DR NOAM	Upgrade the second DR NOAM server using the Upgrade Single Server procedure: Execute Appendix G -- Single Server Upgrade Procedure After successfully completing the procedure in Appendix G, return to this point and continue with the next procedure per Table 8. <i>THIS PROCEDURE HAS BEEN COMPLETED.</i>
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4.3.1 PCA Topology Hiding Configuration

In DSR 7.0, the Policy and Charging Topology Hiding configuration moved from being site-specific at the SOAM, to being network-wide specific at the NOAM. Because each site could be independently configured, manual intervention is required to determine the appropriate setting for the network-wide configuration. The network-wide settings will apply to ALL sites once the site is upgraded.

**This procedure is applicable only to systems with the Policy and Charging feature enabled.
This procedure is applicable only to major upgrades from 6.0 to DSR 7.1 and later.**

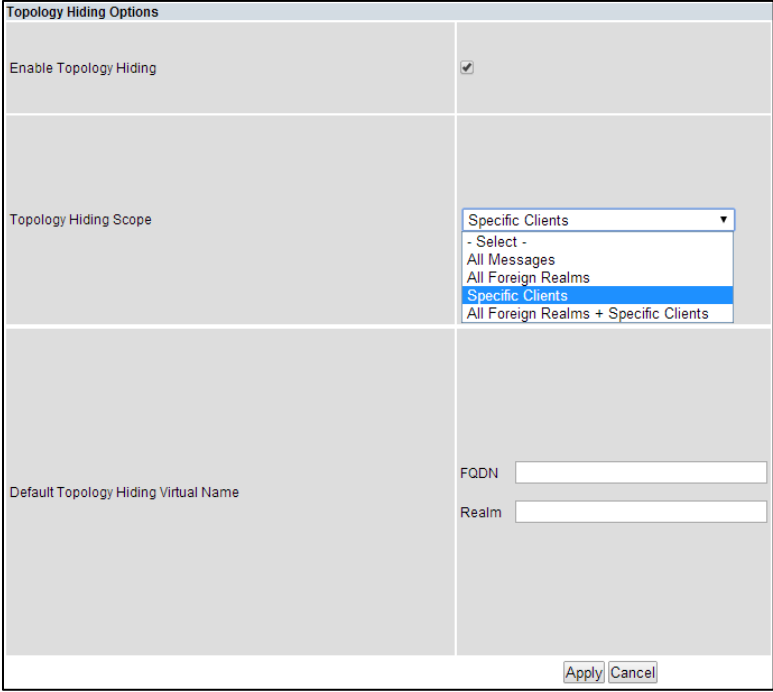
NOTE: The network-wide Topology Hiding settings at the NOAM will apply to each site as it is upgraded. Please note that this may result in a behavior change if the pre-upgrade site settings differ from the network-wide settings.

NOTE: This procedure can be skipped if Topology Hiding is not in use for this system.

Procedure 18: PCA Topology Hiding Configuration

S T E P #	<p>This procedure sets the network-wide Topology Hiding configuration. This procedure applies only to systems with the Policy and Charging feature enabled.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>	
1. <input type="checkbox"/>	<p>Active NOAM VIP:</p> <p>Enable Global Provisioning</p>	<p>Before the Topology Hiding configuration can be modified, Global Provisioning must be enabled temporarily.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Database. The Database Status screen is displayed. 3. Click the Enable Provisioning button. 4. Verify the button text changes to Disable Provisioning.

Procedure 18: PCA Topology Hiding Configuration

<p>2.</p> <p>Active NOAM VIP:</p> <p>Configure Topology Hiding settings</p>	<p>Configure the topology hiding settings.</p> <ol style="list-style-type: none"> 1. Navigate to Policy and Charging > Configuration > Policy DRA > Network-Wide Options. 2. In the Topology Hiding Options section, select the Enable Topology Hiding checkmark. 3. Select the appropriate Topology Hiding Scope setting. 4. Enter a Default Topology Hiding Virtual Name – FQDN and Realm. These default values will be used if specific values have not been set at a site. 5. Select Apply. 
<p>3.</p> <p>Active NOAM VIP:</p> <p>Disable global provisioning</p>	<p>Disable global provisioning.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Database. The Database Status screen is displayed 2. Click the Disable Provisioning button. 3. Confirm the operation by clicking Ok in the popup dialog box. 4. Verify the button text changes to Enable Provisioning. A yellow information box should also be displayed at the top of the view screen which states: [Warning Code 002] - Global provisioning has been manually disabled. <p>The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>

THIS PROCEDURE HAS BEEN COMPLETED.

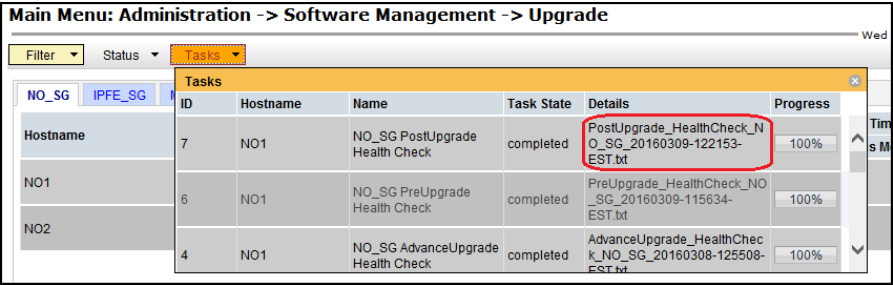
4.4 Verify NOAM Post Upgrade Status

This procedure determines the validity of the upgrade, as well as the health and status of the network and servers.

Procedure 19: Verify NOAM Post Upgrade Status

S T E P #	This procedure verifies Post Upgrade Status for NOAM upgrade. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u> .																														
	1 <input type="checkbox"/>	<p>Active NOAM VIP: Post-upgrade health checks</p> <p>This procedure will run the automated post-upgrade Health Checks.</p> <ol style="list-style-type: none"> Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. Select the Active NOAM. <div data-bbox="516 653 1403 982" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Accept or Reject Warn</td> <td>Active</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.3.0.0.0-73.18.0 DSR-7.3.0.0.0_73.18.0-x86_64.iso</td> </tr> <tr> <td>NO2</td> <td>Accept or Reject Warn</td> <td>Standby</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.3.0.0.0-73.18.0 DSR-7.3.0.0.0_73.18.0-x86_64.iso</td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All</p> </div> <ol style="list-style-type: none"> Click the Checkup button. The Upgrade [Checkup] screen is displayed. Under Health check options, select the Post Upgrade option. Click Ok. Control returns to the Upgrade screen. <div data-bbox="516 1157 1403 1518" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Checkup]</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Health Check</td> <td>OAM Max HA Role: Active Network Element: NO_DSR_VM</td> </tr> </tbody> </table> <p>Health check options</p> <p> <input type="radio"/> Advance Upgrade <input type="radio"/> Pre Upgrade <input checked="" type="radio"/> Post Upgrade </p> <p>Upgrade ISO: - Select - Select the desired upgrade ISO media file.</p> <p>Ok Cancel</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	NO1	Accept or Reject Warn	Active	Network OAM&P NO_DSR_VM	OAM&P	7.3.0.0.0-73.18.0 DSR-7.3.0.0.0_73.18.0-x86_64.iso	NO2	Accept or Reject Warn	Standby	Network OAM&P NO_DSR_VM	OAM&P	7.3.0.0.0-73.18.0 DSR-7.3.0.0.0_73.18.0-x86_64.iso	Hostname	Action	Status	NO1	Health Check
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																										
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NO2	Accept or Reject Warn	Standby	Network OAM&P NO_DSR_VM	OAM&P	7.3.0.0.0-73.18.0 DSR-7.3.0.0.0_73.18.0-x86_64.iso																										
Hostname	Action	Status																													
NO1	Health Check	OAM Max HA Role: Active Network Element: NO_DSR_VM																													

Procedure 19: Verify NOAM Post Upgrade Status

<p>2</p> <p>Active NOAM VIP:</p> <p>Monitor health check progress</p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <NOServerGroup> PostUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results.  <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1"> <thead> <tr> <th>NO_SG</th> <th>IPFE_SG</th> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>7</td> <td>NO1</td> <td>NO_SG PostUpgrade Health Check</td> <td>completed</td> <td>PostUpgrade_HealthCheck_NO_SG_20160309-122153-EST.bt</td> <td>100%</td> </tr> <tr> <td></td> <td></td> <td>6</td> <td>NO1</td> <td>NO_SG PreUpgrade Health Check</td> <td>completed</td> <td>PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.bt</td> <td>100%</td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>NO1</td> <td>NO_SG AdvanceUpgrade Health Check</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_NO_SG_20160308-125508-EST.bt</td> <td>100%</td> </tr> </tbody> </table>	NO_SG	IPFE_SG	ID	Hostname	Name	Task State	Details	Progress			7	NO1	NO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_NO_SG_20160309-122153-EST.bt	100%			6	NO1	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.bt	100%			4	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-125508-EST.bt	100%
NO_SG	IPFE_SG	ID	Hostname	Name	Task State	Details	Progress																										
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		4	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_NO_SG_20160308-125508-EST.bt	100%																										
<p>3</p> <p>Active NOAM VIP:</p> <p>Analyze health check results</p>	<p>Analyze Health Check failure. If the Health Check report status is anything other than "Pass", the Health Check logs must be analyzed to determine if the upgrade can proceed.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the file named "UpgradeHealthCheck.log" and click View. 3. Locate the log entries for the most recent health check. 4. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. <p>THIS PROCEDURE HAS BEEN COMPLETED</p>																																

4.5 Allow Provisioning (Post NOAM Upgrade)

The following procedure enables Global Provisioning for all Network Elements.

	<p>ANY NETWORK-WIDE PROVISIONING CHANGES MADE AT THE NOAM BEFORE THE UPGRADE IS ACCEPTED WILL BE LOST IF THE UPGRADE IS BACKED OUT</p>
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Procedure 20: Allow Provisioning

<p>S T E P #</p>	<p>This procedure enables provisioning for the NOAM (and DR-NOAM) servers</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND</u> ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>	
<p>1.</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 5px;"></div>	<p><u>Active NOAM VIP:</u></p> <p>Enable global provisioning and configuration.</p>	<p>Enable global provisioning and configuration updates on the entire network:</p> <ol style="list-style-type: none"> 1. Log into the Active NOAM GUI using the VIP. 2. Select Status & Manage > Database. The Database Status screen is displayed 3. Click the Enable Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Disable Provisioning.
<p>Note: After enabling provisioning at the NOAM, the SOAM GUI(s) may display a banner indicating that global provisioning is disabled. This message can be ignored – global provisioning is enabled. This is a display issue only and will be corrected when the SOAMs are upgraded.</p>		
<p>2.</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 5px;"></div>	<p><u>Active NOAM VIP:</u></p> <p>Add new Network Element (if required).</p>	<p>Perform this step only if the addition of a new Network Element is required at this time</p> <p>If a new Network Element is to be added, this procedure can be started now. Addition of the new Network Element will require a separate maintenance window. The servers in the new Network Element must be installed with the same DSR release as that of the upgraded NOAM(s). Follow the DSR 7.3 Installation Procedures ([6], [7]) to install the software on the new servers and add the new Network Element under the existing NOAM(s). Skip the sections of the Installation Procedure related to installing and configuring the NOAM(s). This will add a new DSR SOAM site under the existing NOAM(s).</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

5 SITE UPGRADE EXECUTION

This section contains the procedures for upgrading an entire site - starting with the pre-upgrade activities, to upgrading the SOAMs and C-level servers, and finishing with verifying the upgrade.

To maximize the Maintenance Window usage, the procedures in this section make full use of the parallel upgrade capabilities of the DSR, while ensuring traffic continuity and redundancy.

Table 9 details the site upgrade plan, which divides the upgrade into five iterations. An iteration is defined as the complete upgrade of one or more servers, from the pre-upgrade health checks to upgrade complete. The first two iterations consist of upgrading the SOAMs - the first iteration upgrades the Standby SOAM along with the Spare SOAM, if a spare exists. The second iteration upgrades the Active SOAM.

The third iteration begins the upgrade of the C-level servers. In iteration 3, one-half of the DA-MPs, SS7-MPs, and IPFEs are upgraded. This leaves the remaining half of these server functions to handle traffic processing. If the system is configured to support PCA/PDRA, then all Spare SBR servers are also upgraded in iteration 3 (including the second Spare SBR for three-site redundancy).

The fourth iteration upgrades the second half of the DA-MPs, SS7-MPs, and IPFEs, as well as the Standby SBR(s), if equipped. For non-PCA/PDRA systems, the site upgrade is complete when iteration 4 is completed.

The fifth iteration is required only for PCA/PDRA-equipped systems. In iteration 5, the Active SBR(s) are upgraded, completing the site upgrade.

NOTE: For PCA/PDRA systems, the Spare, Standby, and Active SBRs are upgraded in separate iterations to enforce redundancy of the session data. This approach ensures that two SBRs are online at all times.

Table 9. Site Upgrade Plan

Iteration 1	Iteration 2	Iteration 3	Iteration 4	Iteration 5
Standby SOAM, Spare SOAM	Active SOAM			
		½ DA-MPs	½ DA-MPs	
		½ SS7-MPs	½ SS7-MPs	
		½ IPFEs	½ IPFEs	
		Spare SBR(s)	Standby SBR(s)	Active SBR(s)

5.1 Site Pre-Upgrade Activities

SITE UPGRADE: Pre-Upgrade Activities

Use this section to execute pre-upgrade planning, pre-upgrade backups, pre-upgrade health checks, and to disable Site Provisioning.

This section contains the procedures for site upgrade planning, pre-upgrade backups, health checks, and disabling site provisioning.

5.1.1 Site Upgrade Planning

The upgrade of the site servers consists of a mixture of automated upgrades using the Automated Server Group upgrade feature, along with “manual” upgrades that are a little less automated.

Table 10 should be used to plan the upgrade of each site. For the server groups that will be upgraded using ASG, the only planning necessary is to record the server group name. ASG will automatically select the individual servers to be upgraded. The SS7-MP and IPFE server groups must be upgraded manually since there is only one server per server group. Planning is necessary for these server groups to ensure traffic continuity. Record the hostname of the servers to be upgraded in each iteration.

Table 10. Site Upgrade Planning Sheet.

Iteration 1		Notes
Standby SOAM Hostname: Spare SOAM Hostname:		If a Spare SOAM exists, the Spare and Standby SOAMs will be upgraded manually. Otherwise, the SOAMs will be upgraded with ASG.
Iteration 2		Notes
Active SOAM		The Active SOAM will be upgraded in iteration 2, either manually or by ASG.
Iteration 3		Notes
DA-MP Group 1		ASG will automatically select DA-MPs for upgrade
SS7-MP 1 Hostname:		Manual upgrade
SS7-MP 3 Hostname:		Manual upgrade
SS7-MP 5 Hostname:		Manual upgrade
SS7-MP 7 Hostname:		Manual upgrade
IPFE 1 Hostname:		Manual upgrade
IPFE 3 Hostname:		Manual upgrade
Spare SBR(s)		ASG will automatically select the Spare SBR(s) for upgrade
Iteration 4		Notes
DA-MP Group 2		ASG will automatically select DA-MPs for upgrade
SS7-MP 2 Hostname:		Manual upgrade
SS7-MP 4 Hostname:		Manual upgrade
SS7-MP 6 Hostname:		Manual upgrade
SS7-MP 8 Hostname:		Manual upgrade
IPFE 2 Hostname:		Manual upgrade
IPFE 4 Hostname:		Manual upgrade
Standby SBR(s)		ASG will automatically select the Standby SBR(s) for upgrade
Iteration 5		Notes
Active SBR(s)		ASG will automatically select the Active SBR(s) for upgrade

Table 11 shows the procedures to be executed for the site upgrade, along with the estimated time to complete each step. Use Table 11 as a guide for determining the order in which the procedures are to be executed.

NOTE: If the TVOE Hosts are upgraded during the same Maintenance Window as the application upgrade, then see [Table 6] for additional time estimates associated with the TVOE upgrade.

Table 11: Site Upgrade Execution Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 21	0:10-0:20	0:10-0:20	Site Pre-Upgrade Backups	None
Procedure 23	0:05-0:10	0:15-0:30	Site Pre-Upgrade Health Check for Release 7.2 and later	None
or Procedure 24	0:10-0:15	0:20-0:25	Site Pre-Upgrade Health Check for Release 7.0.x, 7.1.x	None
or Procedure 25	0:10-0:20	0:20-0:40	Site Pre-Upgrade Health Check for Release 6.0	None
Procedure 26	0:01-0:05	0:16-0:45	Disable Site Provisioning	Site Provisioning Disabled, No Traffic Impact
Procedure 27	0:01-0:05	0:17-0:50	SOAM Upgrade Pre-Checks	No Traffic Impact
Iteration 1	0:40-1:00		Standby SOAM, Spare SOAM (if equipped)	Refer to Section 5.2 for details
Iteration 2	0:40-1:00		Active SOAM	Refer to Section 5.2 for details
Iteration 3	0:40-1:00		½ DA-MPs, ½ SS7-MPs, ½ IPFEs, Spare SBR(s)	Refer to Section 5.3 for details
Iteration 4	0:40-1:00		½ DA-MPs, ½ SS7-MPs, ½ IPFEs, Standby SBR(s)	Refer to Section 5.4 for details
Iteration 5	0:00-1:00		Active SBR(s)	Refer to Section 5.5 for details
Procedure 33	0:02		Allow Site Provisioning	Site Provisioning Enabled, No Traffic Impact
Procedure 34	0:10-0:15		Site Post-Upgrade Health Check	None

5.1.2 Site Pre-Upgrade Backups

This procedure is non-intrusive and is used to perform a backup of all servers associated with the SOAM site(s) being upgraded. It is recommended that this procedure be executed no earlier than 36 hours prior to the start of the upgrade.

Since this backup is to be used in the event of disaster recovery, any site configuration changes made after this backup should be recorded and re-entered after the disaster recovery.

Procedure 22 is an alternate procedure that can be used to backup a site using the command line. Procedure 22 should only be used by direction of MOS.

Procedure 21: Site Pre-Upgrade Backups

<p>S T E P #</p>	<p>This procedure conducts a full backup of the Configuration database and run environment on site being upgraded, so that each server has the latest data to perform a backout, if necessary.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE</u></p>																			
<p>1.</p>	<p>Active SOAM VIP:</p> <p>Backup Site configuration data</p> <p>IMPORTANT: Required for Disaster Recovery</p>	<p>Backup SOAM database.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > Database to return to the Database Status screen. 3. Click to highlight the Active SOAM server, click Backup. NOTE: the Backup button will only be enabled when the Active server is selected. The Database [Backup] screen is displayed. 4. Selected the Configuration checkbox. 5. Select the desired compression type. Retain the default selection unless there is a specific reason or direction to change it. 6. Enter Comments (optional). 7. Click OK. <p>NOTE: the Active SOAM can be determined by going to the Status & Manage >HA screen, and note which server is currently assigned the VIP in the "Active VIPs" field. The server having VIP assigned is the Active.</p>																		
<p>2.</p>	<p>Active SOAM VIP:</p> <p>Save database backup</p> <p>IMPORTANT: Required for Disaster Recovery</p>	<p>Download and save backup files.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files The Files menu is displayed. 2. Click on the Active SOAM server tab. 3. Select the configuration database backup file and click the Download button. 4. If a confirmation window is displayed, click Save. 5. If the Choose File window is displayed, select a destination folder on the local workstation to store the backup file. Click Save. 6. If a Download Complete confirmation is displayed, click Close. 																		
<p>3.</p>	<p>Active NOAM VIP:</p> <p>Backup DB run environment</p>	<p>Backup run environment for site being upgraded.</p> <ol style="list-style-type: none"> 1. Login to the NOAM GUI using the VIP. 2. Navigate to Administration > Software Management > Upgrade. 3. Click the Backup All button. <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Backup Needed Err</td> <td>Active</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.14.1</td> </tr> <tr> <td>NO2</td> <td>Backup Needed Warn</td> <td>Standby</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.14.1</td> </tr> </tbody> </table> <p>Buttons: Backup, Backup All, Auto Upgrade, Accept, Report, Report All</p>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	NO1	Backup Needed Err	Active	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.14.1	NO2	Backup Needed Warn	Standby	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.14.1
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version															
NO1	Backup Needed Err	Active	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.14.1															
NO2	Backup Needed Warn	Standby	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.14.1															

Procedure 21: Site Pre-Upgrade Backups

<p>S T E P #</p>	<p>This procedure conducts a full backup of the Configuration database and run environment on site being upgraded, so that each server has the latest data to perform a backout, if necessary.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>																																					
<p>4.</p>	<p>Active NOAM VIP:</p> <p>Set backup parameters</p>	<p>The Upgrade [Backup All] screen is displayed. This screen displays the various Network Elements, and identifies which servers are ready for backup.</p> <ol style="list-style-type: none"> In the Action column, select the Back up checkbox for the Network Element to be upgraded. Verify the check box for the NOAM server group is NOT checked. <p>Note: Backing up the NOAM servers at this point will overwrite the pre-upgrade backup files that are needed for backing out the target release. Do NOT backup the NOAM servers.</p> <ol style="list-style-type: none"> In the Full backup options section, verify the 'Exclude' option is selected. Click the Ok button. This initiates a full backup on each eligible server. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Network element</th> <th style="text-align: left;">Action</th> <th style="text-align: left;">Server(s) in the proper state for backup</th> </tr> </thead> <tbody> <tr> <td>NO_DSR_VM</td> <td><input type="checkbox"/> Back up</td> <td>None</td> </tr> <tr> <td>SO1_DSR_VM</td> <td><input checked="" type="checkbox"/> Back up</td> <td>SO1 SO2 MP1 MP2 MP3 MP4 IPFE</td> </tr> </tbody> </table> <p>Full backup options</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Database parts exclusion</td> <td> <input checked="" type="radio"/> Exclude <input type="radio"/> Do not exclude </td> <td> Select "Exclude" to perform a full backup of the COMCOL run enviro in /usr/TKLC/appworks/etc/exclude_parts.d/. Select "Do not exclude" to perform a full backup of the COMCOL run backup files in /var/TKLC/db/filemgmt. </td> </tr> </table> <p style="text-align: right;">Ok Cancel</p>	Network element	Action	Server(s) in the proper state for backup	NO_DSR_VM	<input type="checkbox"/> Back up	None	SO1_DSR_VM	<input checked="" type="checkbox"/> Back up	SO1 SO2 MP1 MP2 MP3 MP4 IPFE	Database parts exclusion	<input checked="" type="radio"/> Exclude <input type="radio"/> Do not exclude	Select "Exclude" to perform a full backup of the COMCOL run enviro in /usr/TKLC/appworks/etc/exclude_parts.d/. Select "Do not exclude" to perform a full backup of the COMCOL run backup files in /var/TKLC/db/filemgmt.																								
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Database parts exclusion	<input checked="" type="radio"/> Exclude <input type="radio"/> Do not exclude	Select "Exclude" to perform a full backup of the COMCOL run enviro in /usr/TKLC/appworks/etc/exclude_parts.d/. Select "Do not exclude" to perform a full backup of the COMCOL run backup files in /var/TKLC/db/filemgmt.																																				
<p>5.</p>	<p>Active NOAM VIP:</p> <p>Monitor for backup completion</p>	<p>Monitor the backup tasks</p> <ol style="list-style-type: none"> From the Upgrade screen, select the Tasks pulldown. Monitor the progress of the backups until the Network Element(s) selected in step 4 are complete. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter: Tasks</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>MP6</td> <td>Pre-upgrade full backup</td> <td>running</td> <td>Full backup on MP6</td> <td>10%</td> </tr> <tr> <td>1</td> <td>MP11</td> <td>Pre-upgrade full backup</td> <td>running</td> <td>Full backup on MP11</td> <td>10%</td> </tr> <tr> <td>1</td> <td>MP12</td> <td>Pre-upgrade full backup</td> <td>running</td> <td>Full backup on MP12</td> <td>10%</td> </tr> <tr> <td>1</td> <td>MP13</td> <td>Pre-upgrade full backup</td> <td>running</td> <td>Full backup on MP13</td> <td>10%</td> </tr> <tr> <td>1</td> <td>MP14</td> <td>Pre-upgrade full backup</td> <td>running</td> <td>Full backup on MP14</td> <td>10%</td> </tr> </tbody> </table> </div>	ID	Hostname	Name	Task State	Details	Progress	1	MP6	Pre-upgrade full backup	running	Full backup on MP6	10%	1	MP11	Pre-upgrade full backup	running	Full backup on MP11	10%	1	MP12	Pre-upgrade full backup	running	Full backup on MP12	10%	1	MP13	Pre-upgrade full backup	running	Full backup on MP13	10%	1	MP14	Pre-upgrade full backup	running	Full backup on MP14	10%
ID	Hostname	Name	Task State	Details	Progress																																	
1	MP6	Pre-upgrade full backup	running	Full backup on MP6	10%																																	
1	MP11	Pre-upgrade full backup	running	Full backup on MP11	10%																																	
1	MP12	Pre-upgrade full backup	running	Full backup on MP12	10%																																	
1	MP13	Pre-upgrade full backup	running	Full backup on MP13	10%																																	
1	MP14	Pre-upgrade full backup	running	Full backup on MP14	10%																																	

Procedure 21: Site Pre-Upgrade Backups

S T E P #	<p>This procedure conducts a full backup of the Configuration database and run environment on site being upgraded, so that each server has the latest data to perform a backout, if necessary.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p><u>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</u></p>	
6. <input type="checkbox"/>	<p><u>Active NOAM VIP:</u></p> <p>Verify that backup files are present on each server.</p>	<ol style="list-style-type: none"> 1. Log into the Active NOAM or SOAM GUI. 2. Select Status & Manage > Files (<i>The Files menu is displayed</i>) 3. Click on each Server tab, in turn 4. For each Server, verify that the following (2) files have been created: <div style="margin-left: 20px;"> <pre>Backup.DSR.<server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>.UPG.tar.bz2</pre> <pre>Backup.DSR.<server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.UPG.tar.bz2</pre> </div> 5. Repeat sub-steps 1 through 4 for each site being upgraded.
<p><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>		

5.1.3 Alternate Pre-Upgrade Backup

This procedure is an alternative to the normal pre-upgrade backup provided in Procedure 21. It is recommended that this procedure be executed only under the direction of MOS.

Procedure 22: Alternate Pre-Upgrade Backup

S T E P #	<p>This procedure is a manual alternative backup. The procedure conducts a full backup of the Configuration database and run environment on site being upgraded, so that each server has the latest data to perform a backout, if necessary.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE</u></p>	
1. <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>SSH to the Active SOAM</p>	<p>Use the SSH command (on UNIX systems – or putty if running on Windows) to log into the Active SOAM:</p> <pre>ssh admusr@<SOAM_VIP></pre>
2. <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>Start a screen session.</p>	<p>Enter the following commands:</p> <pre># screen</pre> <p>(The screen tool will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p>
3. <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>Execute a backup of all servers managed from the SOAM to be upgraded.</p>	<p>Execute the backupAllHosts utility on the Active SOAM. This utility will remotely access each specified server, and run the backup command for that server.</p> <p>The --site parameter allows the user to backup all servers associated with a given SOAM site to be upgraded:</p> <p>WARNING: Failure to include the --site parameter with the backupAllHosts command will result in overwriting the NOAM backup file created in Section 3.3.4. Backing out to the previous release is not possible if the file is overwritten.</p> <pre>\$ /usr/TKLC/dpi/bin/backupAllHosts --site=<NEName></pre> <p>...where <NEName> is the Network Element Name (NEName) as seen using the following command:</p> <pre>\$ iqt NetworkElement</pre> <p>The following output will be generated upon execution of either of the above options:</p> <pre>Do you want to remove the old backup files (if exists) from all the servers (y/[n])?y</pre> <p>It may take from 10 to 30 minutes for this command to complete, depending upon the number of servers and the data in the database. Do not proceed until the backup on each server is completed.</p> <p>Output similar to the following will indicate successful completion:</p> <pre>Script Completed. Status: HOSTNAME STATUS ----- ----- HPC3blade02 PASS HPC3blade01 PASS HPC3blade03 PASS HPC3blade04 PASS (Errors will also report back to the command line.)</pre> <p>NOTE: There is no progress indication for this command; only the final report when it completes.</p>

Procedure 22: Alternate Pre-Upgrade Backup

S T E P #	<p>This procedure is a manual alternative backup. The procedure conducts a full backup of the Configuration database and run environment on site being upgraded, so that each server has the latest data to perform a backout, if necessary.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
4. <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>Exit the screen session.</p>	<pre># exit</pre> <p>[screen is terminating]</p> <p>NOTE: “screen -ls” is used to show active screen sessions on a server, and “screen -dr” is used to re-enter a disconnected screen session.</p>
5. <input type="checkbox"/>	<p>ALTERNATIVE METHOD (Optional)</p> <p>Server CLI:</p> <p>If needed, the Alternative backup method can be executed on each individual server instead of using the “backupAllHosts” script.</p>	<p>ALTERNATIVE: A manual back up can be executed on each server individually, rather than using the script above. To do this, log into each server in the site individually, and execute the following command to manually generate a full backup on that server:</p> <pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup</pre> <p>Output similar to the following will indicate successful completion:</p> <pre>Success: Full backup of COMCOL run env has completed. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullDBParts. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt. Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullRunEnv. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt.</pre>
6. <input type="checkbox"/>	<p>Active NOAM VIP:</p> <p>Verify that backup files are present on each server.</p>	<ol style="list-style-type: none"> 1. Log into the Active NOAM GUI using the VIP. 2. Select Status & Manage > Files The Files menu is displayed 3. Click on each server tab, in turn 4. For each server, verify that the following (2) files have been created: <pre>Backup.DSR.<server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>.UPG. tar.bz2 Backup.DSR.<server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.UPG.t ar.bz2</pre> <p>Repeat sub-steps 1 through 4 for each site.</p>
THIS PROCEDURE HAS BEEN COMPLETED.		

5.1.4 Site Pre-Upgrade Health Checks

This section provides procedures to verify the health of the SOAM site prior to upgrade. Procedure 23 is the primary procedure to be executed when the Active NOAM is on Release 7.2 and later. Alternate release-specific procedures are also provided, to be used as directed.

5.1.4.1 Site Pre-Upgrade Health Check for Release 7.2 and later

This procedure is used when the NOAMs are on Release 7.2 and later. The procedure is non-intrusive and performs a health check of the site prior to upgrading.

Procedure 23: Site Pre-Upgrade Health Check for Release 7.2 and later

S T E P # 1 <input type="checkbox"/>	This procedure performs a Health Check prior to upgrading the SOAMs. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND</u> ASK FOR <u>UPGRADE ASSISTANCE</u> .																																															
	<p>This procedure runs the automated pre-upgrade Health Checks.</p> <ol style="list-style-type: none"> Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. Select the SOAM server group tab. Select the Active SOAM. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Status Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr style="background-color: #e0ffe0;"> <td>SO2</td> <td>Ready</td> <td>Active</td> <td>System OAM</td> <td>OAM</td> <td>7.1.1.0.0-71.31.0</td> </tr> <tr> <td>SO1</td> <td>Ready</td> <td>Standby</td> <td>System OAM</td> <td>OAM</td> <td>7.1.1.0.0-71.31.0</td> </tr> <tr> <td></td> <td>Norm</td> <td>N/A</td> <td>SO1_DSR_VM</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Norm</td> <td>N/A</td> <td>SO1_DSR_VM</td> <td></td> <td></td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All</p> </div> <ol style="list-style-type: none"> Click the Checkup button. The Upgrade [Checkup] screen is displayed. Under Health check options, select the Pre Upgrade option. Use the Upgrade ISO pulldown to select the target release ISO. Click Ok. Control returns to the Upgrade screen. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Checkup]</p> <p>Info</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th colspan="2">Status</th> </tr> <tr> <th></th> <th></th> <th>OAM Max HA Role</th> <th>Network Element</th> </tr> </thead> <tbody> <tr> <td>SO2</td> <td>Health Check</td> <td>Active</td> <td>SO1_DSR_VM</td> </tr> </tbody> </table> <p>Health check options</p> <p>Checkup Type: <input type="radio"/> Advance Upgrade <input checked="" type="radio"/> Pre Upgrade <input type="radio"/> Post Upgrade</p> <p>Upgrade ISO: DSR-7.2.0.0.0_72.16.5-x86_64.iso Select the desired upgrade ISO media file.</p> <p style="text-align: right;">Ok Cancel</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	SO2	Ready	Active	System OAM	OAM	7.1.1.0.0-71.31.0	SO1	Ready	Standby	System OAM	OAM	7.1.1.0.0-71.31.0		Norm	N/A	SO1_DSR_VM				Norm	N/A	SO1_DSR_VM			Hostname	Action	Status				OAM Max HA Role	Network Element	SO2	Health Check	Active
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																																											
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SO1	Ready	Standby	System OAM	OAM	7.1.1.0.0-71.31.0																																											
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		OAM Max HA Role	Network Element																																													
SO2	Health Check	Active	SO1_DSR_VM																																													

Procedure 23: Site Pre-Upgrade Health Check for Release 7.2 and later

<p>2</p> <p>Active NOAM VIP:</p> <p>Monitor health check progress</p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <SO ServerGroup> PreUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SO_SG</th> <th>IPFE_SG</th> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>SO_SG</td> <td>IPFE_SG</td> <td>8</td> <td>NO1</td> <td>SO_SG PreUpgrade Health Check</td> <td>completed</td> <td>PreUpgrade_HealthCheck_SO_SG_20160309-132455-EST.bt</td> <td>100%</td> </tr> <tr> <td>SO2</td> <td></td> <td>7</td> <td>NO1</td> <td>NO_SG PostUpgrade Health Check</td> <td>completed</td> <td>PostUpgrade_HealthCheck_NO_SG_20160309-122153-EST.bt</td> <td>100%</td> </tr> <tr> <td>SO1</td> <td></td> <td>6</td> <td>NO1</td> <td>NO_SG PreUpgrade Health Check</td> <td>completed</td> <td>PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.bt</td> <td>100%</td> </tr> </tbody> </table> </div>	SO_SG	IPFE_SG	ID	Hostname	Name	Task State	Details	Progress	SO_SG	IPFE_SG	8	NO1	SO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_SO_SG_20160309-132455-EST.bt	100%	SO2		7	NO1	NO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_NO_SG_20160309-122153-EST.bt	100%	SO1		6	NO1	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.bt	100%
SO_SG	IPFE_SG	ID	Hostname	Name	Task State	Details	Progress																										
SO_SG	IPFE_SG	8	NO1	SO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_SO_SG_20160309-132455-EST.bt	100%																										
SO2		7	NO1	NO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_NO_SG_20160309-122153-EST.bt	100%																										
SO1		6	NO1	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NO_SG_20160309-115634-EST.bt	100%																										
<p>3</p> <p>Active NOAM VIP:</p> <p>Analyze health check results</p>	<p>Analyze Health Check report for failures. If the Health Check report status is anything other than "Pass", the Health Check logs must be analyzed to determine if the upgrade can proceed.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the file named "UpgradeHealthCheck.log" and click View. 3. Locate the log entries for the most recent health check. 4. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. <p>If the health check log contains the message "Unable to execute Health Check on <Active SOAM hostname>", perform an alternate health check procedure as follows:</p> <p>If the Active SOAM release is 7.0.x or 7.1.x, perform Procedure 24</p> <p>If the Active SOAM release is 6.0, perform Procedure 25</p>																																

THIS PROCEDURE HAS BEEN COMPLETED.

5.1.4.2 Site Pre-Upgrade Health Check for Release 7.0.x, 7.1.x

This procedure is an alternate health check that is used when upgrading to Release 7.3 and the SOAMs are on Release 7.0.x or 7.1.x. The procedure is non-intrusive and performs a health check of the site prior to upgrading.

Procedure 24: Site Pre-Upgrade Health Check for Release 7.0.x, 7.1.x

<p>S T E P #</p>	<p>This procedure performs a Health Check prior to upgrading the SOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1. <input type="checkbox"/></p>	<p><u>ACTIVE SOAM CLI:</u> Perform health checks</p>	<p>Run health checks on the Active SOAM.</p> <p>1. Use an SSH client to connect to the Active SOAM:</p> <pre>ssh <SOAM XMI IP address> login as: admusr password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> <p>2. Enter the command:</p> <pre>\$ upgradeHealthCheck preUpgradeHealthCheckOnSoam</pre> <p>This command creates three files in /var/TKLC/db/filemgmt/UpgradeHealthCheck/ with the filename format:</p> <pre><SOserver_name>_ServerStatusReport_<date-time>.xml <SOserver_name>_ComAgentConnStatusReport_<date-time>.xml</pre> <p>If any alarms are present in the system:</p> <pre><SOserver_name>_AlarmStatusReport_<date-time>.xml</pre> <p>If the system is PDRA, one additional file is generated:</p> <pre><SOserver_name>_SBRStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> <p>3. If the message “Server <hostname> needs operator attention before upgrade” is output, inspect the Server Status Report to determine the reason for the message. If the following message appears in the Server Status Report, the alert can be ignored: Server <hostname> has no alarm with DB State as Normal and Process state as Kill.</p> <p>Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p> <p>4. Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.</p>
<p>2. <input type="checkbox"/></p>	<p><u>ACTIVE SOAM CLI:</u> Capture Diameter Maintenance Status</p>	<p>Capture Diameter Maintenance status.</p> <p>1. Enter the command:</p> <pre>\$ upgradeHealthCheck diameterMaintStatus</pre> <p>This command will output a series of messages, providing Diameter Maintenance status. Capture this output and save for later use. Note: the output is also captured in /var/TKLC/db/filemgmt/UpgradeHealthCheck.log.</p> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p>

Procedure 24: Site Pre-Upgrade Health Check for Release 7.0.x, 7.1.x

<p>3.</p> <p><input type="checkbox"/></p>	<p><u>ACTIVE SOAM CLI:</u></p> <p>View DA-MP Status</p>	<p>Capture DA-MP status.</p> <ol style="list-style-type: none"> 1. Enter the command: <pre>\$ upgradeHealthCheck daMpStatus</pre> <p>This command outputs status to the screen for review.</p> <p>Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> 2. Verify all Peer MPs are available 3. Note the number of Total Connections Established _____
<p>4.</p> <p><input type="checkbox"/></p>	<p><u>ACTIVE SOAM VIP:</u></p> <p>Capture Diameter Configuration on Active SOAM GUI</p>	<p>Export Diameter configuration.</p> <ol style="list-style-type: none"> 1. Select Main Menu > Diameter Common > Export. 2. Capture and archive the configuration data by setting the Export Application drop down entry to "ALL". 3. If SCP will be used to retrieve the export files in substep 6, select the Export Directory - File Management Directory radio button. 4. Click Ok to confirm. 5. Verify the requested data is exported using the tasks button at the top of the screen. 6. Select the File Management button to view the files available for download. Download all of the exported files to the client machine, or use the SCP utility to download the files from the Active NOAM to the client machine.
<p>5.</p> <p><input type="checkbox"/></p>	<p>Capture Data for each SOAM Site</p>	<p>Repeat steps 1 through 4 for each configured SOAM Site to be upgraded.</p>
<p><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>		

5.1.4.3 Site Pre-Upgrade Health Check for Release 6.0

This procedure is an alternate health check that is used when upgrading to Release 7.3 and the Active SOAM is on Release 6.0. The procedure is non-intrusive and performs a health check of the site prior to upgrading.

Procedure 25: Site Pre-Upgrade Health Check for Release 6.0

<p>S T E P #</p>	<p>This procedure performs a Health Check prior to upgrading the SOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1.</p> <p><input type="checkbox"/></p>	<p>Active SOAM VIP:</p> <p>Verify Server Status is Normal</p>	<p>Verify server status</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed. 3. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). 4. Do not proceed with the upgrade if any server status is not Norm. 5. Do not proceed if there are any Major or Critical alarms. <p>NOTE: It is not recommended to continue with the upgrade if any server status has unexpected values. An upgrade should only be executed on a server with unexpected alarms if the upgrade is specifically intended to clear those alarm(s). This would mean that the target release software contains a fix to clear the “stuck” alarm(s) and upgrading is the ONLY method to clear the alarm(s). Do not continue otherwise.</p>
<p>2.</p> <p><input type="checkbox"/></p>	<p>Active SOAM VIP:</p> <p>Log all current alarms</p>	<p>Capture active alarms</p> <ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Click the Report button to generate an Alarms report. 3. Save the report and/or print the report. Keep these copies for future reference.
<p>3.</p> <p><input type="checkbox"/></p>	<p>Active SOAM VIP:</p> <p>Capture the Diameter Maintenance Status</p>	<p>Capture Diameter Maintenance status.</p> <ol style="list-style-type: none"> 1. Select Main Menu > Diameter > Maintenance 2. Select the Maintenance > Route Lists screen. 3. Filter out all the Route Lists with Route List Status as “Is Not Available” and “Is Available”. 4. Record the number of “Not Available” and “Available” Route Lists. 5. Select Maintenance >Route Groups screen. 6. Filter out all the Route Groups with “PeerNode/Connection Status as “Is Not Available” and “Is Available”. 7. Record the number of “Not Available” and “Available” Route Groups. 8. Select Maintenance >Peer Nodes screen. 9. Filter out all the Peer Nodes with “Peer Node Operational Status” as “Is Not Available” and “Is Available”. 10. Record the number of “Not Available” and “Available” peer nodes. 11. Select Maintenance >Connections screen. 12. Filter out all the Connections with “Operational Status” as “Is Not Available” and “Is Available”. 13. Record the number of “Not Available” and “Available” connections. 14. Select Maintenance >Applications screen. 15. Filter out all the Applications with “Operational State” as “Is Not Available” and “Is Available”. 16. Record the number of “Not Available” and “Available” applications. 17. Save recorded data on the client machine.

Procedure 25: Site Pre-Upgrade Health Check for Release 6.0

4. <input type="checkbox"/>	<p>Active SOAM VIP: View DA-MP Status</p>	<p>Capture DA-MP status.</p> <ol style="list-style-type: none"> 1. Select Diameter > Maintenance > DA-MPs. The DA-MP status screen is displayed. 2. Select the Peer DA-MP Status tab. 3. Verify all Peer MPs are available 4. Select the DA-MP Connectivity tab. 5. Note the number of Total Connections Established.
5. <input type="checkbox"/>	<p>Active SOAM VIP: Capture Transport Manager configuration (if MD-IWF equipped)</p> <p>NOTE: <i>Perform this step only if the MD-IWF feature is provisioned.</i></p>	<p>Capture Transport Manager configuration.</p> <ol style="list-style-type: none"> 1. Select Main Menu > Transport Manager > Configuration > Adjacent Node 2. Capture and archive a screen capture of the screen. 3. Select Configuration Sets. 4. Capture and archive a screen capture of the screen. 5. Select Transport 6. Click the Report at the bottom of the table to generate a report for all entries. 7. Save the report and/or print the report. Keep these copies for future reference.
6. <input type="checkbox"/>	<p>Active SOAM VIP: Capture SS7/Sigtran Configuration on Active SOAM GUI (if MD-IWF equipped)</p> <p>NOTE: <i>Perform this step only if the MD-IWF feature is provisioned.</i></p>	<p>If the MD-IWF feature is enabled, capture SS7/Sigtran configure.</p> <ol style="list-style-type: none"> 1. Select Main Menu > SS7/Sigtran > Configuration > Adjacent Server Groups. 2. Capture and archive a screen capture of the screen. 3. Select Local Signaling Points. 4. Click the Report button. 5. Download and archive the report on the client machine. 6. Select Local SCCP Users. 7. Click the Report button. 8. Download and archive the report on the client machine. 9. Select Remote Signaling Points. 10. Click the Report button. 11. Download and archive the report on the client machine. 12. Select Remote MTP3 Users. 13. Capture and archive a screen capture of the screen. 14. Select Link Sets. 15. Click the Report button. 16. Download and archive the report on the client machine. 17. Select Links. 18. Click the Report button. 19. Download and archive the report on the client machine. 20. Select Routes. 21. Click the Report button. 22. Download and archive the report on the client machine. 23. Select SCCP Options. 24. Capture and archive a screen capture of the screen. 25. Select MTP3 Options. 26. Capture and archive a screen capture of the screen. 27. Select M3UA Options. 28. Capture and archive a screen capture of the screen. 29. Select Local Congestion Options. 30. Capture and archive a screen capture of the screen. 31. Select Capacity Constraint Options. 32. Capture and archive a screen capture of the screen.
7. <input type="checkbox"/>	<p>Capture Data for each SOAM Site</p>	<p>Repeat steps 1 through 6 for each configured SOAM Site to be upgraded.</p>

THIS PROCEDURE HAS BEEN COMPLETED.

5.1.5 Disable Site Provisioning

This procedure disables Site Provisioning in preparation for upgrading the site.

	<p>!! WARNING!!</p> <p>THIS PROCEDURE MAY ONLY BE PERFORMED IN THE MAINTENANCE WINDOW IMMEDIATELY BEFORE THE START OF THE SOAM SITE UPGRADE.</p>
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Procedure 26: Disable Site Provisioning

<p>S</p> <p>T</p> <p>E</p> <p>P</p> <p>#</p>	<p>This procedure disables provisioning for the SOAM.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE.</u></p>	
<p>1.</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 5px auto;"></div>	<p><u>Active SOAM VIP:</u></p> <p>Disable Site Provisioning</p>	<p>Disable Site Provisioning at the SOAM.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI of the site to be upgraded. 2. Select Status & Manage > Database. The Database Status screen is displayed. 3. Click the Disable Site Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Enable Site Provisioning; a yellow information box should also be displayed at the top of the view screen which states: [Warning Code 004] - Site provisioning has been manually disabled. <p>The Active SOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>
<p>2.</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 5px auto;"></div>	<p>Repeat for each SOAM Site</p>	<p>Repeat steps 1 for each configured SOAM Site to be upgraded.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

SOAM UPGRADE ACTIVE / STANDBY / SPARE

5.2 SOAM Upgrade Overview

This section contains the steps required to perform a major or incremental upgrade of the SOAMs for a DSR site.

TVOE Hosts may be upgraded during this procedure, if the TVOE needs to be upgraded. It assumes that each of the SOAM servers is running on a TVOE Host (i.e. it assumes that there are 2 or 3 TVOE hosts to be upgraded at the site.)

It is highly recommended that TVOE Hosts at a site be upgraded in a Maintenance Window prior to the start of the DSR 7.3 Application upgrade. If the TVOE Hosts are upgraded with the Application, consideration must be given to the risks and consequences of exceeding the Maintenance Window.

During the site upgrade (SOAMs plus all C-level servers), site provisioning is disabled. Provisioning will be re-enabled at the completion of the site upgrade.

For each site in the DSR, the SOAM(s) and associated MPs and IPFEs should be upgraded within a single maintenance window.

Table 12 shows the estimated execution times for the SOAM upgrade. Procedure 28: Automated SOAM Upgrade (Active/Standby) is the recommended procedure for upgrading the SOAMs when there is no Spare. ASG will automatically upgrade the Standby SOAM, followed by the Active SOAM.

If the site does have a Spare SOAM, Procedure 29: Manual SOAM Upgrade (Active/Standby/Spare) is the recommended procedure. The manual upgrade procedure will upgrade the Standby and Spare SOAMs in parallel, followed by the Active SOAM.

Table 12: SOAM Upgrade Execution Overview

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Iteration 1 & 2 Procedure 28	1:20-2:40	1:20-2:40	Automated SOAM Upgrade (Active/Standby)	No traffic impact
or Procedure 29			Manual SOAM Upgrade (Active/Standby/Spare)	


5.2.1 RMS Notes

RMS-based DSRs are deployed in one of two supported configurations: without geographic redundancy, or with geographic redundancy. In both cases, the RMS-based DSR implements just a single Diameter network element.

When an RMS-based DSR has no geographic redundancy, there is just a single RMS geographic site, functioning as a single RMS Diameter site. The upgrade of this DSR deployment should be done in two maintenance windows: one for the NOAMs, and the second for all remaining servers.

When an RMS-based DSR includes geographic redundancy, there are two RMS geographic sites (but still functioning as a single RMS Diameter site). The primary RMS site contains the NOAM Active/Standby pair that manages the network element, while the geo-redundant RMS site contains a Disaster Recovery NOAM pair. Each RMS geographic site includes its own SOAM pair, but only the SOAMs at the primary RMS site are used to manage the signaling network element. The SOAMs at the geo-redundant site are for backup purposes only. The upgrade of

this DSR deployment should be done in three maintenance windows: one for all NOAMs; a second for the SOAMs and DA-MPs at the geo-redundant backup RMS site; and a third for the SOAMs and DA-MPs at the primary RMS site.

	<p>!! WARNING!!</p> <p>THE FOLLOWING PROCEDURES MUST BE COMPLETED BEFORE THE START OF SOAM UPGRADE:</p> <p>Procedure 21; [Procedure 23, Procedure 24, or Procedure 25]; Procedure 26</p>
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5.2.2 Upgrade SOAMs

This section provides the procedures to upgrade the SOAMs. The SOAMs can be upgraded manually under user control, or automatically using the Automated Server Group Upgrade option. The recommended method for SOAM upgrade depends on the existence of a Spare SOAM. If the site includes a Spare SOAM, then the SOAMs are upgraded manually so that the Spare and Standby can be upgraded concurrently. This reduces the time required to upgrade the SOAMs.

Regardless of which SOAM upgrade option is used, Procedure 27 is required to ensure site provisioning is disabled.

If the site does ***not*** include a Spare SOAM, use the automated SOAM upgrade in Procedure 28.

If the site does include a Spare SOAM, use the manual SOAM upgrade in Procedure 29.

Procedure 27: SOAM Upgrade Pre-Checks

S T E P #	<p>This procedure verifies traffic status, and verifies that Site Provisioning is disabled, in preparation for upgrading the SOAMs.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE.</u></p>	
1.	<p>Active SOAM VIP:</p> <p><input type="checkbox"/> Verify Traffic status</p>	<p>View KPIs to verify traffic status.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > KPIs. 3. Inspect KPI reports to verify traffic is at the expected condition.
2.	<p>Active SOAM VIP:</p> <p><input type="checkbox"/> Verify Site Provisioning is disabled</p>	<p>Verify that Site Provisioning was properly disabled in Procedure 26.</p> <ol style="list-style-type: none"> 1. In the GUI status bar, where it says “<i>Connected using ...</i>”, check for the message “Site Provisioning disabled” <p>If the message is present, continue with the next procedure per Table 11, otherwise, execute:</p> <p style="padding-left: 40px;">Procedure 26: Disable Site Provisioning</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

5.2.2.1 Automated SOAM Upgrade (Active/Standby)

Procedure 28 is the recommended method for upgrading the SOAMs if the site does not include a Spare SOAM. Upon completion of this procedure, proceed to the next procedure as specified in Table 11.

Procedure 28: Automated SOAM Upgrade (Active/Standby)

S T E P #	<p>This procedure upgrades the SOAM(s) using the Automated Server Group Upgrade option. If necessary, the TVOE on each server that hosts an SOAM guest is also upgraded.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<p>Upgrade TVOE Host for Active and/or Standby SOAM servers</p>	<p>If the TVOE Host for the Active or Standby SOAM needs to be upgraded:</p> <p>Execute Appendix J to upgrade the TVOE Host for the Active and/or Standby SOAM, as necessary.</p> <p>NOTE: In an RMS-based DSR, the SOAM is a guest on a TVOE Host that has already been upgraded as part of the NOAM upgrade.</p>
2. <input type="checkbox"/>	<p>Upgrade SOAM Server Group</p>	<p>Upgrade the SOAM Server Group using the Upgrade Multiple Servers procedure with the following options:</p> <ul style="list-style-type: none"> • Use the Automated Server Group Upgrade option • Select the Serial upgrade mode <p>Execute Appendix H — Upgrade Multiple Servers Procedure</p> <p>After successfully completing the procedure in Appendix H, return to this point and continue with the next procedure per Table 11.</p>
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

NOTE: Once the Network Element SOAMs are upgraded, if any C-level server is removed from a Server Group and re-added, the server must be restored by way of Disaster Recovery procedures. The normal replication channel to the C-level server will be inhibited due to the difference in release versions.

5.2.2.2 Manual SOAM Upgrade (Active/Standby/Spare)

Procedure 29 is used to upgrade the SOAM Server Group if the site includes a Spare SOAM. If the SOAM Server Group was upgraded using Procedure 28, do not execute this procedure; continue with the next procedure per Table 11.

Procedure 29: Manual SOAM Upgrade (Active/Standby/Spare)

S T E P #	<p>This procedure upgrades the SOAM(s) in a DSR, including, if necessary, TVOE on each server that hosts an SOAM guest. This procedure upgrades the SOAMs manually.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS</u> AND ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>	
1. <input type="checkbox"/>	<p>Upgrade TVOE Host for Active, Standby, and/or Spare SOAM servers</p>	<p>If the TVOE Host for the Active, Standby, or Spare SOAM needs to be upgraded:</p> <p>Execute Appendix J to upgrade the TVOE Host for the Active, Standby, and/or Spare SOAM, as necessary.</p> <p>NOTE: In an RMS-based DSR, the SOAM is a guest on a TVOE Host that has already been upgraded as part of the NOAM upgrade.</p>
2. <input type="checkbox"/>	<p>Upgrade Standby and Spare SOAMs</p>	<p>Upgrade the Standby and Spare SOAM servers in parallel using the Upgrade Multiple Servers procedure :</p> <p>Execute Appendix H - Upgrade Multiple Servers Procedure</p> <p>After successfully completing the procedure in Appendix H, return to this point and continue with the next step.</p>
3. <input type="checkbox"/>	<p>Upgrade Active SOAM</p>	<p>Upgrade the Active SOAM server using Upgrade Single Server procedure :</p> <p>Execute Appendix G - Single Server Upgrade Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point and continue with the next procedure per Table 11.</p>
<p><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>		

NOTE: Once the Network Element SOAMs are upgraded, if any C-level server is removed from a Server Group and re-added, the server must be restored by way of Disaster Recovery procedures. The normal replication channel to the C-level server will be inhibited due to the difference in release versions.

5.3 Upgrade Iteration 3 Overview

Upgrade iteration 3 begins the upgrade of the site C-level servers. As shown in Table 9, iteration 3 consists of upgrading the DA-MPs, SS7-MPs, IPFEs, and Spare SBR(s), if equipped. The C-level components will be upgraded in parallel to maximize Maintenance Window usage.

Table 13 shows the estimated time required to upgrade the C-level servers for iteration 3.

Table 13: Iteration 3 Upgrade Execution Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 30	0:40-1:00	0:40-1:00	Upgrade Iteration 3	½ DA-MPs, ½ SS7-MPs, ½ IPFEs, Spare SBR(s) will be offline

CAUTION

ASG DOES NOT ALLOW THE OPERATOR TO SPECIFY THE UPGRADE ORDER OF THE DA-MP SERVERS. IF A SPECIFIC ORDER IS REQUIRED TO MAINTAIN AVAILABILITY OF ANY ONE TARGET SET (I.E. ALL DAMPS OF A TARGET SET ARE NOT SIMULTANEOUSLY UNAVAILABLE), THEN DO NOT USE ASG TO UPGRADE THE DA-MPS. ALTERNATE UPGRADE PROCEDURES ARE PROVIDED IN Appendix L.3

NOTE: The intent of the upgrade iteration is to upgrade multiple server groups in parallel. After initiating the upgrade of a server group, proceed immediately to the next step to initiate the upgrade of the next server group.

5.3.1 Upgrade Iteration 3

Procedure 30 provides the steps to upgrade ½ of the DA-MPs, ½ of the SS7-MPs, ½ of the IPFEs, and the Spare SBR(s). Refer to Table 10 for the hostnames of the servers to be upgraded in this iteration.

Procedure 30: Upgrade Iteration 3

S T E P #	This procedure upgrades a portion of the C-level servers for iteration 3.	
	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS</u> AND ASK FOR <u>UPGRADE ASSISTANCE</u> .	
1.	<p>Active NOAM VIP:</p> <p>View pre-upgrade status of DA-MPs</p>	<p>View the pre-upgrade status of the DA-MP servers.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed 3. Select the DA-MP Server Group tab. 4. For the DA-MP servers to be upgraded in iteration 3, verify the Application Version value is the expected source software release version.

Procedure 30: Upgrade Iteration 3

2.

Active NOAM VIP:

Verify Upgrade State is "Ready"

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

NO_SG IPFE_SG MP_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
Server Status	Appl Max HA Role	Network Element	Upgrade ISO		
NO1	Backup Needed Norm	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.111.001
NO2	Backup Needed Norm	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.11.0

Backup Backup All Auto Upgrade Accept Report Report All

5. If the servers are in "Backup Needed" state, select the servers and click the "Backup" button. The Upgrade State changes to "Backup in Progress". When the backup is complete, the Upgrade State changes to "Ready".
6. Verify the "OAM Max Ha Role" is the expected condition (either Standby or Active) (this will depend on the server being upgraded)

The Upgrade Administration form will be refreshed, and the servers to be upgraded will show Upgrade State = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.

The Upgrade Administration screen is displayed:

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

SO_SG IPFE_SG MP_SG NO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
Server Status	Appl Max HA Role	Network Element	Upgrade ISO		
SO1	Ready Norm	Active N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0
SO2	Ready Norm	Standby N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0

Backup Backup All Auto Upgrade Accept Report Report All

Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31101 (DB Replication to slave DB has failed)
- Alarm ID = 31106 (DB Merge to Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)

Procedure 30: Upgrade Iteration 3

3.

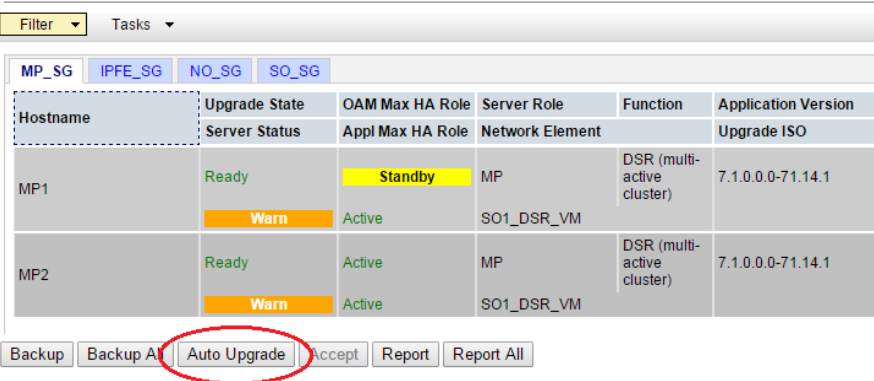
Active NOAM VIP:

Initiate DA-MP upgrade (part 1)

Initiate the Automated Server Group Upgrade option

- To utilize the Automated Server Group upgrade option, verify that no servers in the server group are selected.

Main Menu: Administration -> Software Management -> Upgrade



The screenshot shows a table with columns: Hostname, Upgrade State, OAM Max HA Role, Server Role, Function, and Application Version. Below the table are buttons: Backup, Backup All, Auto Upgrade (circled in red), Accept, Report, and Report All.

- Click the **Auto Upgrade** button. The Upgrade [Initiate] screen is displayed.

4.

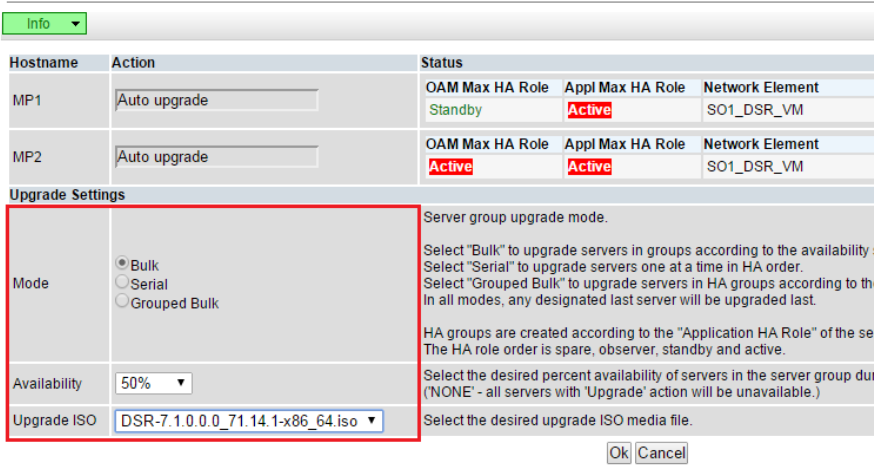
Active NOAM VIP:

Initiate DA-MP upgrade (part 2)

Start the Automated Server Group Upgrade of the DA-MPs.

- The **Upgrade Settings** section of the Initiate screen controls the behavior of the automated upgrade. Select **Bulk** Mode.
- Select **50%** for the **Availability** setting.
- Select the appropriate ISO from the **Upgrade ISO** pick list.
- Click the **Ok** button to start the upgrade.

Main Menu: Administration -> Software Management -> Upgrade [Initiate]



The screenshot shows the 'Upgrade Settings' section with a red box around the Mode (Bulk selected), Availability (50%), and Upgrade ISO (DSR-7.1.0.0_71.14.1-x86_64.iso) fields. Below are 'Ok' and 'Cancel' buttons.

Procedure 30: Upgrade Iteration 3

<p>5.</p> <p>Active NOAM VIP:</p> <p>View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <p>1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be displayed under the Status Message column.</p>
<p>6.</p> <p>Identify the SS7-MP Server Group(s) to Upgrade</p>	<p>If no SS7MPs are configured, proceed to step 14.</p> <p>From the data captured in Table 10, identify the SS7-MP server group(s) to upgrade in iteration 3.</p>
<p>7.</p> <p>Active NOAM VIP:</p> <p>View pre-upgrade status of SS7-MPs</p>	<p>View the pre-upgrade status of the SS7-MP servers.</p> <p>1. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed</p> <p>2. Select each SS7-MP Server Group tab in turn.</p> <p>3. For the SS7-MP servers to be upgraded in iteration 3, verify the Application Version value is the expected source software release version.</p>

Main Menu: Administration -> Software Management -> Upgrade

Filter Status Tasks

MP_SG IPFE_SG NO_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element	Upgrade ISO	
MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.2.0.0.0-72.18.0
	Err	OOS	SO1_DSR_VM		
MP2	Pending	Active	MP	DSR (active/stand by pair)	7.2.0.0.0-72.18.0
	Err	Active	SO1_DSR_VM		

While the DA-MP servers are upgrading, continue with the next step to upgrade additional C-level components in parallel.

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

SuperBee_NO SuperBee_IPFE1 SuperBee_IPFE2 SuperBee_MP SuperBee_SO SuperBee_SS7MP1

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element	Upgrade ISO	
SuperBee-SS7MP-1	Backup Needed	Active	MP	SS7-IWF	7.2.0.0.0-72.22.0
	Norm	OOS	SO_SuperBee		

4. If the servers are in "Backup Needed" state, select the servers and click the "Backup" button. The Upgrade State changes to "Backup in Progress". When the backup is complete, the Upgrade State changes to "Ready".

5. Verify the "OAM Max Ha Role" is the expected condition (either Standby or Active) (this will depend on the server being upgraded)

Procedure 30: Upgrade Iteration 3

8.

Active NOAM VIP:

Verify Upgrade Status is "Ready"

The Upgrade Administration form will be refreshed, and the servers to be upgraded will show Upgrade Status = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.

The Upgrade Administration screen is displayed:

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

SuperBee_NO	SuperBee_IPFE1	SuperBee_IPFE2	SuperBee_MP	SuperBee_SO	SuperBee_SS7MP1	St
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
Server Status	Server Status	Appl Max HA Role	Network Element	Upgrade ISO		
SuperBee-SS7MP-1	Ready Norm	Active OOS	MP SO_SuperBee	SS7-IWF	7.2.0.0.0-72.22.0	

Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All

Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31101 (DB Replication to slave DB has failed)
- Alarm ID = 31106 (DB Merge to Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)

9.

Active NOAM VIP:

Initiate SS7-MP upgrade (part 1)

Initiate the SS7-MP server upgrade.

1. From the Upgrade Administration screen, select the server to be upgraded.
2. Click the "Upgrade Server" button.

Main Menu: Administration -> Software Management -> Upgrade

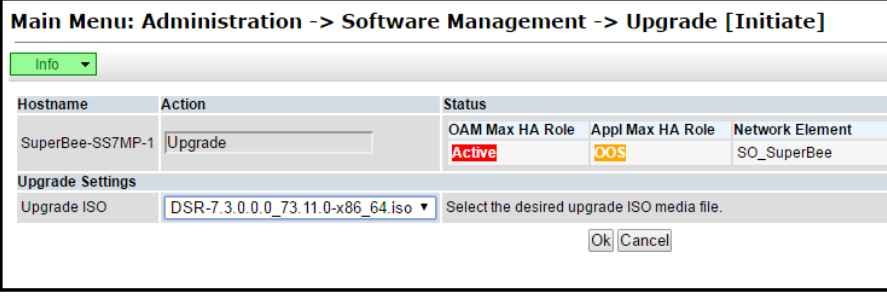
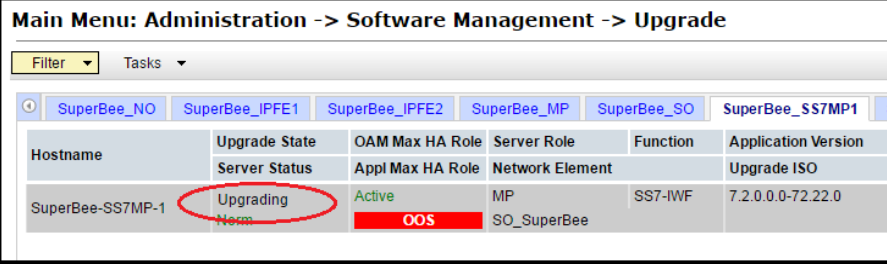
Filter Tasks

SuperBee_NO	SuperBee_IPFE1	SuperBee_IPFE2	SuperBee_MP	SuperBee_SO	SuperBee_SS7MP1	Super
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
Server Status	Server Status	Appl Max HA Role	Network Element	Upgrade ISO		
SuperBee-SS7MP-1	Ready Norm	Active OOS	MP SO_SuperBee	SS7-IWF	7.2.0.0.0-72.22.0	

Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All

The Initiate Upgrade form will be displayed:
Administration > Software Management > Upgrade [Initiate]

Procedure 30: Upgrade Iteration 3

<p>10.</p> <p>Active NOAM VIP:</p> <p>Initiate SS7-MP upgrade (part 2)</p>	<p>Select target ISO.</p> <ol style="list-style-type: none"> 1. On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. 2. Click OK to initiate the upgrade. 	<p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p> 
<p>11.</p> <p>Active NOAM VIP:</p> <p>View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <ol style="list-style-type: none"> 1. Observe the Upgrade State of the SS7-MP server. Upgrade status will be displayed under the Status Message column. 	<p>Main Menu: Administration -> Software Management -> Upgrade</p> 
<p>12.</p> <p>Repeat for each SS7-MP</p>	<p>Repeat steps 6 through 11 for the next SS7-MP to be upgraded per Table 10.</p>	
<p>13.</p> <p>Continue upgrade iteration 3</p>	<p>While the SS7-MP servers are upgrading, continue with the next step to upgrade additional C-level components in parallel.</p>	
<p>14.</p> <p>Identify the IPFE Server Group(s) to Upgrade</p>	<p>If no IPFEs are configured, proceed to step 21.</p> <p>From the data captured in Table 10, identify the IPFE server group(s) to upgrade in iteration 3.</p>	

Procedure 30: Upgrade Iteration 3

<p>15.</p> <p>Active NOAM VIP:</p> <p>View pre-upgrade status of IPFEs</p>	<p>View the pre-upgrade status of the IPFE servers.</p> <ol style="list-style-type: none"> 1. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed 2. Select each IPFE Server Group tab in turn. 3. For the IPFE servers to be upgraded in iteration 3, verify the Application Version value is the expected source software release version. <div data-bbox="511 441 1396 709" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Backup Needed Norm</td> <td>Active OOS</td> <td>MP SO1_DSR_VM</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> 4. If the servers are in "Backup Needed" state, select the servers and click the "Backup" button. The Upgrade State changes to "Backup in Progress". When the backup is complete, the Upgrade State changes to "Ready". 5. Verify the "OAM Max Ha Role" is the expected condition (either Standby or Active) (this will depend on the server being upgraded) 	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	IPFE	Backup Needed Norm	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0-72.18.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version														
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO														
IPFE	Backup Needed Norm	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0-72.18.0														
<p>16.</p> <p>Active NOAM VIP:</p> <p>Verify Upgrade Status is "Ready"</p>	<p>The Upgrade Administration form will be refreshed, and the servers to be upgraded will show Upgrade Status = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.</p> <p>The Upgrade Administration screen is displayed:</p> <div data-bbox="511 1039 1396 1360" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <p>IPFE_SG MP_SG NO_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Ready Err</td> <td>Active OOS</td> <td>MP SO1_DSR_VM</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All</p> </div> <p>Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:</p> <ul style="list-style-type: none"> Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10073 (Server Group Max Allowed HA Role Warning) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 32515 (Server HA Failover Inhibited) Alarm ID = 31101 (DB Replication to slave DB has failed) Alarm ID = 31106 (DB Merge to Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server) 	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	IPFE	Ready Err	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0-72.18.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version														
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO														
IPFE	Ready Err	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0-72.18.0														

Procedure 30: Upgrade Iteration 3

<p>17.</p>	<p>Active NOAM VIP: Initiate IPFE upgrade (part 1)</p>	<p>Initiate the IPFE server upgrade.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the server to be upgraded. Click the "Upgrade Server" button. <div data-bbox="516 373 1401 699" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Tasks <input type="text"/></p> <p>IPFE_SG MP_SG NO_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Ready</td> <td>Active</td> <td>MP</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> <tr> <td></td> <td style="background-color: red; color: white;">Err</td> <td style="background-color: red; color: white;">OOS</td> <td>SO1_DSR_VM</td> <td></td> <td></td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All</p> </div> <p>The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]</p>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	IPFE	Ready	Active	MP	IP Front End	7.2.0.0-72.18.0		Err	OOS	SO1_DSR_VM		
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																					
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																					
IPFE	Ready	Active	MP	IP Front End	7.2.0.0-72.18.0																					
	Err	OOS	SO1_DSR_VM																							
<p>18.</p>	<p>Active NOAM VIP: Initiate IPFE upgrade (part 2)</p>	<p>Select target ISO.</p> <ol style="list-style-type: none"> On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. Click OK to initiate the upgrade. <div data-bbox="516 930 1401 1220" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p> <p>Info <input type="text"/></p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Upgrade <input type="text"/></td> <td>OAM Max HA Role: Active Appl Max HA Role: OOS Network Element: SO1_DSR_VM</td> </tr> </tbody> </table> <p>Upgrade Settings</p> <p>Upgrade ISO: <input type="text" value="DSR-7.3.0.0.0_73.11.0-x86_64.iso"/> Select the desired upgrade ISO media file.</p> <p>OK Cancel</p> </div>	Hostname	Action	Status	IPFE	Upgrade <input type="text"/>	OAM Max HA Role: Active Appl Max HA Role: OOS Network Element: SO1_DSR_VM																		
Hostname	Action	Status																								
IPFE	Upgrade <input type="text"/>	OAM Max HA Role: Active Appl Max HA Role: OOS Network Element: SO1_DSR_VM																								
<p>19.</p>	<p>Active NOAM VIP: View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <ol style="list-style-type: none"> Observe the Upgrade State of the IPFE server. Upgrade status will be displayed under the Status Message column. <div data-bbox="516 1377 1401 1640" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Status <input type="text"/> Tasks <input type="text"/></p> <p>IPFE_SG MP_SG NO_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Upgrading</td> <td>Standby</td> <td>MP</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> <tr> <td></td> <td style="background-color: red; color: white;">Err</td> <td style="background-color: red; color: white;">OOS</td> <td>SO1_DSR_VM</td> <td></td> <td>DSR-7.3.0.0.0_73.11.0-x86_64.iso</td> </tr> </tbody> </table> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	IPFE	Upgrading	Standby	MP	IP Front End	7.2.0.0-72.18.0		Err	OOS	SO1_DSR_VM		DSR-7.3.0.0.0_73.11.0-x86_64.iso
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																					
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IPFE	Upgrading	Standby	MP	IP Front End	7.2.0.0-72.18.0																					
	Err	OOS	SO1_DSR_VM		DSR-7.3.0.0.0_73.11.0-x86_64.iso																					
<p>20.</p>	<p>Repeat for each IPFE</p>	<p>Repeat steps 14 through 19 for the next IPFE to be upgraded per Table 10.</p>																								
<p>21.</p>	<p>Identify the SBR Server Group(s) to Upgrade</p>	<p>If no SBRs are configured, proceed to step 28.</p> <p>From the data captured in Table 10, identify the SBR server group(s) to upgrade in iteration 3.</p>																								

Procedure 30: Upgrade Iteration 3

22.

Active NOAM VIP:

Verify status of Servers to be upgraded

For the SBR server group to be upgraded:

1. From the **Administration > Software Management > Upgrade** screen, select the SBR Server Group to be upgraded.
2. Verify the Application Version value is the expected source software release version for each SBR server in the selected server group.

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

EVONO	EVONODR	EVO_BPSBR_A	EVO_BPSBR_B	EVO_BPSBR_C	EVO_BPSBR_D	EVO_DAMP
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO	
EVO-BPSBR-1	Backup Needed Warn	Standby Standby	MP EVOSOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0	
EVO-BPSBR-8	Backup Needed Norm	Active Active	MP EVOSOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0	
STI-BPSBR-5	Backup Needed Warn	Spare Spare	MP STISOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0	
LFA-BPSBR-13	Backup Needed Warn	Spare Spare	MP LFA_SOAM_NE	Policy and Charging SBR	7.2.0.0.0-72.22.0	

3. If the server is in **“Backup Needed”** state, select the server and click the **“Backup”** button. The Upgrade State changes to **“Backup in Progress”**. When the backup is complete, the Upgrade State changes to **“Ready”**.
4. Verify the **“OAM Max Ha Role” is the expected condition (either Standby or Active)** (this will depend on the server being upgraded)

Procedure 30: Upgrade Iteration 3

23.

Active NOAM VIP:

Verify Upgrade Status is "Ready"

The Upgrade Administration form will be refreshed, and the server to be upgraded will show Upgrade Status = READY (This may take a minute). Depending on the server being upgraded, new alarms may occur.

The Upgrade Administration screen is displayed:

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

EVONO EVONODR EVO_BPSBR_A EVO_BPSBR_B EVO_BPSBR_C EVO_BPSBR_D EVO_DAMP

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
EVO-BPSBR-1	Ready	Standby	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
	Warn	Standby	EVOSOAMNE		
EVO-BPSBR-8	Ready	Active	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
	Norm	Active	EVOSOAMNE		
STI-BPSBR-5	Ready	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
	Warn	Spare	STISOAMNE		
LFA-BPSBR-13	Ready	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
	Warn	Spare	LFA_SOAM_NE		

Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All

Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31101 (DB Replication to slave DB has failed)
- Alarm ID = 31106 (DB Merge to Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)

Procedure 30: Upgrade Iteration 3

24.

Active NOAM VIP:

Initiate SBR upgrade (part 1)

Initiate the Automated Server Group Upgrade option

1. To utilize the Automated Server Group upgrade option, select the SBR server group to be upgraded.
2. Verify that no servers in the server group are selected.

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

EVO_BPSBR_A EVONO EVONODR EVO_BPSBR_B EVO_BPSBR_C EVO_BPSBR_D EVO_DAMP

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
EVO-BPSBR-1	Ready Warn	Standby Standby	MP EVOSOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0
EVO-BPSBR-8	Ready Norm	Active Active	MP EVOSOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0
STI-BPSBR-5	Ready Warn	Spare Spare	MP STISOAMNE	Policy and Charging SBR	7.2.0.0.0-72.22.0
LFA-BPSBR-13	Ready Warn	Spare Spare	MP LFA_SOAM_NE	Policy and Charging SBR	7.2.0.0.0-72.22.0

Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All

3. Click the **Auto Upgrade** button. The Upgrade [Initiate] screen is displayed.

25.

Active NOAM VIP:

Initiate SBR upgrade (part 2)

Start the Automated Server Group Upgrade.

1. The Upgrade **Settings** section of the Initiate screen controls the behavior of the automated upgrade. Select **Grouped Bulk Mode**.
2. Select an **Availability** setting of 50%.
3. Select the appropriate ISO from the **Upgrade ISO** pick list.
4. Click the **Ok** button to start the upgrade.

Main Menu: Administration -> Software Management -> Upgrade [Initiate]

Info

Hostname	Action	Status
EVO-BPSBR-1	Auto upgrade	OAM Max HA Role: Standby Appl Max HA Role: Standby Network Element: EVOSOAMNE Application Version: 7.2.0.0.0-72.22.0
EVO-BPSBR-8	Auto upgrade	OAM Max HA Role: Active Appl Max HA Role: Active Network Element: EVOSOAMNE Application Version: 7.2.0.0.0-72.22.0
STI-BPSBR-5	Auto upgrade	OAM Max HA Role: Spare Appl Max HA Role: Spare Network Element: STISOAMNE Application Version: 7.2.0.0.0-72.22.0
LFA-BPSBR-13	Auto upgrade	OAM Max HA Role: Spare Appl Max HA Role: Spare Network Element: LFA_SOAM_NE Application Version: 7.2.0.0.0-72.22.0

Upgrade Settings

Server group upgrade mode.

Mode: Bulk Serial Grouped Bulk

Availability: 50%

Upgrade ISO: DSR-7.2.0.0.0_72.22.0-x86_64.iso

Ok Cancel

Procedure 30: Upgrade Iteration 3

<p>26.</p>	<p>Active NOAM VIP: View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <p>1. Observe the Upgrade State of the SBR Server Group. Upgrade status will be displayed under the Status Message column.</p> <div data-bbox="513 369 1403 924" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Tasks <input type="text"/></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">EVO_BPSBR_A</th> <th style="text-align: left;">EVONO</th> <th style="text-align: left;">EVONODR</th> <th style="text-align: left;">EVO_BPSBR_B</th> <th style="text-align: left;">EVO_BPSBR_C</th> <th style="text-align: left;">EVO_BPSBR_D</th> <th style="text-align: left;">EVO_DAMP</th> </tr> </thead> <tbody> <tr> <td>Hostname</td> <td>Upgrade State</td> <td>OAM Max HA Role</td> <td>Server Role</td> <td>Function</td> <td colspan="2">Application Version</td> </tr> <tr> <td></td> <td>Server Status</td> <td>Appl Max HA Role</td> <td>Network Element</td> <td></td> <td colspan="2">Upgrade ISO</td> </tr> <tr> <td>EVO-BPSBR-1</td> <td>Pending</td> <td>Standby</td> <td>MP</td> <td>Policy and Charging SBR</td> <td colspan="2">7.2.0.0.0-72.22.0</td> </tr> <tr> <td></td> <td>Warn</td> <td>Standby</td> <td>EVOSOAMNE</td> <td></td> <td colspan="2"></td> </tr> <tr> <td>EVO-BPSBR-8</td> <td>Pending</td> <td>Active</td> <td>MP</td> <td>Policy and Charging SBR</td> <td colspan="2">7.2.0.0.0-72.22.0</td> </tr> <tr> <td></td> <td>Norm</td> <td>Active</td> <td>EVOSOAMNE</td> <td></td> <td colspan="2"></td> </tr> <tr> <td>STI-BPSBR-5</td> <td>Upgrading</td> <td>Spare</td> <td>MP</td> <td>Policy and Charging SBR</td> <td colspan="2">7.2.0.0.0-72.22.0</td> </tr> <tr> <td></td> <td>Err</td> <td>OOS</td> <td>STISOAMNE</td> <td></td> <td colspan="2"></td> </tr> <tr> <td>LFA-BPSBR-13</td> <td>Upgrading</td> <td>Spare</td> <td>MP</td> <td>Policy and Charging SBR</td> <td colspan="2">7.2.0.0.0-72.22.0</td> </tr> <tr> <td></td> <td>Err</td> <td>OOS</td> <td>LFA_SOAM_NE</td> <td></td> <td colspan="2"></td> </tr> </tbody> </table> </div>	EVO_BPSBR_A	EVONO	EVONODR	EVO_BPSBR_B	EVO_BPSBR_C	EVO_BPSBR_D	EVO_DAMP	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version			Server Status	Appl Max HA Role	Network Element		Upgrade ISO		EVO-BPSBR-1	Pending	Standby	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0			Warn	Standby	EVOSOAMNE				EVO-BPSBR-8	Pending	Active	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0			Norm	Active	EVOSOAMNE				STI-BPSBR-5	Upgrading	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0			Err	OOS	STISOAMNE				LFA-BPSBR-13	Upgrading	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0			Err	OOS	LFA_SOAM_NE			
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<p>27.</p>	<p>Repeat for each SBR Server Group</p>	<p>Repeat steps 21 through 26 for the next SBR Server Group to be upgraded per Table 10.</p>																																																																													

Procedure 30: Upgrade Iteration 3

28.

Active NOAM VIP:

View In-Progress Status (monitor)

View the Upgrade Administration form to monitor upgrade progress.

See step 29 below for instructions if the upgrade fails, or if execution time exceeds 60 minutes.

Note: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as “FAILED”. The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.

1. Navigate to **Administration > Software Management > Upgrade**. The Upgrade Administration screen is displayed.
2. Sequence through the server group tabs for the server groups being upgraded. Observe the **Upgrade State** of the servers of interest. Upgrade status will be displayed under the **Status Message** column.

Main Menu: Administration -> Software Management -> Upgrade

Filter					
Status	Tasks				
MP_SG	IPFE_SG	NO_SG	SO_SG		
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element	Upgrade ISO	
MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.1.0.0-71.6.0
	Err	OOS	SO_DSR_VM	DSR-7.1.0.0_71.8.1-x86_64.iso	
MP2	Upgrading	Spare	MP	DSR (active/stand by pair)	7.1.0.0-71.6.0
	Err	OOS	SO_DSR_VM	DSR-7.1.0.0_71.8.1-x86_64.iso	

Backup Backup All Auto Upgrade Accept Report Report All

During the upgrade, the servers may have a combination of the following expected alarms.
NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 31101 (DB Replication To Slave Failure)
- Alarm ID = 31106 (DB Merge To Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)
- Alarm ID = 31233 (HA Secondary Path Down)
- Alarm ID = 31283 (Highly available server failed to receive mate heartbeats)
- Alarm ID = 32515 (Server HA Failover Inhibited)

3. The DA-MP and SBR server groups being upgraded with ASG will automatically sequence to iteration 4. Periodically monitor these servers for failures.
4. For the SS7-MP and IPFE servers being upgraded, wait for the upgrades to complete. The **Status Message** column will show “Success” after approximately 20 to 50 minutes. Do not proceed to iteration 4 until the SS7-MP and IPFE servers have completed upgrade.

NOTE: Do Not Accept any upgrade at this time.

If any upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.

Procedure 30: Upgrade Iteration 3

29. <input type="checkbox"/>	<u>Server CLI:</u> If the upgrade of a server fails:	If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files: <code>/var/TKLC/log/upgrade/upgrade.log</code> <code>/var/TKLC/log/upgrade/ugwrap.log</code> <code>/var/TKLC/log/upgrade/earlyChecks.log</code> <code>/var/TKLC/log/platcfg/upgrade.log</code> It is recommended to contact MOS by referring to Appendix P of this document and provide these files. Refer to Appendix N for failed server recovery procedures.
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THIS PROCEDURE HAS BEEN COMPLETED.

5.4 Upgrade Iteration 4 Overview

Upgrade iteration 4 continues the upgrade of the site C-level servers. As shown in Table 9, iteration 4 consists of upgrading the second half of the DA-MPs, SS7-MPs, and IPFEs, as well as the Standby SBR(s), if equipped.

Table 14 shows the estimated time required to upgrade the C-level servers for iteration 4.

Table 14: Iteration 4 Upgrade Execution Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 31	0:40-1:00	0:40-1:00	Upgrade Iteration 4	½ DA-MPs, ½ SS7-MPs, ½ IPFEs, Standby SBR(s) will be offline

NOTE: The intent of the upgrade iteration is to upgrade multiple server groups in parallel. After initiating the upgrade of a server group, proceed immediately to the next step to initiate the upgrade of the next server group.

5.4.1 Upgrade Iteration 4

Procedure 31 provides the steps to upgrade ½ of the SS7-MPs, and ½ of the IPFEs. The DA-MPs and SBRs will automatically be upgraded by ASG. Refer to Table 10 for the hostnames of the servers to be upgraded in this iteration.

Procedure 31: Upgrade Iteration 4

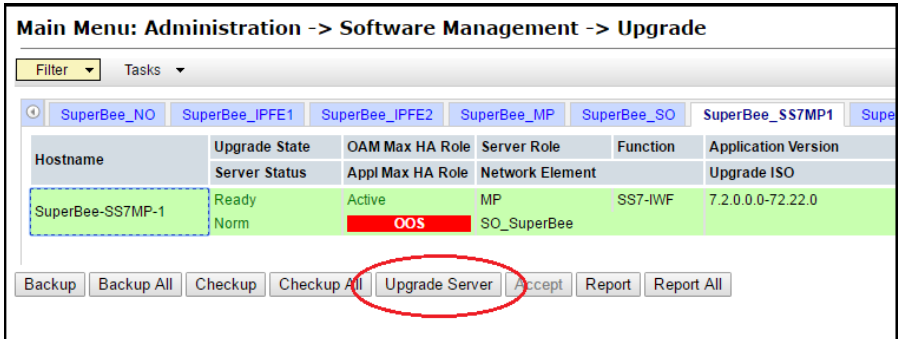
S T E P #	This procedure upgrades a portion of the C-level servers for iteration 4.	
	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS</u> AND ASK FOR <u>UPGRADE ASSISTANCE</u> .		
1. <input type="checkbox"/>	Identify the SS7-MP Server Group(s) to Upgrade	<p>If no SS7MPs are configured, proceed to step 9.</p> <p>From the data captured in Table 10, identify the SS7-MP server group(s) to upgrade in iteration 4.</p>

Procedure 31: Upgrade Iteration 4

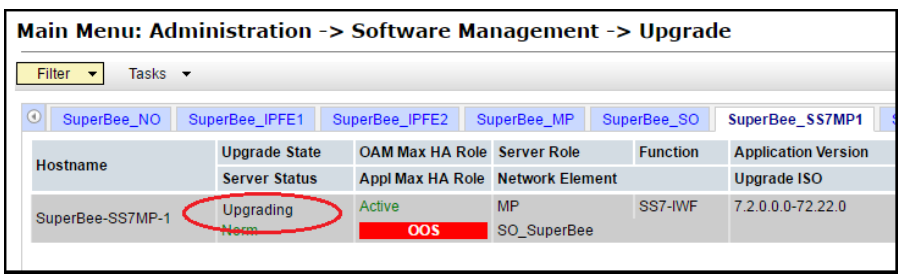
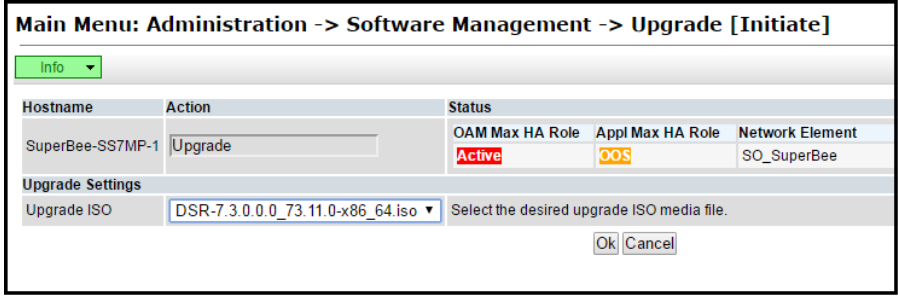
<p>2.</p> <p>Active NOAM VIP:</p> <p>View pre-upgrade status of SS7-MPs</p>	<p>View the pre-upgrade status of the SS7-MP servers.</p> <ol style="list-style-type: none"> Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed Select each SS7-MP Server Group tab in turn. For the SS7-MP servers to be upgraded in iteration 4, verify the Application Version value is the expected source software release version. <div data-bbox="511 443 1404 705" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>SuperBee_NO SuperBee_IPFE1 SuperBee_IPFE2 SuperBee_MP SuperBee_SO SuperBee_SS7MP1</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th colspan="3">Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>SuperBee-SS7MP-1</td> <td>Backup Needed Norm</td> <td>Active OOS</td> <td>MP SO_SuperBee</td> <td>SS7-IWF</td> <td>7.2.0.0-72.22.0</td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> If the servers are in "Backup Needed" state, select the servers and click the "Backup" button. The Upgrade State changes to "Backup in Progress". When the backup is complete, the Upgrade State changes to "Ready". Verify the "OAM Max Ha Role" is the expected condition (either Standby or Active) (this will depend on the server being upgraded) 	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Appl Max HA Role	Network Element	Upgrade ISO			SuperBee-SS7MP-1	Backup Needed Norm	Active OOS	MP SO_SuperBee	SS7-IWF	7.2.0.0-72.22.0
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<p>3.</p> <p>Active NOAM VIP:</p> <p>Verify Upgrade State is "Ready"</p>	<p>The Upgrade Administration form will be refreshed, and the servers to be upgraded will show Upgrade State = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.</p> <p>The Upgrade Administration screen is displayed:</p> <div data-bbox="511 1037 1404 1341" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>SuperBee_NO SuperBee_IPFE1 SuperBee_IPFE2 SuperBee_MP SuperBee_SO SuperBee_SS7MP1</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th colspan="3">Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>SuperBee-SS7MP-1</td> <td>Ready Norm</td> <td>Active OOS</td> <td>MP SO_SuperBee</td> <td>SS7-IWF</td> <td>7.2.0.0-72.22.0</td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Auto Upgrade Accept Report Report All</p> </div> <p>Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:</p> <ul style="list-style-type: none"> Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10073 (Server Group Max Allowed HA Role Warning) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 32515 (Server HA Failover Inhibited) Alarm ID = 31101 (DB Replication to slave DB has failed) Alarm ID = 31106 (DB Merge to Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server) 	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Appl Max HA Role	Network Element	Upgrade ISO			SuperBee-SS7MP-1	Ready Norm	Active OOS	MP SO_SuperBee	SS7-IWF	7.2.0.0-72.22.0
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Procedure 31: Upgrade Iteration 4

<p>4.</p> <p>Active NOAM VIP:</p> <p>Initiate SS7-MP upgrade (part 1)</p>	<p>Initiate the SS7-MP server upgrade.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the server to be upgraded. Click the “Upgrade Server” button.
<p>5.</p> <p>Active NOAM VIP:</p> <p>Initiate SS7-MP upgrade (part 2)</p>	<p>Select target ISO.</p> <ol style="list-style-type: none"> On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. Click OK to initiate the upgrade.
<p>6.</p> <p>Active NOAM VIP:</p> <p>View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <ol style="list-style-type: none"> Observe the Upgrade State of the SS7-MP server. Upgrade status will be displayed under the Status Message column.
<p>7.</p> <p>Repeat for each SS7-MP</p>	<p>Repeat steps 1 through 6 for the next SS7-MP to be upgraded per Table 10.</p>
<p>8.</p> <p>Continue upgrade iteration 4</p>	<p>While the SS7-MP servers are upgrading, continue with the next step to upgrade additional C-level components in parallel.</p>



The Initiate Upgrade form will be displayed:
Administration > Software Management > Upgrade [Initiate]



Procedure 31: Upgrade Iteration 4

<p>9.</p>	<p>Identify the IPFE Server Group(s) to Upgrade</p>	<p>If no IPFEs are configured, proceed to step 16.</p> <p>From the data captured in Table 10, identify the IPFE server group(s) to upgrade in iteration 4.</p>																								
<p>10.</p>	<p>Active NOAM VIP:</p> <p>View pre-upgrade status of IPFEs</p>	<p>View the pre-upgrade status of the IPFE servers.</p> <ol style="list-style-type: none"> Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed Select each IPFE Server Group tab in turn. For the IPFE servers to be upgraded in iteration 4, verify the Application Version value is the expected source software release version. 																								
<div style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td style="background-color: yellow;">Backup Needed</td> <td>Active</td> <td>MP</td> <td>IP Front End</td> <td>7.2.0.0.0-72.18.0</td> </tr> <tr> <td></td> <td style="background-color: lightgreen;">Norm</td> <td style="background-color: red; color: white;">OOS</td> <td>SO1_DSR_VM</td> <td></td> <td></td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> If the servers are in “Backup Needed” state, select the servers and click the “Backup” button. The Upgrade State changes to “Backup in Progress”. When the backup is complete, the Upgrade State changes to “Ready”. Verify the “OAM Max Ha Role” is the expected condition (either Standby or Active) (this will depend on the server being upgraded) 			Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	IPFE	Backup Needed	Active	MP	IP Front End	7.2.0.0.0-72.18.0		Norm	OOS	SO1_DSR_VM		
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<p>11.</p>	<p>Active NOAM VIP:</p> <p>Verify Upgrade Status is “Ready”</p>	<p>The Upgrade Administration form will be refreshed, and the servers to be upgraded will show Upgrade Status = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.</p> <p>The Upgrade Administration screen is displayed:</p>																								
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Procedure 31: Upgrade Iteration 4

<p>12.</p>	<p>Active NOAM VIP: Initiate IPFE upgrade (part 1)</p>	<p>Initiate the IPFE server upgrade.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the server to be upgraded. Click the “Upgrade Server” button. <div data-bbox="516 369 1401 697" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Tasks <input type="text"/></p> <p>IPFE_SG MP_SG NO_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th>Upgrade ISO</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Ready</td> <td>Active</td> <td>MP</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> <tr> <td></td> <td style="background-color: red; color: white;">Err</td> <td style="background-color: red; color: white;">OOS</td> <td>SO1_DSR_VM</td> <td colspan="2"></td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All</p> </div> <p>The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]</p>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Appl Max HA Role	Network Element	Upgrade ISO			IPFE	Ready	Active	MP	IP Front End	7.2.0.0-72.18.0		Err	OOS	SO1_DSR_VM		
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	Err	OOS	SO1_DSR_VM																							
<p>13.</p>	<p>Active NOAM VIP: Initiate IPFE upgrade (part 2)</p>	<p>Select target ISO.</p> <ol style="list-style-type: none"> On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. Click OK to initiate the upgrade. <div data-bbox="516 926 1401 1215" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p> <p>Info <input type="text"/></p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> <th colspan="3"></th> </tr> <tr> <th>OAM Max HA Role</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th colspan="3"></th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Upgrade <input type="text"/></td> <td>Active</td> <td>OOS</td> <td colspan="2">SO1_DSR_VM</td> </tr> </tbody> </table> <p>Upgrade Settings</p> <p>Upgrade ISO: <input type="text" value="DSR-7.3.0.0_73.11.0-x86_64.iso"/> Select the desired upgrade ISO media file.</p> <p>OK Cancel</p> </div>	Hostname	Action	Status				OAM Max HA Role	Appl Max HA Role	Network Element				IPFE	Upgrade <input type="text"/>	Active	OOS	SO1_DSR_VM							
Hostname	Action	Status																								
OAM Max HA Role	Appl Max HA Role	Network Element																								
IPFE	Upgrade <input type="text"/>	Active	OOS	SO1_DSR_VM																						
<p>14.</p>	<p>Active NOAM VIP: View In-Progress Status (monitor)</p>	<p>View the Upgrade Administration form to monitor upgrade progress.</p> <ol style="list-style-type: none"> Observe the Upgrade State of the IPFE server. Upgrade status will be displayed under the Status Message column. <div data-bbox="516 1371 1401 1633" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Status <input type="text"/> Tasks <input type="text"/></p> <p>IPFE_SG MP_SG NO_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th>Upgrade ISO</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>IPFE</td> <td>Upgrading</td> <td>Standby</td> <td>MP</td> <td>IP Front End</td> <td>7.2.0.0-72.18.0</td> </tr> <tr> <td></td> <td style="background-color: red; color: white;">Err</td> <td style="background-color: red; color: white;">OOS</td> <td>SO1_DSR_VM</td> <td colspan="2">DSR-7.3.0.0_73.11.0-x86_64.iso</td> </tr> </tbody> </table> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Appl Max HA Role	Network Element	Upgrade ISO			IPFE	Upgrading	Standby	MP	IP Front End	7.2.0.0-72.18.0		Err	OOS	SO1_DSR_VM	DSR-7.3.0.0_73.11.0-x86_64.iso	
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																					
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IPFE	Upgrading	Standby	MP	IP Front End	7.2.0.0-72.18.0																					
	Err	OOS	SO1_DSR_VM	DSR-7.3.0.0_73.11.0-x86_64.iso																						
<p>15.</p>	<p>Repeat for each IPFE</p>	<p>Repeat steps 9 through 14 for the next IPFE to be upgraded per Table 10.</p>																								

Procedure 31: Upgrade Iteration 4

16.

Active NOAM VIP:

View In-Progress Status (monitor)

View the Upgrade Administration form to monitor upgrade progress.

See step 17 below for instructions if the upgrade fails, or if execution time exceeds 60 minutes.

Note: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as "FAILED". The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.

1. Navigate to **Administration > Software Management > Upgrade**. The Upgrade Administration screen is displayed.
2. Sequence through the server group tabs for the server groups being upgraded. Observe the **Upgrade State** of the servers of interest. Upgrade status will be displayed under the **Status Message** column.

Main Menu: Administration -> Software Management -> Upgrade

Filter Status Tasks

MP_SG IPFE_SG NO_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.1.0.0.0-71.6.0
	Err	OOS	SO_DSR_VM		DSR-7.1.0.0.0_71.8.1-x86_64.iso
MP2	Upgrading	Spare	MP	DSR (active/stand by pair)	7.1.0.0.0-71.6.0
	Err	OOS	SO_DSR_VM		DSR-7.1.0.0.0_71.8.1-x86_64.iso

Backup Backup All Auto Upgrade Accept Report Report All

During the upgrade, the servers may have a combination of the following expected alarms.
NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 31101 (DB Replication To Slave Failure)
- Alarm ID = 31106 (DB Merge To Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)
- Alarm ID = 31233 (HA Secondary Path Down)
- Alarm ID = 31283 (Highly available server failed to receive mate heartbeats)
- Alarm ID = 32515 (Server HA Failover Inhibited)

3. The SBR server groups being upgraded with ASG will automatically sequence to iteration 5. Periodically monitor these servers for failures, if equipped.
4. For the DA-MP, SS7-MP and IPFE servers being upgraded, wait for the upgrades to complete. The **Status Message** column will show "Success" after approximately 20 to 50 minutes. Do not proceed to iteration 5 until the DA-MP, SS7-MP and IPFE servers have completed upgrade.

If the system does not have SBRs, the server upgrades are complete. Proceed to Procedure 33 per Table 11.

Procedure 31: Upgrade Iteration 4

17. <input type="checkbox"/>	<u>Server CLI:</u> If the upgrade of a server fails:	If any upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures. If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files: <code>/var/TKLC/log/upgrade/upgrade.log</code> <code>/var/TKLC/log/upgrade/ugwrap.log</code> <code>/var/TKLC/log/upgrade/earlyChecks.log</code> <code>/var/TKLC/log/platcfg/upgrade.log</code>
--	--	--

THIS PROCEDURE HAS BEEN COMPLETED.

5.5 Upgrade Iteration 5 Overview

Upgrade iteration 5 continues the upgrade of the site C-level servers. As shown in Table 9, iteration 5 consists of upgrading the Active SBR(s).

Table 13 shows the estimated time required to upgrade the remaining C-level servers for iteration 5.

Table 15: Iteration 5 Upgrade Execution Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 32	0:40-1:00	0:40-1:00	Upgrade Iteration 5	Standby SBR will become Active; previously Active SBR will be offline for upgrade

5.5.1 Upgrade Iteration 5

Procedure 32 provides the steps to upgrade the Active SBRs. The SBRs are automatically upgraded by ASG so the task for iteration 5 is to monitor the upgrade progress. Refer to Table 10 for the hostnames of the servers upgraded in this iteration.

Procedure 32: Upgrade Iteration 5

1.

Active NOAM VIP:
View In-Progress Status (monitor)

View the Upgrade Administration form to monitor upgrade progress.

See step 2 below for instructions if the upgrade fails, or if execution time exceeds 60 minutes.

Note: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as "FAILED". The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.

1. Navigate to **Administration > Software Management > Upgrade**. The Upgrade Administration screen is displayed.
2. Sequence through the server group tabs for the server groups being upgraded. Observe the **Upgrade State** of the servers of interest. Upgrade status will be displayed under the **Status Message** column.

Main Menu: Administration -> Software Management -> Upgrade

Filter ▾
Status ▾
Tasks ▾

MP_SG
IPFE_SG
NO_SG
SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.1.0.0-71.6.0
	Err	OOS	SO_DSR_VM		DSR-7.1.0.0_71.8.1-x86_64.iso
MP2	Upgrading	Spare	MP	DSR (active/stand by pair)	7.1.0.0-71.6.0
	Err	OOS	SO_DSR_VM		DSR-7.1.0.0_71.8.1-x86_64.iso

Backup
Backup All
Auto Upgrade
Accept
Report
Report All

		<p>During the upgrade, the servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:</p> <p>Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10073 (Server Group Max Allowed HA Role Warning) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 31101 (DB Replication To Slave Failure) Alarm ID = 31106 (DB Merge To Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server) Alarm ID = 31233 (HA Secondary Path Down) Alarm ID = 31283 (Highly available server failed to receive mate heartbeats) Alarm ID = 32515 (Server HA Failover Inhibited)</p> <p>3. Wait for the SBR upgrades to complete. The "Status Message" column will show "Success". This step will take approximately 20 to 50 minutes.</p>
2.	<p>Server CLI:</p> <p>If the upgrade of a server fails:</p>	<p>If any upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.</p> <p>If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files:</p> <pre>/var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log</pre>

THIS PROCEDURE HAS BEEN COMPLETED.



THE FOLLOWING PROCEDURES MUST BE EXECUTED AT THE COMPLETION OF EACH SOAM SITE UPGRADE:

- Procedure 33: Allow Site Provisioning
- Procedure 34: Site Post-Upgrade Health Check



AFTER ALL SOAM SITES IN THE TOPOLOGY HAVE COMPLETED UPGRADE, THE UPGRADE MAY BE ACCEPTED USING THE FOLLOWING PROCEDURE:

- Procedure 45: Accepting Upgrade

5.6 Site Post-Upgrade Verification

The post-upgrade procedures consist of procedures that are performed after all of the site upgrades are complete. The final Health Check of the system collects alarm and status information to verify that the upgrade did not degrade system operation. After an appropriate soak time, the upgrade is accepted.

5.6.1 Allow Site Provisioning

This procedure enables Site Provisioning for the site just upgraded.

	<p>ANY PROVISIONING CHANGES MADE TO THIS SITE BEFORE THE UPGRADE IS ACCEPTED WILL BE LOST IF THE UPGRADE IS BACKED OUT</p>
---	---

Procedure 33: Allow Site Provisioning

S T E P #	<p>This procedure allows provisioning for SOAM and MP servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<p><u>Active SOAM VIP:</u></p> <p>Enable Site Provisioning</p>	<p>Enable site provisioning.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI of the site just upgraded using the VIP. 2. Select Status & Manage > Database. The Database Status screen is displayed. 3. Click the Enable Site Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Disable Site Provisioning
<p><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>		

5.6.2 Site Post-Upgrade Health Checks

This section provides procedures to verify the validity and health of the site upgrade.

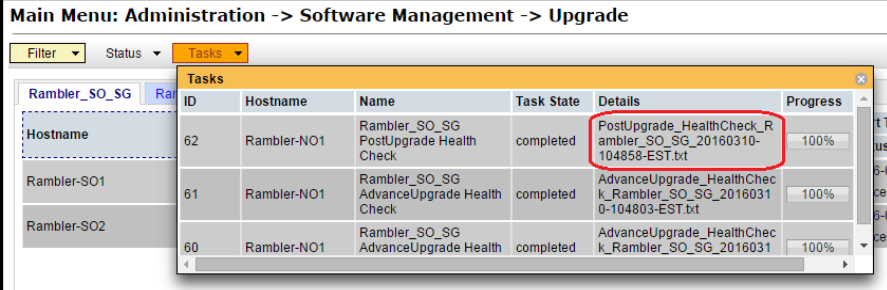
5.6.2.1 Site Post-Upgrade Health Check

This procedure determines the validity of the upgrade, as well as the health and status of the network and servers.

Procedure 34: Site Post-Upgrade Health Check

S T E P #	<p>This procedure verifies Post-Upgrade site status.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>																														
1	<p>Active NOAM VIP:</p> <p>This procedure will run the automated post-upgrade Health Checks.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. 2. Select the SOAM Server Group tab for the site being upgraded. 3. Select the Active SOAM. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <p>Rambler_NO_SG Rambler_DAMP_SG Rambler_DRNO_SG Rambler_SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>Rambler-SO1</td> <td style="background-color: yellow;">Accept or Reject Warn</td> <td>Active</td> <td>SO_Rambler</td> <td>System OAM</td> <td>7.2.0.0.0-72.17.0</td> </tr> <tr> <td>Rambler-SO2</td> <td style="background-color: yellow;">Accept or Reject Warn</td> <td>Standby</td> <td>SO_Rambler</td> <td>System OAM</td> <td>7.2.0.0.0-72.17.0</td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All</p> </div> <ol style="list-style-type: none"> 4. Click the Checkup button. The Upgrade [Checkup] screen is displayed. 5. Under Health check options, select the Post Upgrade option. 6. Click Ok. Control returns to the Upgrade screen. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Checkup]</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Rambler-SO1</td> <td>Health Check</td> <td>OAM Max HA Role: Active Network Element: SO_Rambler</td> </tr> </tbody> </table> <p>Health check options</p> <p>Checkup Type: <input type="radio"/> Advance Upgrade <input type="radio"/> Pre Upgrade <input checked="" type="radio"/> Post Upgrade</p> <p>Upgrade ISO: - Select - <small>Select the desired upgrade ISO media file.</small></p> <p style="text-align: right;">Ok Cancel</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	Rambler-SO1	Accept or Reject Warn	Active	SO_Rambler	System OAM	7.2.0.0.0-72.17.0	Rambler-SO2	Accept or Reject Warn	Standby	SO_Rambler	System OAM	7.2.0.0.0-72.17.0	Hostname	Action	Status	Rambler-SO1	Health Check	OAM Max HA Role: Active Network Element: SO_Rambler
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																										
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																										
Rambler-SO1	Accept or Reject Warn	Active	SO_Rambler	System OAM	7.2.0.0.0-72.17.0																										
Rambler-SO2	Accept or Reject Warn	Standby	SO_Rambler	System OAM	7.2.0.0.0-72.17.0																										
Hostname	Action	Status																													
Rambler-SO1	Health Check	OAM Max HA Role: Active Network Element: SO_Rambler																													

Procedure 34: Site Post-Upgrade Health Check

<p>2</p> <p>Active NOAM VIP:</p> <p>Monitor health check progress</p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> 1. Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <SO ServerGroup> PostUpgrade Health Check. 2. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. 3. Click the hyperlink to download the Health Check report. Open the report and review the results. 	
<p>3</p> <p>Active NOAM VIP:</p> <p>Analyze health check results</p>	<p>Analyze Health Check failure. If the Health Check report status is anything other than "Pass", the Health Check logs can be analyzed to determine if the upgrade can proceed.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Files. The Files screen is displayed. 2. Select the file named "UpgradeHealthCheck.log" and click View. 3. Locate the log entries for the most recent health check. 4. Review the log for failures. Analyze the failures and determine if it is safe to continue the upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. <p>If the health check log contains the message "Unable to execute Health Check on <Active NOAM hostname>", perform health checks in accordance with Procedure 35.</p>	
<p>4</p> <p>Active SOAM VIP:</p> <p>Export and archive configuration data</p>	<p>Export configuration data</p> <ol style="list-style-type: none"> 1. Select Main Menu > Diameter Common > Export 2. Capture and archive configuration data by choosing Export Application the drop down entry named "ALL". 3. Click Ok to confirm. 4. If SCP will be used to retrieve the export files in step 6, select the Export Directory - File Management Directory radio button. 5. Verify the requested data is exported using the tasks button at the top of the screen. 6. Browse to Main Menu >Status & Manage >Files and download all the exported files to the client machine, or use the SCP utility to download the files from the Active SOAM to the client machine. 7. Select Diameter > Maintenance > Applications 8. Verify Operational Status is 'Available' for all applications 	
<p>5</p> <p>Active SOAM Server:</p> <p>Check if the setup previously has a customer supplied Apache certificate installed and protected with a passphrase, which was renamed before starting with upgrade.</p>	<p>If the setup had a customer-supplied Apache certificate installed and protected with passphrase before the start of the upgrade (refer to Procedure 2), the certificate was renamed to server.crt-orig. To restore the customer-supplied certificate, rename 'server.crt-orig' back to 'server.crt'.</p>	

Procedure 34: Site Post-Upgrade Health Check

6 <input type="checkbox"/>	Compare data to the Pre-Upgrade health check to verify if the system has degraded after the second maintenance window.	Verify that the health check status of the upgraded site as collected from Steps 1 through 4 is the same as the pre-upgrade health checks taken in Section 3.3.2. If system operation is degraded, it is recommended to contact MOS.
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THIS PROCEDURE HAS BEEN COMPLETED.

5.6.2.2 Alternate Site Post-Upgrade Health Check

This procedure determines the validity of the upgrade, as well as the health and status of the network and servers. This procedure is an alternative to the normal post upgrade health check in Procedure 34.

Procedure 35: Alternate Site Post-Upgrade Health Check

S T E P #	<p>This procedure verifies Post-Upgrade site status.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<u>ACTIVE SOAM CLI:</u> Verify SOAM post-Upgrade Status	<p>Run SOAM post-upgrade health check.</p> <ol style="list-style-type: none"> Use an SSH client to connect to the Active SOAM: <pre>ssh admusr@<SOAM XMI IP address> password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> Enter the command: <pre>\$ upgradeHealthCheck postUpgradeHealthCheckOnSoam</pre> <p>This command creates three files in /var/TKLC/db/filemgmt/UpgradeHealthCheck/ with the filename format:</p> <pre><SOserver_name>_ServerStatusReport_<date-time>.xml <SOserver_name>_ComAgentConnStatusReport_<date-time>.xml</pre> <p>If any alarms are present in the system:</p> <pre><SOserver_name>_AlarmStatusReport_<date-time>.xml</pre> <p>If the system is PDRA, one additional file is generated:</p> <pre><SOserver_name>_SBRStatusReport_<date-time>.xml</pre> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> If the message “Server <hostname> needs operator attention before upgrade” is output, inspect the Server Status Report to determine the reason for the message. If the following message appears in the Server Status Report, the alert can be ignored: Server <hostname> has no alarm with DB State as Normal and Process state as Kill. <p>Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p> <ol style="list-style-type: none"> Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.
2. <input type="checkbox"/>	<u>ACTIVE SOAM CLI:</u> Capture Diameter Maintenance Status	<p>Capture Diameter Maintenance status.</p> <ol style="list-style-type: none"> Enter the command: <pre>\$ upgradeHealthCheck diameterMaintStatus</pre> <p>This command will output a series of messages, providing Diameter Maintenance status. Capture this output and save for later use. Note: the output is also captured in /var/TKLC/db/filemgmt/UpgradeHealthCheck.log.</p> <p>Note: The message “FIPS integrity verification test failed” may be output when the upgradeHealthCheck command runs. This message can be ignored.</p>

Procedure 35: Alternate Site Post-Upgrade Health Check

<p>3.</p> <p><input type="checkbox"/></p>	<p><u>ACTIVE SOAM CLI:</u></p> <p>View DA-MP Status</p>	<p>Capture DA-MP status.</p> <p>1. Enter the command:</p> <pre>\$ upgradeHealthCheck daMpStatus</pre> <p>This command outputs status to the screen for review.</p> <p>Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.</p> <p>2. Verify all Peer MPs are available</p> <p>3. Note the number of Total Connections Established _____</p>
<p>4.</p> <p><input type="checkbox"/></p>	<p>Verify system health</p>	<p>Verify that the health check status of the upgraded site as collected in this procedure is the same as the pre-upgrade health checks taken in Procedure 2. If system operation is degraded, it is recommended to report it to MOS.</p>

THIS PROCEDURE HAS BEEN COMPLETED.

6 BACKOUT PROCEDURE OVERVIEW

The procedures provided in this section return the individual servers and the overall DSR system to the source release after an upgrade is aborted. The backout procedures support two options for restoring the source release:

- Emergency backout
- Normal backout

The emergency backout overview is provided in Table 16. These procedures back out the target release software in the fastest possible manner, without regard to traffic impact.

The normal backout overview is provided in

Table 17. These procedures back out the target release software in a more controlled manner, sustaining traffic to the extent possible.

All backout procedures are executed inside a maintenance window.

The backout procedure times provided in Table 16 and

Table 17 are only estimates as the reason to execute a backout has a direct impact on any additional backout preparation that must be done.

Table 16: Emergency Backout Procedure Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 36	0:10-0:30	0:10-0:30	Backout Health Check The reason to execute a backout has a direct impact on any additional backout preparation that must be done. Since all possible reasons cannot be predicted ahead of time, only estimates are given here. Execution time will vary.	None.
Procedure 37	See Note	See Note	Emergency Site Backout: NOTE: Execution time of downgrading entire network is approximately equivalent to execution time taken during upgrade. 0:05 (5 minutes) can be subtracted from total time because ISO Administration is not executed during Backout procedures.	All impacts as applicable in upgrade apply in this procedure. Also backout procedures will cause traffic loss.
Procedure 38	See Note	See Note	Emergency NOAM Backout: NOTE: Execution time of downgrading a single server is approximately equivalent to execution time to upgrade the server.	All impacts as applicable in upgrade apply in this procedure. Also backout procedures will cause traffic loss.
Section 6.8	See Note	See Note	IDIH Backout NOTE: Execution time of downgrading the Oracle server is approximately equivalent to execution time to upgrade the server.	None
Procedure 43	0:01-0:05	Varies	Post-Backout Health Check	None

Table 17. Normal Backout Procedure Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 36	0:10-0:30	0:10-0:30	Backout Health Check The reason to execute a backout has a direct impact on any additional backout preparation that must be done. Since all possible reasons cannot be predicted ahead of time, only estimates are given here. Execution time will vary.	None.
Procedure 39	See Note	See Note	Normal Site Backout: NOTE: Execution time of downgrading entire network is approximately equivalent to execution time taken during upgrade. 0:05 (5 minutes) can be subtracted from total time because ISO Administration is not executed during Backout procedures.	All impacts as applicable in upgrade apply in this procedure. Also backout procedures will cause traffic loss.
Procedure 40	See Note	See Note	Normal NOAM Backout: NOTE: Execution time of downgrading a single server is approximately equivalent to execution time to upgrade the server.	All impacts as applicable in upgrade apply in this procedure. Also backout procedures will cause traffic loss.
Section 6.8	See Note	See Note	IDIH Backout NOTE: Execution time of downgrading the Oracle server is approximately equivalent to execution time to upgrade the server.	None
Procedure 43	0:01-0:05	Varies	Post-Backout Health Check	None

6.1 Recovery Procedures

It is recommended to direct upgrade procedure recovery issues to MOS by referring to Appendix P of this document. Before executing any of these procedures, it is recommended to contact MOS. 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
Before attempting to perform these backout procedures, it is recommended to contact MOS as described in Appendix P.

Warning
Backout procedures WILL cause traffic loss.

NOTE: These recovery procedures are provided for the backout of an Upgrade ONLY (i.e., from a failed 72.y.z release to the previously installed 6.0/7.0.x/7.1.x/7.2 release). Backout of an initial installation is not supported.

6.2 Backout Health Check

This section provides the procedure to verify that the DSR is ready for backout. The site post-upgrade Health Check is used to perform the backout Health Check.

Procedure 36: Backout Health Check

S T E P #	<p>This procedure performs a Health Check on the site prior to backing out the upgrade.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>																								
1	<p>Active NOAM VIP:</p> <p>This procedure will run the automated post-upgrade Health Checks for backout.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. 2. Select the SOAM Server Group tab for the site being backed out. 3. Select the Active SOAM. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <p>Rambler_NO_SG Rambler_DAMP_SG Rambler_DRNO_SG Rambler_SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>Rambler-SO1</td> <td style="background-color: #ffff00;">Accept or Reject Warn</td> <td>Active</td> <td>System OAM</td> <td>OAM</td> <td>7.2.0.0.0-72.17.0</td> </tr> <tr> <td>Rambler-SO2</td> <td style="background-color: #ffff00;">Accept or Reject Warn</td> <td>Standby</td> <td>System OAM</td> <td>OAM</td> <td>7.2.0.0.0-72.17.0</td> </tr> </tbody> </table> <p>Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	Rambler-SO1	Accept or Reject Warn	Active	System OAM	OAM	7.2.0.0.0-72.17.0	Rambler-SO2	Accept or Reject Warn	Standby	System OAM	OAM	7.2.0.0.0-72.17.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																				
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																				
Rambler-SO1	Accept or Reject Warn	Active	System OAM	OAM	7.2.0.0.0-72.17.0																				
Rambler-SO2	Accept or Reject Warn	Standby	System OAM	OAM	7.2.0.0.0-72.17.0																				

Procedure 36: Backout Health Check

	<ol style="list-style-type: none"> Click the Checkup button. The Upgrade [Checkup] screen is displayed. Under Health check options, select the Post Upgrade option. Click Ok. Control returns to the Upgrade screen. <div data-bbox="513 415 1403 768" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Checkup]</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Rambler-SO1</td> <td>Health Check</td> <td>OAM Max HA Role: Active Network Element: SO_Rambler</td> </tr> </tbody> </table> <p>Health check options</p> <p>Checkup Type: <input type="radio"/> Advance Upgrade <input type="radio"/> Pre Upgrade <input checked="" type="radio"/> Post Upgrade</p> <p>Upgrade ISO: - Select - Select the desired upgrade ISO media file.</p> <p style="text-align: right;">Ok Cancel</p> </div>	Hostname	Action	Status	Rambler-SO1	Health Check	OAM Max HA Role: Active Network Element: SO_Rambler																		
Hostname	Action	Status																							
Rambler-SO1	Health Check	OAM Max HA Role: Active Network Element: SO_Rambler																							
<p>2</p> <p>Active NOAM VIP:</p> <p>Monitor health check progress</p>	<p>Monitor for the completion of the Health Check.</p> <ol style="list-style-type: none"> Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <SO_ServerGroup> PostUpgrade Health Check. Monitor the Health Check task until the Task State is completed. The Details column will display a hyperlink to the Health Check report. Click the hyperlink to download the Health Check report. Open the report and review the results. <div data-bbox="513 1062 1403 1360" style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Status Tasks</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Hostname</th> <th>Name</th> <th>Task State</th> <th>Details</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>62</td> <td>Rambler-NO1</td> <td>Rambler_SO_SG PostUpgrade Health Check</td> <td>completed</td> <td>PostUpgrade_HealthCheck_Rambler_SO_SG_20160310-104858-EST.txt</td> <td>100%</td> </tr> <tr> <td>61</td> <td>Rambler-NO1</td> <td>Rambler_SO_SG AdvanceUpgrade Health Check</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_Rambler_SO_SG_20160310-104803-EST.txt</td> <td>100%</td> </tr> <tr> <td>60</td> <td>Rambler-NO1</td> <td>Rambler_SO_SG AdvanceUpgrade Health</td> <td>completed</td> <td>AdvanceUpgrade_HealthCheck_Rambler_SO_SG_20160310-104803-EST.txt</td> <td>100%</td> </tr> </tbody> </table> </div>	ID	Hostname	Name	Task State	Details	Progress	62	Rambler-NO1	Rambler_SO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_Rambler_SO_SG_20160310-104858-EST.txt	100%	61	Rambler-NO1	Rambler_SO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck_Rambler_SO_SG_20160310-104803-EST.txt	100%	60	Rambler-NO1	Rambler_SO_SG AdvanceUpgrade Health	completed	AdvanceUpgrade_HealthCheck_Rambler_SO_SG_20160310-104803-EST.txt	100%
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<p>3</p> <p>Active NOAM VIP:</p> <p>Analyze health check results</p>	<p>Analyze Health Check results. If the Health Check report status is anything other than "Pass", the Health Check logs can be analyzed to determine if the backout can proceed.</p> <ol style="list-style-type: none"> Select Status & Manage > Files. The Files screen is displayed. Select the file named "UpgradeHealthCheck.log" and click View. Locate the log entries for the most recent health check. Review the log for failures. Analyze the failures and determine if it is safe to continue the backout. If necessary, it is recommended to contact MOS for guidance as described in Appendix P. 																								

Procedure 36: Backout Health Check

<p>4</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u> Identify IP addresses of servers to be backed out</p>	<ol style="list-style-type: none">1. Select 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. Using the data recorded in Table 3, note the XMI/iLO/LOM IP addresses of all the hostnames to be backed out. These are required to access the server when performing the backout. <p>The reason to execute a backout has a direct impact on any additional backout preparation that must be done. The backout procedures WILL cause traffic loss. Since all possible reasons cannot be predicted ahead of time, it is recommended to contact MOS as stated in the Warning box above.</p>
<p>5</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u> Verify backup archive files</p>	<ol style="list-style-type: none">1. Select Status & Manage > Files.2. For each server to be backed out, select the server tab on the Files screen. Verify that the two backup archive files, created in section 3.3.4, are present on every server that is to be backed out. These archive files will have the format: Backup.<application>.<server>.FullDBParts.<role>.<date_time>.UPG.tar.bz2 Backup. <application>.<server>.FullRunEnv.<role>.<date_time>.UPG.tar.bz2

THIS PROCEDURE HAS BEEN COMPLETED.

EMERGENCY SITE BACKOUT

Use this section to perform an emergency backout of a DSR upgrade

6.3 Perform Emergency Backout

The procedures in this section perform a backout of all servers to restore the source release. An emergency backout can only be executed once all necessary corrective setup steps have been taken to prepare for the backout. It is recommended to contact MOS, as stated in the warning box in Section 6.1, to verify that all corrective setup steps have been taken.

6.3.1 Emergency Site Backout

The procedures in this section backout all servers at a specific site without regard to traffic impact.




!! WARNING!!

EXECUTING THIS PROCEDURE WILL RESULT IN A TOTAL LOSS OF ALL TRAFFIC BEING PROCESSED BY THIS DSR. TRAFFIC BEING PROCESSED BY THE MATE DSR IS NOT AFFECTED.

Procedure 37: Emergency Site Backout

<p>S T E P #</p>	<p>This procedure is used to backout the DSR application software from multiple B- and C-level servers for a specific site. Any server requiring backout can be included: SOAMs, DA-MPs, SS7-MPs, IPFEs, SBRs, and even TVOE hosts.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p><u>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</u></p>	
<p>1. <input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Identify all servers that require Backout</p>	<p>Identify all servers that require Backout (within a Site):</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Administration >Software Management >Upgrade. The Upgrade Administration screen is displayed. 3. Identify the servers in the respective Server Groups with the target release Application Version value. These servers were previously upgraded but now require Backout. 4. Make note of these servers. They have been identified for backout. 5. Before initiating the backout procedure, remove all new blades and/or sites configured after upgrade was started.

Procedure 37: Emergency Site Backout

<p>2.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Disable Global Provisioning (if not already done)</p>	<p>Disable provisioning and configuration updates on the entire network (if not done previously):</p> <p>Since this step is being executed during a backout procedure, it is likely that provisioning and configuration updates are disabled already. If they have not been disabled, execute the following steps to disable provisioning:</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Database. The Database Status screen is displayed. 2. Click the Disable Provisioning button. 3. Confirm the operation by clicking Ok in the popup dialog box. 4. Verify the button text changes to Enable Provisioning. A yellow information box will be displayed at the top of the view screen which states: [Warning Code 002] - Global provisioning has been manually disabled. <p>The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>
<p>3.</p> <p><input type="checkbox"/></p>	<p><u>Active SOAM VIP:</u></p> <p>Disable Site Provisioning for the site to be backed out.</p>	<p>Disable Site Provisioning</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > Database The Database Status screen is displayed 3. Click the Disable Site Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Enable Site Provisioning. A yellow information box will be displayed at the top of the view screen which states: [Warning Code 004] - Site provisioning has been manually disabled. <p>The Active SOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>
		<p>!WARNING! STEP 4 WILL RESULT IN A TOTAL LOSS OF ALL TRAFFIC BEING PROCESSED BY THIS DSR</p>
<p>4.</p> <p><input type="checkbox"/></p>	<p>Backout all C-level servers, as applicable</p>	<p><u>For all configurations:</u></p> <p>Backout all C-level servers (IPFEs, SBRs, SBRs, DA-MPs, and SS7-MPs) identified in step 1: Execute Section 6.6, Backout Multiple Servers.</p>
<p>5.</p> <p><input type="checkbox"/></p>	<p>Backout the Standby and Spare SOAM servers, as applicable</p>	<p>Backout the Standby and Spare DSR SOAM servers:</p> <p>If Standby and Spare SOAM servers are present: Execute Section 6.6, Backout Multiple Servers.</p> <p>If only a Spare SOAM server is present: Execute Section 6.5, Backout Single Server.</p>
<p>6.</p> <p><input type="checkbox"/></p>	<p>Backout the Active SOAM</p>	<p>Backout the Active DSR SOAM server: Execute Section 6.5, Backout Single Server.</p>

Procedure 37: Emergency Site Backout

<p>7.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Prep for TVOE backout TVOE, if upgraded previously</p>	<p>If the SOAM is a guest under the same host as a NOAM, do not backout the TVOE at this time. Proceed to step 11.</p> <p>Otherwise, if the SOAM is a guest of the TVOE software, determine if TVOE backout is required (if upgraded previously). If backout is not required, proceed to step 11.</p> <p>Execute the following steps for the SOAM TVOE server upgraded previously.</p> <p>Disable all applications running on the TVOE server.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Stop button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers changes to 'Disabled'.
<p>8.</p> <p><input type="checkbox"/></p>	<p>TVOE CLI:</p> <p>Backout TVOE</p>	<p>Backout the TVOE upgrade.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host <pre>ssh admusr@<TVOE IP> password: <enter password></pre> 2. List the guests running on the current TVOE host by using following command : <pre>\$ sudo virsh list</pre> <p>NOTE: the output of above command will list all guests running on the TVOE host.</p> 3. Execute the following command for each guest listed: <pre>\$ sudo virsh shutdown <guestname></pre> <p>NOTE: Shutting down applications may lead to lost VIP. Wait until all TVOE servers on which SOAM(s) are hosted are successfully backed out.</p> 4. Periodically execute the following command until the command displays no entries. This means that all VMs have been properly shut down : <pre>\$ sudo virsh list</pre> 5. Backout TVOE on the blade according to reference [3].

Procedure 37: Emergency Site Backout

<p>9.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u></p> <p>Start TVOE guests</p>	<p>Restart the TVOE guests.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>ssh admusr@<TVOE IP> password: <enter password></pre> 2. Execute the following command to start the TVOE guest shutdown in step 8 above (if not already started). <pre>\$ sudo virsh start <guestname></pre> 3. Periodically execute the following command until the command displays all the VM guests running. <pre>\$ sudo virsh list</pre>
<p>10.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Enable applications</p>	<p>Enable all applications running on the backed out TVOE server.</p> <ol style="list-style-type: none"> 1. Log into the NOAM VIP GUI 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Restart button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers is changed to 'Enabled'. <p>Repeat steps 7 thru 10 for another TVOE server hosting a SOAM (as applicable).</p>
<p>11.</p> <p><input type="checkbox"/></p>	<p><u>Active SOAM VIP:</u></p> <p>Enable Site Provisioning</p>	<p>Enable Site provisioning.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > Database. The Database Status screen is displayed 3. Click the Enable Site Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Disable Site Provisioning.

THIS PROCEDURE HAS BEEN COMPLETED.

NOTE: If another site is to be backed out, follow all procedures in Table 16 in another maintenance window.

6.3.2 Emergency NOAM Backout

The procedures in this section backout the NOAM servers.

Procedure 38: Emergency NOAM Backout

S T E P #	<p>This procedure is used to perform an emergency backout of the DSR application software from the NOAM servers. This includes the DSR NOAMs, DR NOAMs, and TVOE hosts. This procedure backs out the application software as quickly as possible, without regard to operational impact.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>	
1. <input type="checkbox"/>	Backout Standby DR NOAM server (if equipped)	<p>Backout the Standby DR NOAM server:</p> <p>Execute Section 6.5 Backout Single Server.</p>
2. <input type="checkbox"/>	Backout Active DR NOAM server (if equipped)	<p>Backout the other DR NOAM server (now the Standby):</p> <p>Execute Section 6.5 Backout Single Server.</p>
3. <input type="checkbox"/>	Backout Standby DSR NOAM server (as applicable)	<p>Backout the Standby DSR NOAM server:</p> <p>Execute Section 6.5 Backout Single Server.</p>
4. <input type="checkbox"/>	Backout Active DSR NOAM server	<p>Backout the other DSR NOAM server (now the standby):</p> <p>Execute Section 6.5 Backout Single Server.</p>
5. <input type="checkbox"/>	<p><u>Active NOAM VIP:</u></p> <p>Disable applications</p>	<p>If the NOAM is a guest of the TVOE software, determine if TVOE backout is required (if upgraded previously). If backout is not required then proceed to step 9.</p> <p>Execute the following steps for each TVOE server upgraded previously. Disable all applications running on the TVOE server.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Stop button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers changes to 'Disabled'.

Procedure 38: Emergency NOAM Backout

<p>6.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u></p> <p>Backout TVOE if upgraded previously</p>	<p>Backout TVOE. This step is executed only if TVOE was upgraded as part of the DSR upgrade.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>\$ ssh admusr@<TVOE IP> password: <enter password></pre> 2. List the guests running on the current TVOE host: <pre>\$ sudo virsh list</pre> <p>The output of this command will list all guests running on the TVOE host.</p> 3. Execute the following command for each guest listed : <pre>\$ sudo virsh shutdown <guestname></pre> <p>NOTE: Shutting down applications may lead to lost VIP. Wait until all TVOE servers on which NOAM(s) are hosted are successfully backed out.</p> 4. Periodically execute the following command until the command displays no entries. This means that all VMs have been properly shut down : <pre>\$ sudo virsh list</pre> 5. Backout TVOE on the blade according to reference [3].
<p>7.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u></p> <p>Start TVOE guests</p>	<p>Restart the TVOE guests.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>\$ ssh admusr@<TVOE IP> password: <enter password></pre> 2. Execute the following command to start the TVOE guests shutdown in step 6 (if not already started). <pre>\$ sudo virsh start <guestname></pre> 3. Periodically execute the following command until the command displays all the VM guests running. <pre>\$ sudo virsh list</pre>
<p>8.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Enable applications</p>	<p>Enable all applications running on the backed out TVOE server.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Restart button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers is changed to 'Enabled'. <p>Repeat steps 5 thru 8 for another TVOE server hosting a NOAM (as applicable).</p>

Procedure 38: Emergency NOAM Backout

<p>9.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Enable Global Provisioning</p>	<p>Enable global provisioning and configuration updates on the entire network</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Database The Database Status screen is displayed. 3. Click the Enable Provisioning button. 4. Verify the button text changes to Disable Provisioning.
<p>10.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Remove 'Ready' state for any backed out server</p>	<p>Remove 'Ready' state</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Servers. The Server Status screen is displayed. 2. If any backed-out server Application Status is 'Disabled', then select the server row and press the Restart button. 3. Select Administration >Software Management >Upgrade The Upgrade Administration screen is displayed. 4. If any backed-out server shows an Upgrade State of "Ready" or "Success", then select that server and press the Complete Upgrade button. Otherwise, skip this step. The Upgrade [Make Ready] screen will appear. 5. Click OK. This will now remove the Forced Standby designation for the backed-out server. <p>NOTE: Due to backout being initiated from the command line instead of through the GUI, the following SOAP error may appear in the GUI banner.</p> <pre>SOAP error while clearing upgrade status of hostname=[frame10311b6] ip=[172.16.1.28]</pre> <p>It is safe to ignore this error message.</p> <ol style="list-style-type: none"> 6. Verify the Application Version value for servers has been downgraded to the original release version.

THIS PROCEDURE HAS BEEN COMPLETED.

NORMAL SITE BACKOUT

Use this section to perform a normal backout of a DSR upgrade

6.4 Perform Normal Backout

The following procedures to perform a normal backout can only be executed once all necessary corrective setup steps have been taken to prepare for the backout. It is recommended to contact MOS, as stated in the warning box in Section 6.1, to verify that all corrective setup steps have been taken.


6.4.1 Normal Site Backout

The procedures in this section backout all servers at a specific site.

Procedure 39: Normal Site Backout

<p>S T E P #</p>	<p>This procedure is used to backout an upgrade of the DSR application software from multiple servers in the network. Any server requiring backout can be included: SOAMs, DA-MPs, SS7-MPs, IPFEs, SBRs, and even TVOE hosts.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
<p>1.</p>	<p><u>Active NOAM VIP:</u></p> <p>Identify all servers that require Backout</p>	<p>Identify all servers that require Backout (within a Site):</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Administration >Software Management > Upgrade. The Upgrade Administration screen is displayed. 3. Identify the servers in the respective Server Groups with the target release Application Version value. These servers were previously upgraded but now require Backout. 4. Make note of these servers. They have been identified for Backout. 5. Before initiating the backout procedure, remove all new blades and/or sites configured after upgrade was started.
<p>2.</p>	<p><u>Active NOAM VIP:</u></p> <p>Disable Global Provisioning (if not already done)</p>	<p>Disable provisioning and configuration updates on the entire network (if not done previously:</p> <p>Since this step is being executed during a backout procedure, it is likely that provisioning and configuration updates are disabled already. If they have not been disabled, execute the following steps to disable provisioning:</p> <ol style="list-style-type: none"> 1. Select Status & Manage > Database. The Database Status screen is displayed. 2. Click the Disable Provisioning button. 3. Confirm the operation by clicking Ok in the popup dialog box. 4. Verify the button text changes to Enable Provisioning. A yellow information box should also be displayed at the top of the view screen which states: [Warning Code 002] - Global provisioning has been manually disabled. <p>The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>

Procedure 39: Normal Site Backout

<p>3.</p> <p><input type="checkbox"/></p>	<p>Active SOAM VIP:</p> <p>Disable Site Provisioning for the site to be backed out</p>	<p>Disable Site Provisioning</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI using the VIP. 2. Select Status & Manage > Database The Database Status screen is displayed 3. Click the Disable Site Provisioning button. 4. Confirm the operation by clicking Ok in the popup dialog box. 5. Verify the button text changes to Enable Site Provisioning. A yellow information box should also be displayed at the top of the view screen which states: [Warning Code 004] - Site provisioning has been manually disabled. <p>The Active SOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)</p>																						
<p>4.</p> <p><input type="checkbox"/></p>	<p>Backout the first set of C-level servers as applicable</p>	<p>Backout the first set of servers. The following servers can be backed out in parallel (as applicable)</p> <ul style="list-style-type: none"> • Standby DA-MP for 1+1 (Active/Standby) configuration, or • ½ of all DA-MPs for N+0 (Multi-Active) configuration • Standby SBR(s) • Spare SBR(s) • ½ of all SS7-MPs • ½ of all IPFEs <p>NOTE: In a PCA System, the Spare SBR server is located at the mated site of the site being backed out.</p> <p>Execute 6.6 - Backout Multiple Servers for the C-level servers identified above.</p>																						
<p></p>		<p>!WARNING! Failure to comply with step 5 and step 6 may result in the loss of PCA traffic, resulting in service impact</p>																						
<p>5.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify Standby SBR server status</p>	<p>If the server being backed out is the Standby SBR, execute this step. Otherwise, continue with step 6.</p> <ol style="list-style-type: none"> 1. Navigate to Main Menu > Policy and Charging > Maintenance > SBR Status. Open the tab of the server group being upgraded. 2. Do not proceed to step 6 until the Resource HA Role for the Standby server has a status of Standby. <p>Main Menu: Policy and Charging -> Maintenance -> SBR Status</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Filter <input type="text"/></p> <p>PCA_MATED_SITES</p> <table border="1"> <thead> <tr> <th>Server Group Name</th> <th>Resource Domain Name</th> <th>Resource Domain Profile</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> GTR_SBR_SG_A</td> <td>PCA_SESSION</td> <td>Policy and Charging Session</td> </tr> <tr> <th>Server Name</th> <th>Resource HA Role</th> <th>Congestion Level</th> <th>Sub Resources Hosted</th> </tr> <tr> <td>GTR-SBR-1A</td> <td>Active</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> <tr> <td>GTR-SBR-1B</td> <td>Standby</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> <tr> <td>NSX-SBR-1Sp</td> <td>Spare</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> </tbody> </table> </div>	Server Group Name	Resource Domain Name	Resource Domain Profile	<input type="checkbox"/> GTR_SBR_SG_A	PCA_SESSION	Policy and Charging Session	Server Name	Resource HA Role	Congestion Level	Sub Resources Hosted	GTR-SBR-1A	Active	Normal	0,1,2,3,4,5,6,7	GTR-SBR-1B	Standby	Normal	0,1,2,3,4,5,6,7	NSX-SBR-1Sp	Spare	Normal	0,1,2,3,4,5,6,7
Server Group Name	Resource Domain Name	Resource Domain Profile																						
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GTR-SBR-1A	Active	Normal	0,1,2,3,4,5,6,7																					
GTR-SBR-1B	Standby	Normal	0,1,2,3,4,5,6,7																					
NSX-SBR-1Sp	Spare	Normal	0,1,2,3,4,5,6,7																					

Procedure 39: Normal Site Backout

<p>6.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify bulk download is complete</p>	<p>Verify that bulk download is complete between the Active SBR in the server group to the Standby and Spare SBRs.</p> <ol style="list-style-type: none"> 1. Navigate to Main Menu > Alarm & Event > View History 2. Export the Event Log using the following filter: Server Group: Choose the SBR group that is in upgrade Display Filter: Event ID = 31127 – DB Replication Audit Complete Collection Interval: X hours ending in current time, where X is the time from upgrade completion of the Standby and Spare servers to the current time. 3. Wait for the following instances of Event 31127: <ul style="list-style-type: none"> • 1 for the Standby Binding SBR server • 1 for the Standby Session SBR server • 1 for the Spare Binding SBR server • 1 for the Spare Session SBR server • 1 for the 2nd Spare Binding SBR server, if equipped • 1 for the 2nd Spare Session SBR server, if equipped <p>NOTE: There is an expected loss of traffic depending on size of the bulk download. This must be noted along with events captured.</p>
<p>7.</p> <p><input type="checkbox"/></p>	<p>Backout remaining C-level servers, as applicable</p>	<p>Backout the next set of servers. The following servers can be backed out in parallel (as applicable)</p> <ul style="list-style-type: none"> • Active DA-MP for 1+1 (Active/Standby) configuration, or • ½ of all DA-MPs for N+0 (Multi-Active) configuration • Active SBR(s) • ½ of all SS7-MPs • ½ of all IPFEs <p>Execute 6.5, Backout Single Server for each C-level server identified above.</p>
<p>8.</p> <p><input type="checkbox"/></p>	<p>Backout the Standby SOAM server</p>	<p>Backout the Standby DSR SOAM server:</p> <p>Execute Section 6.5 Backout Single Server.</p>
<p>9.</p> <p><input type="checkbox"/></p>	<p>Backout Active SOAM Server</p>	<p>Backout the Active DSR SOAM server:</p> <p>Execute Section 6.5 Backout Single Server.</p>
<p>10.</p> <p><input type="checkbox"/></p>	<p>Backout Spare SOAM Server (if applicable)</p>	<p>NOTE: The Spare server is located at the mated site of the site being backed out.</p> <p>Backout the spare SOAM server:</p> <p>Execute Section 6.5 Backout Single Server.</p>
<p>11.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Disable applications</p>	<p>If the SOAM is a guest under the same host as a NOAM, do not backout the TVOE at this time. Proceed to step 15.</p> <p>Otherwise, if the SOAM is a guest of the TVOE software, determine if TVOE backout is required (if upgraded previously). If backout is not required, then proceed to step 15.</p> <p>Execute the following steps for a TVOE server previously upgraded.</p> <p>Disable all applications running on the TVOE server.</p> <ol style="list-style-type: none"> 1. Login to the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Stop button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers changes to 'Disabled'.

Procedure 39: Normal Site Backout

<p>12.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u></p> <p>Backout TVOE if upgraded previously</p>	<p>Backout TVOE. This step is executed only if TVOE was upgraded as part of the DSR upgrade.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>\$ ssh admusr@<TVOE IP> password: <enter password></pre> 2. List the guests running on the TVOE host: <pre>\$ sudo virsh list</pre> <p>The output of the command will list all guests running on the TVOE host.</p> 3. Execute the following command for each guest listed : <pre>\$ sudo virsh shutdown <guestname></pre> <p>NOTE: Shutting down applications may lead to lost VIP. Wait until all TVOE servers on which SOAM(s) are hosted are successfully backed out.</p> 4. Periodically execute the following command until the command displays no entries. This means that all VMs have been properly shut down : <pre>\$ sudo virsh list</pre> 5. Backout TVOE on the blade according to reference [3].
<p>13.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u></p> <p>Start TVOE guests</p>	<p>Restart the TVOE guests.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>ssh admusr@<TVOE IP> password: <enter password></pre> 2. Execute the following command to start the TVOE guest shutdown in step 15 (if not already started). <pre>\$ sudo virsh start <guestname></pre> 3. Periodically execute the following command until the command displays all the VM guests running. <pre>\$ sudo virsh list</pre>
<p>14.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Enable applications</p>	<p>Enable all applications running on the backed out TVOE server.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Restart button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers is changed to 'Enabled'. <p>Repeat steps 11 thru 14 for another TVOE server hosting a SOAM (as applicable).</p>

Procedure 39: Normal Site Backout

15. <input type="checkbox"/>	Active SOAM VIP: Enable Site Provisioning	Enable Site provisioning <ol style="list-style-type: none">1. Log into the SOAM GUI using the VIP.2. Select Status & Manage > Database. The Database Status screen is displayed3. Click the Enable Site Provisioning button.4. Confirm the operation by clicking Ok in the popup dialog box.5. Verify the button text changes to Disable Site Provisioning
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

NOTE: If another site is to be backed out, follow all procedures in

Table 17 in another maintenance window.

6.4.2 Normal NOAM Backout

The procedures in this section backout the NOAM servers.

Procedure 40: Normal NOAM Backout

S T E P #	This procedure is used to perform a normal backout of the DSR application software from the NOAM servers. This includes the DSR NOAMs, DR NOAMs, and TVOE hosts.		
	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.		
	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE		
	1. <input type="checkbox"/>	Backout Standby DR NOAM server (if equipped).	Backout the Standby DR NOAM server: Execute Section 6.5 Backout Single Server.
	2. <input type="checkbox"/>	Backout Active DR NOAM server (if equipped).	Backout the other DR NOAM server (now the Standby): Execute Section 6.5 Backout Single Server.
3. <input type="checkbox"/>	Backout Standby DSR NOAM server (as applicable).	Backout the Standby DSR NOAM server: Execute Section 6.5 Backout Single Server.	
4. <input type="checkbox"/>	Backout Active DSR NOAM server.	Backout the Active NOAM server: Execute Section 6.5 Backout Single Server.	
5. <input type="checkbox"/>	Active NOAM VIP: Disable applications	If the NOAM is a guest of the TVOE software, determine if TVOE backout is required (if upgraded previously). If backout is not required then proceed to step 9. Execute the following steps for a TVOE server upgraded previously. Disable all applications running on the TVOE server. <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Stop button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers changes to 'Disabled'. 	

Procedure 40: Normal NOAM Backout

<p>6.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u> Backout TVOE if upgraded previously</p>	<p>Backout TVOE. This step is executed only if the TVOE was upgraded as part of the DSR upgrade.</p> <ol style="list-style-type: none"> 1. Login to the TVOE host: <pre>ssh admusr@<TVOE IP> password: <enter password></pre> 2. List the guests running on the TVOE: <pre>\$ sudo virsh list</pre> <p>The output of the command will list all guests running on the TVOE host.</p> 3. Execute the following command for each guest listed : <pre>\$ sudo virsh shutdown <guestname></pre> <p>NOTE: Shutting down applications may lead to lost VIP. Wait until all TVOE servers on which NOAM(s) are hosted are successfully backed out.</p> 4. Periodically execute the following command until the command displays no entries. This means that all VMs have been properly shut down : <pre>\$ sudo virsh list</pre> 5. Backout TVOE on the blade according to reference [3].
<p>7.</p> <p><input type="checkbox"/></p>	<p><u>TVOE CLI:</u> Start TVOE guests</p>	<p>Restart the TVOE guests.</p> <ol style="list-style-type: none"> 1. Log into the TVOE host: <pre>ssh admusr@<TVOE IP> password: <enter password></pre> 2. Execute the following command to start the TVOE guests shutdown in step 6 (if not already started). <pre>\$ sudo virsh start <guestname></pre> 3. Periodically execute the following command until the command displays all the VM guests running. <pre>\$ sudo virsh list</pre>
<p>8.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u> Enable applications</p>	<p>Enable all applications running on the backed out TVOE server:</p> <ol style="list-style-type: none"> 1. Log into the NOAM VIP GUI 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all applications running on the current TVOE server. 4. Click the Restart button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all selected servers is changed to 'Enabled'. <p>Repeat steps 5 thru 8 for another TVOE server hosting an NOAM (as applicable).</p>


Procedure 40: Normal NOAM Backout

9. <input type="checkbox"/>	<u>Active NOAM VIP:</u> Enable Global Provisioning	Enable global provisioning and configuration updates on the entire network <ol style="list-style-type: none">1. Log into the NOAM GUI using the VIP.2. Select Status & Manage > Database The Database Status screen is displayed.3. Click the Enable Provisioning button.4. Verify the button text changes to Disable Provisioning.
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THIS PROCEDURE HAS BEEN COMPLETED.

6.5 Backout Single Server

This section provides the procedures to backout the application software on a single server.

	<p>THIS PROCEDURE IS EXECUTED AS A COMPONENT OF THE EMERGENCY BACKOUT PROCEDURE (SECTION 6.3) OR THE NORMAL BACKOUT PROCEDURE (SECTION 6.4). THIS PROCEDURE SHOULD NEVER BE EXECUTED AS A STANDALONE PROCEDURE.</p>
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Procedure 41: Backout Single Server

<p>S T E P #</p>	<p>This procedure will backout the upgrade of DSR 7.3 application software. Any server requiring backout can be included: NOAMs, SOAMs, DA-MPs, SS7-MPs, IPFEs, SBRs, and even TVOE hosts.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
<p>1</p>	<p>Active NOAM VIP:</p> <p>Prepare the server for backout.</p> <p>For Active NOAM on release 7.1 or later only</p>	<p>Perform the following steps to prepare the server for backout.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 2. Select the server group tab containing the server to be backed out. Verify the Upgrade State is 'Accept or Reject'. <p>Make the server 'Backout Ready' as follows:</p> <ol style="list-style-type: none"> 3. Select Status & Manage > HA. The HA status screen displays. 4. Click the Edit button. 5. Select the server to be backed out and choose a Max Allowed HA Role value of Standby (unless it is a Query server, in which case the value should remain set to Observer). <p>Note: When the Active NOAM is the server being backed out, selecting OK will initiate an HA switchover, causing the GUI session to log out. Before logging into the Active OAM again, close and re-open the browser using the VIP address for the NOAM, and then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.</p> <ol style="list-style-type: none"> 6. Click the Ok button. 7. The HA status screen displays. Verify the Max Allowed HA Role is set to the desired value for the server. 8. Select Status & Manage > Server. The server status screen is displayed. 9. Select the server to be backed out and click Stop. Click Ok to confirm the operation, then verify the Appl State changes to Disabled. 10. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 11. Select the tab of the server group containing the server to be backed out. Verify the Upgrade State is now Backout Ready. (Note: It may take a couple of minutes for the status to update.)
<p>2</p>	<p>Server CLI:</p> <p>SSH to server</p>	<p>Use an SSH client to connect to the server (e.g. ssh, putty):</p> <pre>ssh admusr@<server address> password: <enter password></pre> <p>NOTE: If direct access to the IMI is not available, or if TVOE is installed on a blade, then access the target server via a connection through the Active NOAM. SSH to the Active NOAM XMI first. From there, SSH to the target server's IMI address.</p>

Procedure 41: Backout Single Server

<p>3</p> <p>Server CLI:</p> <p>Execute the backout</p>		<p>Execute following command to find the state of the server to be backed out. :</p> <pre>\$ ha.mystate</pre> <p>In the example output below, the HA state is Standby.</p> <pre>[admusr@SO2 ~]# ha.mystate resourceId role node subResources lastUpdate DbReplication Stby B2435.024 0 0127:113603.435 VIP Stby B2435.024 0 0127:113603.438 SbrBBaseRepl OOS B2435.024 0 0127:113601.918 SbrBindingRes OOS B2435.024 0 0127:113601.918 SbrSBaseRepl OOS B2435.024 0 0127:113601.918 SbrSessionRes OOS B2435.024 0 0127:113601.918 CacdProcessRes OOS B2435.024 0 0127:113601.918 DA_MP_Leader OOS B2435.024 0 0127:113601.917 DSR_SLDB OOS B2435.024 0-63 0127:113601.917 VIP_DA_MP OOS B2435.024 0-63 0127:113601.917 EXGSTACK_Process OOS B2435.024 0-63 0127:113601.917 DSR_Process OOS B2435.024 0-63 0127:113601.917 CAPM_HELP_Proc Stby B2435.024 0 0127:113603.272 DSROAM_Proc OOS B2435.024 0 0128:081123.951</pre> <pre>\$ sudo /var/TKLC/backout/reject</pre> <p>NOTE: If backout prompts to continue, answer “y”.</p> <p>(The reject command will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p> <p>Sample output of the reject script:</p> <pre>Applications Enabled. Running /usr/TKLC/plat/bin/service_conf reconfig Remove isometadata (appRev) file from upgrade Reverting platform revision file RCS_VERSION=1.4 Creating boot script: /etc/rc3.d/S89backout Rebuilding RPM database. This may take a moment... rpmdb_load: /var/lib/rpm/Packages: unexpected file type or format Cleaning up chroot environment... A reboot of the server is required. The server will be rebooted in 10 seconds</pre>
<p>4</p>	<p>Backout proceeds</p>	<p>Many informational messages are output to the terminal screen as the backout proceeds.</p> <p>Finally, after backout is complete, the server will automatically reboot.</p>
<p>5</p> <p>Server CLI:</p> <p>SSH to server</p>		<p>Use an SSH client to connect to the server (e.g. ssh, putty):</p> <pre>ssh admusr@<server address> password: <enter password></pre>

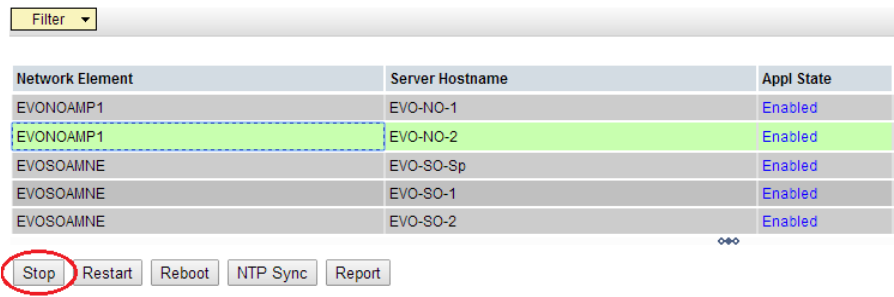
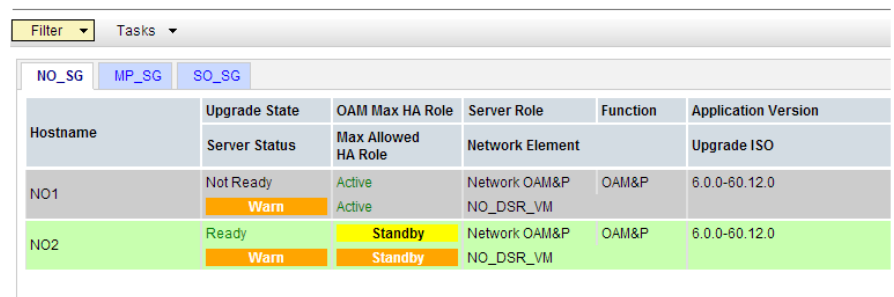
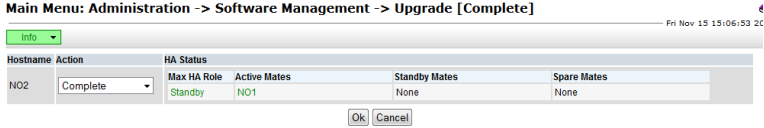
Procedure 41: Backout Single Server

<p>6</p> <p>Server CLI:</p> <p>Restore the full DB run environment</p>	<p>1. Execute the backout_restore utility to restore the full database run environment:</p> <pre>\$ sudo /var/tmp/backout_restore</pre> <p>NOTE: If prompted to proceed, answer “y”.</p> <p>NOTE: In some incremental upgrade scenarios, the backout_restore file will not be found in the /var/tmp directory, resulting in the following error message:</p> <pre>/var/tmp/backout_restore: No such file or directory</pre> <p>If this message occurs, copy the file from /usr/TKLC/appworks/sbin to /var/tmp and repeat sub-step 1.</p> <p>(The backout_restore command will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p> <p>If the restore was successful, the following will be displayed:</p> <pre>Success: Full restore of COMCOL run env has completed. Return to the backout procedure document for further instruction.</pre> <p>If an error is encountered and reported by the utility, it is recommended to consult with MOS by referring to Appendix P of this document for further instructions.</p>
<p>7</p> <p>Server CLI:</p> <p>Verify the backout</p>	<p>1. Examine the output of the following commands to determine if any errors were reported:</p> <pre>\$ sudo verifyUpgrade</pre> <p>Note: The verifyUpgrade command will detect errors that occurred in the initial upgrade, as well as errors that occurred during the backout. Disregard the initial upgrade errors.</p> <p>Note: Disregard the following TKLCplat.sh error:</p> <pre>[root@NO1 ~]# verifyUpgrade ERROR: TKLCplat.sh is required by upgrade.sh! ERROR: Could not load shell library! ERROR: LIB: /var/TKLC/log/upgrade/verifyUpgrade/upgrade.sh ERROR: RC: 1</pre> <p>If the server is on release 7.0.x and later:</p> <pre>\$ sudo verifyBackout</pre> <p>The following command will show the current rev on the server:</p> <pre>\$ appRev Install Time: Wed Feb 25 02:52:47 2015 Product Name: DSR Product Release: 7.1.0.0.0_71.10.0 Base Distro Product: TPD Base Distro Release: 7.0.0.0.0_86.14.0 Base Distro ISO: TPD.install-7.0.0.0.0_86.14.0- OracleLinux6.5-x86_64.iso ISO name: DSR-7.1.0.0.0_71.10.0-x86_64.iso OS: OracleLinux 6.5</pre> <p>2. If the backout was not successful because other errors were recorded in the logs, it is recommended to contact MOS by referring to Appendix P of this document for further instructions.</p> <p>3. If the backout was successful (no errors or failures), then continue with the next step.</p>

Procedure 41: Backout Single Server

8 □	<p>Server CLI: Reboot the server</p>	<p>Enter the following command to reboot the server:</p> <pre>\$ sudo init 6</pre> <p>This step can take several minutes.</p>
9 □	<p>Server CLI: Verify services restart (NOAM/SOAM only)</p>	<p>If the server being backed out is a NOAM or SOAM, perform this step; otherwise proceed to step 10.</p> <p>Verify OAM services have restarted.</p> <ol style="list-style-type: none"> 1. Wait several (approx. 6 minutes) minutes for a reboot to complete before attempting to log back into the server. 2. SSH to the server and log in. <pre>login as: admusr password: <enter password></pre> 3. Execute the following command to verify the httpd service is running. <pre>\$ sudo service httpd status</pre> 4. The expected output displays httpd is running (the process IDs are variable so the list of numbers can be ignored): <pre>httpd <process IDs will be listed here> is running...</pre> <p>If httpd is not running, repeat sub-steps 3 and 4 for a few minutes. If httpd is still not running after 3 minutes, then services have failed to restart. It is recommended to contact MOS by referring to Appendix P of this document for further instructions.</p>
10 □	<p>Active NOAM VIP: Verify server states</p>	<p>Verify server state.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade to observe the server upgrade status. <p>If the Active NOAM is on release 7.1.x and later:</p> <ol style="list-style-type: none"> 2. If the server status is Not Ready, proceed to step 11; otherwise proceed to step 14. <p>If the Active NOAM is on release 6.0 or 7.0.x:</p> <ol style="list-style-type: none"> 3. If the server status is Ready, proceed to step 12; otherwise proceed to step 14.
11 □	<p>Active NOAM VIP: Correct Upgrade State on backed out server</p> <p>For Active NOAM on release 7.1.x and later</p>	<p>Modify the backed out server to transition the Upgrade State to Ready.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > HA The HA status screen is displayed. 2. Click the Edit button. 3. Select the backed out server and choose a Max Allowed HA Role value of Active (unless it is a Query server, in which case the value should remain set to Observer). 4. Click the Ok button. 5. The HA status screen is displayed. Verify the Max Allowed HA Role is set to the desired value for the server. 6. Select Status & Manage > Server. The Server status screen is displayed. 7. If the Appl State of the server being backed out is Disabled, select the server and click Restart. Click Ok to confirm the operation. Verify the Appl State updates to Enabled. 8. Select Administration > Software Management > Upgrade; The Upgrade Status screen is displayed. 9. Select the tab of the server group containing the server to be backed out. Verify the Upgrade State is now Ready. (It might take a couple minutes for the grid to update.) <p>Proceed to step 14 to complete this procedure.</p>

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<p>12</p> <p>Active NOAM VIP:</p> <p>Stop the Application</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>To transition to the Not Ready state, stop the Application.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed. 3. If the server just backed-out shows an “Appl State” of “Enabled”, then select the server row and press the Stop button. <p>Main Menu: Status & Manage -> Server</p> 
<p>13</p> <p>Active NOAM VIP:</p> <p>Correct Upgrade State on backed out server</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>Change the upgrade state for the backed out server.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 2. If the server just backed-out shows an Upgrade State of “Ready” or “Success”, then select the backed-out server and press Complete. Otherwise, skip to step 14. <p>Main Menu: Administration -> Software Management -> Upgrade</p>  <ol style="list-style-type: none"> 3. The Upgrade [Complete] screen will appear. Leave the Action set to the default value of Complete. 4. Click OK. This will update the Max Allowed HA Role of the backed-out server to Active, which will cause the server’s Upgrade State to move to Not Ready. <p>Main Menu: Administration -> Software Management -> Upgrade [Complete]</p>  <p>The following SOAP error may appear in the GUI banner:</p> <pre style="text-align: center;">SOAP error while clearing upgrade status of hostname=[frame10311b6] ip=[172.16.1.28]</pre> <p>It is safe to ignore this error message.</p>


Procedure 41: Backout Single Server

<p>14</p> <input type="checkbox"/>	<p>Active NOAM VIP: Verify application version</p>	<p>Verify the application version is correct for the backed out server.</p> <ol style="list-style-type: none">1. Select Administration > Software Management > Upgrade The Upgrade screen is displayed2. Select the Server Group tab for the server that was backed out.3. Verify the Application Version value for this server has been downgraded to the original release version.
<p>15</p> <input type="checkbox"/>	<p>Procedure Complete</p>	<p>The single server backout is now complete.</p> <p>Return to the overall DSR backout procedure step that directed the execution of this procedure.</p>

THIS PROCEDURE HAS BEEN COMPLETED.

6.6 Backout Multiple Servers

This section provides the procedures to backout the application software on multiple servers.

	<p>THIS PROCEDURE IS EXECUTED AS A COMPONENT OF THE EMERGENCY BACKOUT PROCEDURE (SECTION 6.3) OR THE NORMAL BACKOUT PROCEDURE (SECTION 6.4). THIS PROCEDURE SHOULD NEVER BE EXECUTED AS A STANDALONE PROCEDURE.</p>
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Procedure 42: Backout Multiple Servers

<p>S T E P #</p>	<p>This procedure will backout the upgrade of DSR 7.3 application software for multiple servers. Any server requiring backout can be included.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>	
<p>1</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 5px;"></div>	<p>Active NOAM VIP:</p> <p>Prepare the server for backout.</p>	<p>Perform the following steps to prepare the server for backout.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 2. Select the server group tab containing the server to be backed out. Verify the Upgrade State is 'Accept or Reject'. <p>Make the server 'Backout Ready' as follows:</p> <ol style="list-style-type: none"> 3. Select Status & Manage > HA. The HA status screen displays. 4. Click the Edit button. 5. Select the server to be backed out and choose a Max Allowed HA Role value of Standby (unless it is a Query server, in which case the value should remain set to Observer). <p>Note: When the Active NOAM is the server being upgraded, selecting OK will initiate an HA switchover, causing the GUI session to log out. Before logging into the Active OAM again, close and re-open the browser using the VIP address for the NOAM, and then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.</p> <ol style="list-style-type: none"> 6. Click the Ok button. 7. The HA status screen displays. Verify the Max Allowed HA Role is set to the desired value for the server. 8. Select Status & Manage > Server. The server status screen is displayed. 9. Select the server to be backed out and click Stop. Click Ok to confirm the operation, then verify the Appl State updates to Disabled. 10. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 11. Select the tab of the server group containing the server to be backed out. Verify the Upgrade State is now Backout Ready. (Note: It may take a couple of minutes for the status to update.)
<p>2</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 5px;"></div>	<p>Server CLI:</p> <p>Login to the server(s)</p>	<p>Use an SSH client to connect to the server (e.g. ssh, putty):</p> <pre style="font-family: monospace;">ssh admusr@<server address> password: <enter password></pre> <p>NOTE: If direct access to the IMI is not available, then access the target server via a connection through the Active NOAM. SSH to the Active NOAM XMI first. From there, SSH to the target server's IMI address.</p>

Procedure 42: Backout Multiple Servers

<p>3</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Execute the backout</p>	<p>Determine the state of the server to be backed out. The server role must be either Standby or Spare. Execute following command to find the state :</p> <pre>\$ ha.mystate</pre> <p>In the example output below, the HA state is Standby.</p> <pre>[admusr@SO2 ~]# ha.mystate resourceId role node subResources lastUpdate DbReplication Stby B2435.024 0 0127:113603.435 VIP Stby B2435.024 0 0127:113603.438 SbrBBaseRepl OOS B2435.024 0 0127:113601.918 SbrBindingRes OOS B2435.024 0 0127:113601.918 SbrSBaseRepl OOS B2435.024 0 0127:113601.918 SbrSessionRes OOS B2435.024 0 0127:113601.918 CacdProcessRes OOS B2435.024 0 0127:113601.918 DA_MP_Leader OOS B2435.024 0 0127:113601.917 DSR_SLDB OOS B2435.024 0-63 0127:113601.917 VIP_DA_MP OOS B2435.024 0-63 0127:113601.917 EXGSTACK_Process OOS B2435.024 0-63 0127:113601.917 DSR_Process OOS B2435.024 0-63 0127:113601.917 CAPM_HELP_Proc Stby B2435.024 0 0127:113603.272 DSROAM_Proc OOS B2435.024 0 0128:081123.951</pre> <p>If the state of the server is Active, then return to step 1 above.</p> <pre>\$ sudo /var/TKLC/backout/reject</pre> <p>NOTE: If backout prompts to continue, answer “y”.</p> <p>(The reject command will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p> <p>Sample output of the reject script:</p> <pre>Applications Enabled. Running /usr/TKLC/plat/bin/service_conf reconfig Remove isometadata (appRev) file from upgrade Reverting platform revision file RCS_VERSION=1.4 Creating boot script: /etc/rc3.d/S89backout Rebuilding RPM database. This may take a moment... rpmdb_load: /var/lib/rpm/Packages: unexpected file type or format Cleaning up chroot environment... A reboot of the server is required. The server will be rebooted in 10 seconds</pre>
<p>4</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Backout proceeds</p>	<p>Many informational messages are output to the terminal screen as the backout proceeds.</p> <p>Finally, after backout is complete, the server will automatically reboot.</p>
<p>5</p> <p><input type="checkbox"/></p>	<p>Repeat for each server to be backed out.</p>	<p>Repeat steps 1 through 4 for each server to be backed out.</p>
<p>6</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Login to the server</p>	<p>Use an SSH client to connect to the server (e.g. ssh, putty):</p> <pre>ssh admusr@<server address> password: <enter password></pre>

Procedure 42: Backout Multiple Servers

<p>7</p> <p>Restore the full DB run environment</p>	<p>Server CLI:</p>	<p>1. Execute the backout_restore utility to restore the full database run environment:</p> <pre>\$ sudo /var/tmp/backout_restore</pre> <p>If prompted to proceed, answer “y”.</p> <p>NOTE: In some incremental upgrade scenarios, the backout_restore file will not be found in the /var/tmp directory, resulting in the following error message:</p> <pre>/var/tmp/backout_restore: No such file or directory</pre> <p>If this message occurs, copy the file from /usr/TKLC/appworks/sbin to /var/tmp and repeat sub-step 1.</p> <p>(The backout_restore command will create a no-hang-up shell session, so that the command will continue to execute if the user session is lost.)</p> <p>If the restore was successful, the following will be displayed:</p> <pre>Success: Full restore of COMCOL run env has completed. Return to the backout procedure document for further instruction.</pre> <p>If an error is encountered and reported by the utility, it is recommended to consult with MOS by referring to Appendix P of this document for further instructions.</p>
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Procedure 42: Backout Multiple Servers

<p>8</p> <p>Server CLI:</p> <p>Verify the backout</p>	<p>Verify the backout was successful.</p> <ol style="list-style-type: none"> Examine the output of the following commands to determine if any errors were reported: <pre>\$ sudo verifyUpgrade</pre> <p>Note: The verifyUpgrade command will detected errors that occurred in the initial upgrade, as well as errors that occurred during the backout. Disregard the initial upgrade errors.</p> <p>Note: Disregard the following TKLCplat.sh error:</p> <pre>[root@NO1 ~]# verifyUpgrade ERROR: TKLCplat.sh is required by upgrade.sh! ERROR: Could not load shell library! ERROR: LIB: /var/TKLC/log/upgrade/verifyUpgrade/upgrade.sh ERROR: RC: 1</pre> <p>If the server is on 7.0.x and later:</p> <pre>\$ sudo verifyBackout</pre> <p>The following command will show the current rev on the server:</p> <pre>\$ appRev Install Time: Wed Feb 25 02:52:47 2015 Product Name: DSR Product Release: 7.1.0.0.0_71.10.0 Base Distro Product: TPD Base Distro Release: 7.0.0.0.0_86.14.0 Base Distro ISO: TPD.install-7.0.0.0.0_86.14.0- OracleLinux6.5-x86_64.iso ISO name: DSR-7.1.0.0.0_71.10.0-x86_64.iso OS: OracleLinux 6.5</pre> If the backout was not successful because other errors were recorded in the logs, it is recommended to contact MOS by referring to Appendix P of this document for further instructions. If the backout was successful (no errors or failures), then continue with the next step.
<p>9</p> <p>Server CLI:</p> <p>Reboot the server</p>	<p>Enter the following command to reboot the server:</p> <pre>\$ sudo init 6</pre> <p>This step can take several minutes.</p>

Procedure 42: Backout Multiple Servers

<p>10</p> <p>□</p>	<p>Server CLI:</p> <p>Verify services restart (NOAM/SOAM only)</p>	<p>If the server being backed out is a NOAM or SOAM, perform this step; otherwise proceed to step 11.</p> <p>Verify OAM services have restarted:</p> <ol style="list-style-type: none"> 1. Wait several (approx. 6 minutes) minutes for a reboot to complete before attempting to log back into the server. 2. SSH to the server and log in. <ul style="list-style-type: none"> login as: admusr password: <enter password> 3. Verify the httpd service is running. <ul style="list-style-type: none"> \$ sudo service httpd status 4. The expected output displays httpd is running (the process IDs are variable so the list of numbers can be ignored): <ul style="list-style-type: none"> httpd <process IDs will be listed here> is running... <p>If httpd is not running, repeat sub-steps 3 and 4 for a few minutes. If httpd is still not running after 3 minutes, then services have failed to restart. It is recommended to contact MOS by referring to Appendix P of this document for further instructions.</p>
<p>11</p> <p>□</p>	<p>Repeat for each server backed out</p>	<p>Repeat steps 6 through 10 for each server backed out.</p>
<p>12</p> <p>□</p>	<p>Active NOAM VIP:</p> <p>Verify server states</p>	<p>Verify server state is correct after the backout.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade to observe the server upgrade status. 2. If the server status is Not Ready, continue to step 13; otherwise proceed to step 14.
<p>13</p> <p>□</p>	<p>Active NOAM VIP:</p> <p>Correct upgrade state on backed out server</p>	<p>Modify the backed out server to transition the Upgrade State to Ready.</p> <ol style="list-style-type: none"> 1. Select Status & Manage > HA The HA status screen is displayed. 2. Click the Edit button. 3. Select the backed out server and choose a Max Allowed HA Role value of Active (unless it is a Query server, in which case the value should remain set to Observer). 4. Click the Ok button. 5. The HA status screen is displayed. Verify the Max Allowed HA Role is set to the desired value for the server. 6. Select Status & Manage > Server. The Server status screen is displayed. 7. Select the server being backed out and click Restart. Click Ok to confirm the operation. Verify the Appl State updates to Enabled. 8. Select Administration > Software Management > Upgrade; The Upgrade Status screen is displayed. 9. Select the tab of the server group containing the server that was backed out. Verify the Upgrade State is now Ready. (Note: It may take a couple of minutes for the status to update.)
<p>14</p> <p>□</p>	<p>Active NOAM VIP:</p> <p>Verify application version</p>	<p>Verify the application version of the backed out server.</p> <ol style="list-style-type: none"> 1. Select Administration > Software Management > Upgrade The Upgrade screen is displayed 2. Select the Server Group tab for the server that was backed out. 3. Verify the Application Version value for this server has been downgraded to the original release version.

Procedure 42: Backout Multiple Servers

15 <input type="checkbox"/>	Procedure Complete	The multiple server backout is now complete. Return to the overall DSR backout procedure step that directed the execution of this procedure.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

6.7 Post-Backout Health Check

This procedure is used to determine the health and status of the DSR network and servers following the backout of the entire system.

Procedure 43: Post-Backout Health Check

<p>S</p> <p>T</p> <p>E</p> <p>P</p> <p>#</p>	<p>This procedure performs a basic Health Check of the DSR to verify the health of the system following a backout.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Verify Server Status is Normal</p>	<p>Verify Server Status is Normal</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed. 3. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). 4. Do not proceed with the upgrade if any server status is not Norm. 5. Do not proceed with the upgrade if there are any Major or Critical alarms. <p>NOTE: It is recommended to troubleshoot if any server status is not Norm. A backout should return the servers to their pre-upgrade status.</p>
<p>2.</p> <p><input type="checkbox"/></p>	<p><u>Active NOAM VIP:</u></p> <p>Log all current alarms</p>	<p>Log all current alarms in the system:</p> <ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Click the Report button to generate an Alarms report. 3. Save the report and print the report. Keep these copies for future reference.
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

6.8 IDIH Backout

The procedures in this section back out the Oracle, Application, and Mediation servers to the previous release.

6.8.1 Oracle Server Backout

This procedure backs out the Oracle server.

Procedure 44: Oracle Server Backout

S T E P #	<p>This procedure performs a backout of the Oracle server.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>	
	1 <input type="checkbox"/>	<p><u>Oracle Server CLI</u> Login to the server</p>
2 <input type="checkbox"/>	<p><u>Oracle Server CLI</u> Backout the server</p>	<p>Execute the following commands to back out the server.</p> <pre>sudo /opt/xIH/plat/bin/db_rollback.sh MED sudo /opt/xiH/plat/bin/db_rollback.sh APP</pre>

6.8.2 Mediation and Application Server Backout

The Mediation and Application servers are backed out using the disaster recovery procedure documented in [12].

7 APPENDIXES

Appendix A POST UPGRADE PROCEDURES


The procedures in this section are executed only *AFTER* the upgrade of *ALL* servers in the topology is completed.

Appendix A.1 Accept Upgrade

Detailed steps for accepting the upgrade are provided in the procedure below. TPD requires that upgrades be accepted or rejected before any subsequent upgrades may be performed. Alarm 32532 (Server Upgrade Pending Accept/Reject) will be displayed for each server until one of these two actions is performed.

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

NOTE: Once the upgrade is accepted for a server, that server will not be allowed to backout to a previous release.

	<p>!! WARNING!!</p> <p>UPGRADE ACCEPTANCE MAY ONLY BE EXECUTED WITH AUTHORIZATION FROM THE CUSTOMER</p> <p>THE CUSTOMER SHOULD BE ADVISED THAT ONCE UPGRADE HAS BEEN ACCEPTED, IT WILL NOT BE POSSIBLE TO BACKOUT TO THE PREVIOUS RELEASE</p>
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Procedure 45: Accepting Upgrade

S T E P #	<p>This procedure accepts a successful upgrade.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<p>It is recommended that this procedure be performed two weeks after the upgrade.</p>	<p>Verify that the upgraded system has been stable for two weeks or more.</p> <p>NOTE: It will not be possible to backout after this is procedure is executed.</p>
2. <input type="checkbox"/>	<p>Active NOAM VIP:</p> <p>Execute this step if accepting a NOAM server.</p> <p>Log all current alarms present at the NOAM.</p>	<p>Log all alarms before accepting the NOAM upgrade.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI. 2. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 3. Click the Report button to generate an Alarms report. 4. Save the report and/or print the report. Keep these copies for future reference. <p>All other upgraded servers will have the following expected alarm: Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</p>
3. <input type="checkbox"/>	<p>Active SOAM VIP:</p> <p>Execute this Step if accepting a SOAM server.</p> <p>Log all current alarms present at the SOAM.</p>	<p>Log all alarms before accepting the SOAM upgrade.</p> <ol style="list-style-type: none"> 1. Log into the SOAM GUI. 2. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 3. Click the Report button to generate an Alarms report. 4. Save the report and/or print the report. Keep these copies for future reference. <p>All other upgraded servers will have the following expected alarm: Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</p>

Procedure 45: Accepting Upgrade

<p>4.</p> <p>Active NOAM VIP:</p> <p>Accept upgrade for multiple servers</p>	<p>Accept the upgrade of multiple servers.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Select Administration >Software Management >Upgrade. The Upgrade Administration screen is displayed. 3. Select a server group tab and select the servers (using the Ctrl button) for which upgrade is to be accepted, considering traffic, as Accept upgrade may lead to a server reboot. 4. Click the Accept button <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter <input type="text"/> Tasks <input type="text"/></p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO2</td> <td>Accept or Reject Warn</td> <td>Standby</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.0.0.0-71.11.0</td> </tr> <tr> <td>NO1</td> <td>Accept or Reject Warn</td> <td>Active</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.0.0.0-71.11.0</td> </tr> </tbody> </table> <p>Backup Upgrade Server Accept Report Report All</p> </div> <ol style="list-style-type: none"> 5. A confirmation dialog will warn that once accepted, the server will not be able to revert back to the previous image state. 6. Click Ok. The Upgrade Administration screen re-displays. 7. Select Alarms & Events > View Active. The Alarms & Events > View Active screen displays. <p>As upgrade is accepted on each server, the corresponding Alarm ID - 32532 (Server Upgrade Pending Accept/Reject) should automatically clear.</p>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	NO2	Accept or Reject Warn	Standby	Network OAM&P	OAM&P	7.1.0.0.0-71.11.0	NO1	Accept or Reject Warn	Active	Network OAM&P	OAM&P	7.1.0.0.0-71.11.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																				
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																				
NO2	Accept or Reject Warn	Standby	Network OAM&P	OAM&P	7.1.0.0.0-71.11.0																				
NO1	Accept or Reject Warn	Active	Network OAM&P	OAM&P	7.1.0.0.0-71.11.0																				
<p>5.</p> <p>Accept upgrade of the rest of the system</p>	<p>Repeat step 4 of this procedure until the upgrade of all servers within the system has been accepted.</p>																								

THIS PROCEDURE HAS BEEN COMPLETED.

Appendix A.2 Undeploy ISO

This procedure is run after the upgrade has been Accepted to undeploy all deployed ISOs. When an ISO is undeployed, the ISO is deleted from all servers in the topology except for the Active NOAM. On the Active NOAM, the ISO remains in the File Management Area.

This procedure can be run at anytime after the upgrade has been Accepted.

Procedure 46: Undeploy ISO

S T E P #	<p>This procedure undeploys an ISO from the DSR servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	<p>Active NOAM VIP: View files</p>	<p>View the files in the File Management Area on the Active NOAM.</p> <ol style="list-style-type: none"> Log into the NOAM GUI using the VIP. Select Status & Manage > Files. The Files screen is displayed.
2. <input type="checkbox"/>	<p>Active NOAM VIP: Start ISO undeploy</p>	<p>Start the ISO undeploy sequence.</p> <ol style="list-style-type: none"> Select an ISO that is stored in the isos directory of the File Management Area. The ISO filename will have the format: <code>isos/DSR-7.3.0.0.0_73.12.0-x86_64.iso</code> Click the Undeploy ISO button. Click OK in the confirmation dialog box to start the undeploy sequence. After clicking Ok the Status & Manage > Files screen will refresh.
3. <input type="checkbox"/>	<p>Active NOAM VIP: Monitor progress</p>	<p>Monitor the ISO undeploy progress.</p> <ol style="list-style-type: none"> Select the ISO being deployed in step 2. Click the View ISO Deployment Report button. If some servers show the ISO as “Deployed”, click the Back button on the Files [View] page Periodically repeat sub-steps 1 thru 3 until all servers indicate “Not Deployed”. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Status & Manage -> Files [View]</p> <hr/> <p style="text-align: center;">Main Menu: Status & Manage -> Files [View] Mon Jun 13 12:27:31 2016 UTC</p> <p>Deployment report for DSR-7.3.0.0.0_73.12.0-x86_64.iso:</p> <p>Deployed on 5/7 servers.</p> <pre> NO1: Not Deployed NO2: Deployed SO1: Not Deployed SO2: Deployed MF1: Deployed MF2: Deployed IPFE: Deployed </pre> <p style="text-align: center;">Print Save Back</p> </div>
4. <input type="checkbox"/>	<p>Active NOAM VIP: Repeat as necessary</p>	<ol style="list-style-type: none"> If there are additional ISOs in the File Management Area that need to be undeployed, repeat steps 2 and 3 as necessary.

Appendix A.3 PCA Post Upgrade Procedure

<div style="border: 2px solid yellow; border-radius: 15px; padding: 5px; display: inline-block; background-color: black; color: white; font-weight: bold; font-size: 1.2em;">CAUTION</div>	THIS PROCEDURE IS FOR PCA SYSTEMS ONLY!
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Procedure 47 must be executed on PCA systems after the upgrade to DSR 7.3 is accepted. Do not run this procedure until *after* Procedure 45 has been completed. This procedure executes the PCA top level activation script to remedy a potential PCA activation issue from earlier releases.

Procedure 47: PCA Post Upgrade Procedure

S T E P #	This procedure executes the PCA top level activation script. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND ASK FOR UPGRADE ASSISTANCE.</u>	
1. <input type="checkbox"/>	<u>Active NOAM CLI:</u> Log into the Active NOAM	Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active NOAM: <pre style="margin: 0;">ssh admusr@<server address> password: <enter password></pre>
2. <input type="checkbox"/>	<u>Active NOAM CLI</u> Run PCA activation script	Execute the top level PCA script: <pre style="margin: 0;">/usr/TKLC/dsr/prod/maint/loaders/activate/load.pcaActivati onTopLevel</pre> At the completion of the activation script, the following message is output: <pre style="margin: 0;">Execution of PCA Activation Script complete.</pre>
3. <input type="checkbox"/>	<u>Active NOAM CLI</u> Clear cache	Execute the following command to reset the initialization caches: <pre style="margin: 0;">clearCache</pre>
THIS PROCEDURE HAS BEEN COMPLETED.		

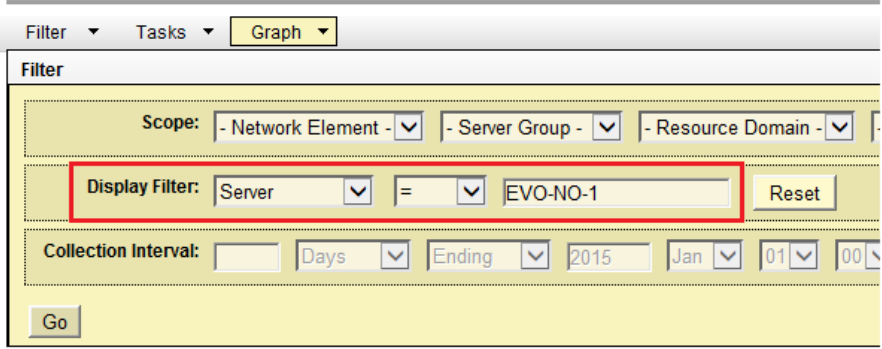
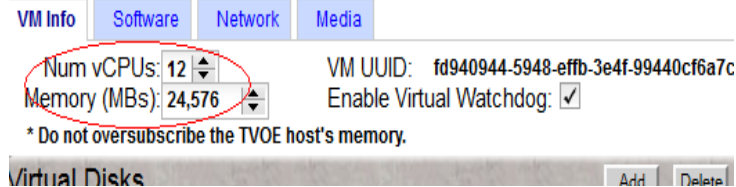
Appendix B COMMAND OUTPUTS

Not Applicable.

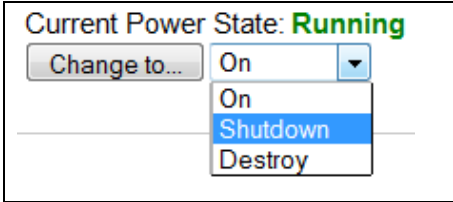

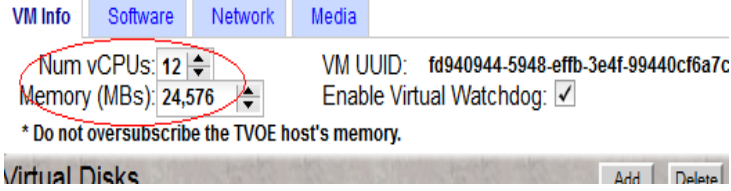
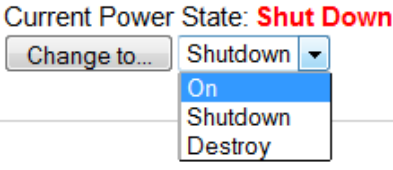
Appendix C UPDATE NOAM GUEST VM CONFIGURATION

This procedure updates the VM configuration for NOAM and DR NOAM guests hosted on an RMS. The new configuration increases the number of virtual CPUs and RAM available to the NOAMs to improve performance in high load conditions. This procedure should be executed only when the NOAM/DR NOAM is virtualized on an RMS with no B-level or C-level servers.

Procedure 48: Update NOAM Guest VM Configuration

<p>S T E P #</p>	<p>This procedure modifies the VM configuration for the NOAM/DR NOAM guest. This procedure applies only to NOAMs hosted on an RMS.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
<p>1.</p>	<p>Active NOAM VIP:</p> <p>Log all current alarms for the NOAM VM</p>	<p>When the NOAM Guest VM is shutdown prior to updating the configuration, a number of alarms will be generated by the event. Thus it is necessary to note any existing alarms for the server prior to the shutdown.</p> <ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Select the Filter dropdown menu. Select "Server = <hostname>" for the Display Filter, where <hostname> is the hostname of the NOAM VM to be upgraded. 3. Click Go to filter the alarms on the specified criteria. 4. Make note of all alarms that are displayed as a result of the applied filter. These should be the only alarms displayed once the VM is restarted. <p>Main Menu: Alarms & Events -> View Active</p> 
<p>2.</p>	<p>PM&C GUI:</p> <p>Check the NOAM guest VM configuration</p>	<p>Load and view the NOAM Guest VM configuration.</p> <ol style="list-style-type: none"> 1. Log into the PM&C GUI by navigating to http://<pmac_management_ip> 2. Select Main Menu > VM Management. 3. Select the TVOE Host that is hosting the NOAM VM to be upgraded. 4. Select the NOAM VM. 5. With the VM Info tab selected, check the 'Num vCPUs' and 'Memory (MBs)' values. If the values match those shown below, this procedure is complete. Otherwise, continue with step 3. 

Procedure 48: Update NOAM Guest VM Configuration

<p>3.</p> <p>PM&C GUI:</p> <p>Edit the NOAM guest VM configuration</p>	<p>Edit NOAM Guest VM configuration</p> <ol style="list-style-type: none"> 1. Log into the PM&C GUI by navigating to <code>http://<pmac_management_ip></code> 2. Select Main Menu > VM Management. 3. Select the TVOE Host that is hosting the NOAM VM to be upgraded. 4. Select the NOAM VM to edit. 5. Change the power state of the guest VM from Running to Shutdown and click the “Change to...” button. Confirm the pop-up and wait for the power state to change to Shutdown. This may take a few moments as this executes a graceful shutdown of the NOAM guest.   <ol style="list-style-type: none"> 6. Click the Edit button near the bottom of the window. 7. Change the following guest configuration values from the current value to the values presented in bold: <ul style="list-style-type: none"> • Num vCPUs: 12 • Memory (MBs): 24,576  <p>No other configuration values should be changed.</p> <ol style="list-style-type: none"> 8. Select Save. The GUI may gray out for a moment while the changes are committed.
<p>4.</p> <p>PM&C GUI:</p> <p>Modify the guest power state.</p>	<p>Change the guest power state.</p> <ol style="list-style-type: none"> 1. Change the guest VM power state from Shutdown to On and click the “Change to...” button. This will restart the VM. 
<p>5.</p> <p>Active NOAM VIP:</p> <p>Monitor current alarms for the NOAM VM</p>	<p>Monitor the alarms for the NOAM VM to be upgraded until the alarm count is down to those that existed prior to the VM shutdown, as recorded in Step 1.</p> <ol style="list-style-type: none"> 1. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 2. Select the Filter dropdown menu. Select “Server = <StbyNOAM>” for the Display Filter, where <StbyNOAM> is the hostname of the Standby NOAM. 3. Click Go to filter the alarms on the specified criteria. 4. Monitor Standby NOAM alarms. <p>THIS PROCEDURE HAS BEEN COMPLETED.</p>

Appendix D PCRFB POOLING MIGRATION CHECK

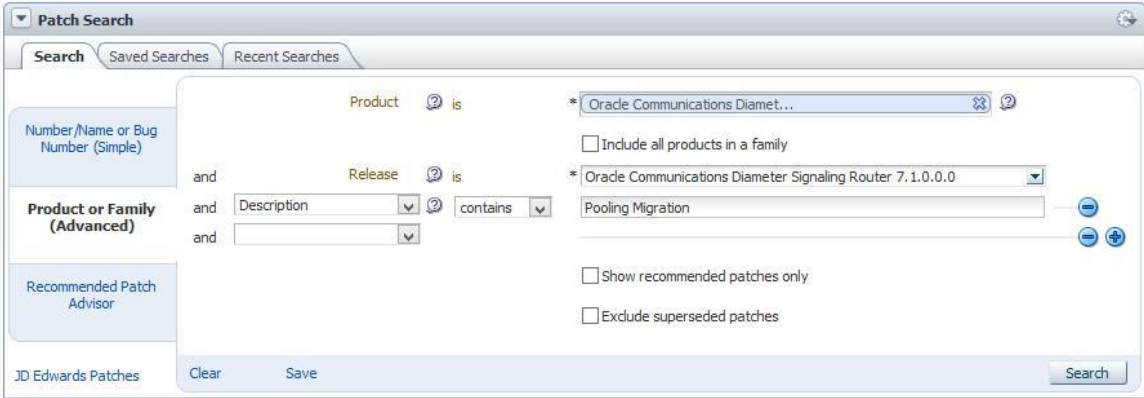
If the PCA application or the PDRA application has been activated in the source release, a check of the PCRFB Pooling Migration is **REQUIRED** prior to the start of a major upgrade to DSR 7.3.

The PCRFB Pooling Migration check is NOT required for a DSR 7.3 incremental upgrade.
 The PCRFB Pooling Migration check is NOT required for a DSR 7.1 or 7.2 to 7.3 upgrade.

Follow the steps in Procedure 49 to execute the PCRFB Pooling Migration Check:

Note: If the PCRFB Pooling Migration is NOT complete, this check must be repeated until PCRFB Pooling Migration is complete and the tool indicates that upgrade is allowed.

Procedure 49: PCRFB Pooling Migration Check

S T E P #	This procedure checks the PCRFB Pooling Migration status to determine if the migration is complete. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.	
	1.	Download PCRFB Pooling Migration Tool Download the PCRFB Pooling Migration Tool from MOS. The tool is used to determine the status of the PCRFB pooling migration. <ol style="list-style-type: none"> 1. Navigate to the MOS site at https://support.oracle.com/ and sign in. 2. Select the Patches & Updates tab 3. In the Patch Search window, select the Product or Family (Advanced) tab on left. 4. Use the following search criteria to locate and download the migration tool (as shown in the figure below): <ul style="list-style-type: none"> • Product is: Oracle Communications Diameter Signaling Router (DSR) • Release is: Oracle Communications Diameter Signaling Router (DSR) 7.1.0.0.0 <ul style="list-style-type: none"> ◦ <i>Note: The 7.1 Migration Tool is also valid for DSR 7.3.</i> • Description contains: Pooling Migration
		
	2.	Copy the PCRFB Pooling Migration Tool Copy the PCRFB Pooling Migration Tool to the Active NOAM. <pre>scp -p <patchfilename> admusr@<Active_NOAM></pre>
	3.	Active NOAM CLI: SSH to the Active NOAM <pre>ssh admusr@<NOAM_VIP> password: <enter password></pre>
4.	Active NOAM CLI: Move the patch file <pre>sudo mv <patchfilename> /usr/TKLC/dsr/tools</pre>	

Procedure 49: PCRF Pooling Migration Check

5. <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Change directory to the PCA tool directory</p>	<p>Change directories using the following command:</p> <pre>cd /usr/TKLC/dsr/tools/</pre>
6. <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Unzip the patch</p>	<p>Unzip the PCRF Pooling Migration Tool using the “unzip” command. Example:</p> <pre>sudo unzip <patchfilename></pre>
7. <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Check the PCRF Pooling Migration Status</p>	<p>Check the PCRF Pooling Migration Status using the following command:</p> <pre>./verifyPCRFPoolingMigration.sh --checkPCRFPoolingMigrationStatus</pre> <p>Sample output:</p> <pre>Preparing log directory ... Creating log directory... Logging is started in /var/TKLC/log/migrationStatusToolLogs/migrationStatusTool.log Preparation of log directory done. ===== Execution of PCRF Pooling Migration Verification Tool Started ===== Checking host server status whether it is active NOAMP server or not. This server is Active NOAMP server. Application Release is 7.0.1.0.0 PDRA/PCA application is activated on this system. 'PCRFPooling' feature is enabled on this system. PCRF Pooling Migration is not required. No need to check PCRF pool migration status. Exiting ... PCRF Pooling Migration is completed or not required on all servers. Execute tool again with option --verifyUpgradeAllowed to check if upgrade is allowed or not. ===== Execution of PCRF Pooling Migration Verification Tool Completed =====</pre>
8. <input type="checkbox"/>	<p>Active NOAM CLI:</p> <p>Verify that PCRF Pooling Migration is complete</p>	<p>After executing the PCRF Pooling Migration tool, determine if the PCRF Pooling Migration has completed using the following command:</p> <pre>./verifyPCRFPoolingMigration.sh --verifyUpgradeAllowed</pre> <p>Note: This command will inform the user if the PCRF Pooling Migration has completed.</p> <p>If PCRF Pooling Migration is complete, the command will print the following output: "Upgrade is allowed."</p> <p>If PCRF Pooling Migration is NOT complete, the command will print the following output: "Upgrade is not allowed."</p>

Procedure 49: PCRF Pooling Migration Check

9. <input type="checkbox"/>	Active NOAM CLI: Estimate PCRF Pooling Migration Completion Optional	If the PCRF Pooling Migration is not complete, the user may get an estimate of when the PCRF Pooling Migration will be complete. Execute the PCRF Pooling Migration Completion Estimate tool using the following command: <code>./verifyPCRFPoolingMigration.sh --estimateMigrationCompletionTime</code> Note: Once complete, this command will output the estimated PCRF Pooling Migration in Days, Hours, Minutes and Seconds. Example: <code>Estimated total time for migration completion for all binding servers is: 3 days 4 hours 45 minutes 34 seconds.</code>
--------------------------------	--	--

THIS PROCEDURE HAS BEEN COMPLETED.

Appendix E DETERMINE IF TVOE UPGRADE IS REQUIRED

When upgrading a server that exists as a virtual guest on a TVOE Host, it is first necessary to determine whether the TVOE Host (i.e. the “bare-metal”) server must be upgraded to a newer release of TVOE.

NOAM and SOAM servers are often implemented as TVOE guests in C-class deployments, so the TVOE upgrade check is necessary. DA-MPs are not implemented as TVOE guests in C-class deployments, so the TVOE upgrade check is not necessary when upgrading C-class DA-MPs.

When DSR is deployed in the VEDSR configuration, or on Rack Mounted Servers (RMSs), all servers are virtual guests, and the TVOE upgrade check is always required. However, DA-MPs are often deployed as guests on the same TVOE Host as the OAM server(s), and so by the time the DA-MP servers are being upgraded, TVOE has already been upgraded and there is no need to do so again.

Procedure 50: Determine if TVOE Upgrade is Required

S T E P #	<p>This procedure checks if TVOE upgrade is required.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>	
1. <input type="checkbox"/>	<p><u>TVOE CLI:</u></p> <p>Determine the version of TVOE already running on the bare-metal server that hosts the virtual guest currently being upgraded</p>	<ol style="list-style-type: none"> 1. Log into the host server on which TVOE is installed. 2. Execute the following command to get the current TVOE installed version : <pre style="font-family: monospace;"># appRev Install Time: Thu Aug 14 08:17:52 2014 Product Name: TVOE Product Release: 2.7.0_84.17.0 Part Number ISO: 872-2290-104 Part Number USB: 872-2290-104 Base Distro Product: TPD Base Distro Release: 7.0.0_70.6.0 Base Distro ISO: TPD.install-6.7.0_84.17.0-CentOS6.2- x86_64.iso OS: CentOS 6.2</pre>
2. <input type="checkbox"/>	<p>Check the TVOE release version required for target DSR release</p>	<p>It is recommended to contact MOS by referring to Appendix P of this document to determine the appropriate release version.</p>
3. <input type="checkbox"/>	<p>If the release in step 1 is less than what is required in step 2 then upgrade of TVOE is required</p>	<p>The procedure to upgrade TVOE on the host server is in Appendix J.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

Appendix F ADDING ISO IMAGES TO PM&C IMAGE REPOSITORY

If the ISO image is delivered on optical media, or USB device, continue with step 1 of this Appendix; otherwise, if the ISO image was delivered to the PM&C using sftp, continue with step 5.

1. In the PM&C GUI, navigate to **Main Menu > VM Management**. In the "VM Entities" list, select the PM&C Guest. On the resulting "View VM Guest" page, select the "Media" tab.
2. Under the **Media** tab, find the ISO image in the "Available Media" list, and click its "Attach" button. After a pause, the image will appear in the "Attached Media" list.

View VM Guest

Name: vm-pmacdev6 Current Power State: **Running**
Host: fe80::461e:a1ff:fe06:484 Change to... On ▾

VM Info
Software
Network
Media

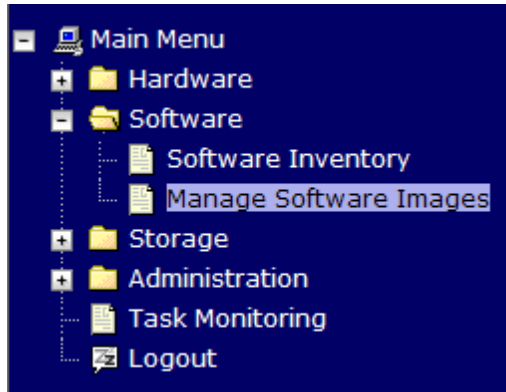
Attached Media

Attached	Image Path
<input type="button" value="Detach"/>	/var/TKLC/voe/mapping-isos/vm-pmacdev6.iso
<input type="button" value="Detach"/>	/media/sdb1/000-0000-000-6.0.0_80.16.0-CentOS-6.2-x86_64.iso

Available Media

Attach	Label	Image Path
<input type="button" value="Attach"/>	tklc_000-0000-000_Rev_A_80.16	/media/sdb1/000-0000-000-6.0.0_80.16.0-CentOS-6.2-x86_64.iso
<input type="button" value="Attach"/>	tklc_000-0000-000_Rev_A_80.17	/var/TKLC/upgrade/TPD.install-6.0.0_80.17.0-CentOS6.2-x86_64.iso

3. **PM&C GUI:** Navigate to **Manage Software Images**
 Navigate to **Main Menu > Software > Manage Software Images**



4. **PM&C GUI:** Add image
 Press the **Add Image** button.

Manage Software Images



Thu Nov 17 18:26:24 2011 UTC

Tasks ▾

Image Name	Type	Architecture	Description
PMAC-4.0.0_40.11.0-872-2291-101-i386	Upgrade	i386	
PMAC-4.0.0_40.15.0-872-2291-101-i386	Upgrade	i386	
TPD-5.0.0_72.28.0-x86_64	Bootable	x86_64	
TPD-5.0.0_72.24.0-i386	Bootable	i386	
PMAC-4.0.0_40.14.1-872-2291-101-i386	Upgrade	i386	

5. **PM&C GUI:** Add the ISO image to the PM&C image repository.

Select an image to add:

- If the image was transferred to PM&C via sftp, it will appear in the list as a local file `"/var/TKLC/..."`.
- If the image was supplied on a CD or a USB drive, it will appear as a virtual device (`"device://..."`). These devices are assigned in numerical order as CD and USB images become available on the Management Server. The first virtual device is reserved for internal use by TVOE and PM&C; therefore, the ISO image of interest is normally present on the second device, `"device://dev/sr1"`. If one or more CD or USB-based images were already present on the Management Server before this procedure was started, choose a correspondingly higher device number.

Enter an appropriate image description and press the **Add New Image** button.

Add Software Image

_Help
Wed Aug 08 13:51:34 2012 UTC

Images may be added from any of these sources:

- Tekelec-provided media in the PM&C host's CD/DVD drive (See Note)
- USB media attached to the PM&C's host (See Note)
- External mounts. Prefix the directory with "extfile://".
- These local search paths:
 - `/var/TKLC/upgrade/*.iso`
 - `/var/TKLC/smac/image/isoimages/home/smacftpusr/*.iso`

Note: CD and USB images mounted on PM&C's VM host must first be made accessible to the PM&C VM guest. To do this, go to the Media tab of the PM&C guest's View VM Guest page.

Path:

Description:

6. PM&C GUI Monitor the Add Image status

The Manage Software Images page is then redisplayed with a new background task entry in the table at the bottom of the page:

Manage Software Images

_Help
Thu Nov 17 18:28:11 2011 UTC

Info Tasks

Info

- Software image `/var/TKLC/upgrade/872-2290-101-1.0.0_72.24.0-TVOE-x86_64.iso` will be added in the background.
- The ID number for this task is: 5.

TPD-5.0.0_72.28.0-x86_64	Bootable	x86_64	
TPD-5.0.0_72.24.0-i386	Bootable	i386	
PMAC-4.0.0_40.14.1-872-2291-101-i386	Upgrade	i386	

7. PM&C GUI Wait until the Add Image task finishes

When the task is complete, its text changes to green and its Progress column indicates "100%".

Check that the correct image name appears in the Status column:

Manage Software Images

Help

Thu Nov 17 18:31:19 2011 UTC

Info Tasks

ID	Task	Target	Status	Start Time	Progress
5	Add Image		Done: 872-2290-101-1.0.0_72.24.0-TVOE-x86_64	2011-11-17 13:31:19	100%

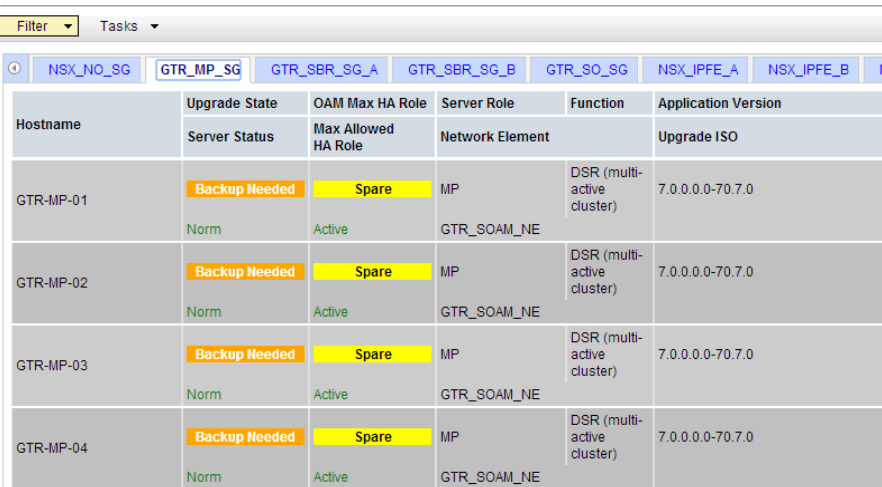
8. **PM&C GUI:** Detach the image from the PM&C guest
 If the image was supplied on CD or USB, return to the PM&C Guest's "**Media**" tab used in Step 2, locate the image in the "**Attached Media**" list, and click its "**Detach**" button. After a pause, the image will be removed from the "**Attached Media**" list. This will release the virtual device for future use. Remove the CD or USB device from the Management Server.

Appendix G UPGRADE SINGLE SERVER – UPGRADE ADMINISTRATION

This Appendix provides the procedure for upgrading a single DSR server of any type (NOAM, SOAM, MP, etc).

Note that this procedure will be executed multiple times during the overall upgrade, depending on the number of servers in the DSR. Make multiple copies of Appendix G to mark up, or keep another form of written record of the steps performed.

Procedure 51: Upgrade Single Server – Upgrade Administration

S T E P #	<p>This procedure executes the Upgrade Single Server – Upgrade Administration steps.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>																															
1	<p>Active NOAM VIP:</p> <p>View the pre-upgrade status of Servers</p>	<p>View the pre-upgrade status</p> <ol style="list-style-type: none"> Log into the NOAM GUI using the VIP Select Administration > Software Management > Upgrade The Upgrade Administration screen is displayed (example below): <p>The Active NOAM server may have some or all of the following expected alarms: Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</p> <p>Main Menu: Administration -> Software Management -> Upgrade</p>  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> </thead> <tbody> <tr> <td>GTR-MP-01</td> <td>Backup Needed Norm</td> <td>Spare Active</td> <td>MP GTR_SOAM_NE</td> <td>DSR (multi-active cluster)</td> <td>7.0.0.0.0-70.7.0</td> </tr> <tr> <td>GTR-MP-02</td> <td>Backup Needed Norm</td> <td>Spare Active</td> <td>MP GTR_SOAM_NE</td> <td>DSR (multi-active cluster)</td> <td>7.0.0.0.0-70.7.0</td> </tr> <tr> <td>GTR-MP-03</td> <td>Backup Needed Norm</td> <td>Spare Active</td> <td>MP GTR_SOAM_NE</td> <td>DSR (multi-active cluster)</td> <td>7.0.0.0.0-70.7.0</td> </tr> <tr> <td>GTR-MP-04</td> <td>Backup Needed Norm</td> <td>Spare Active</td> <td>MP GTR_SOAM_NE</td> <td>DSR (multi-active cluster)</td> <td>7.0.0.0.0-70.7.0</td> </tr> </tbody> </table>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	GTR-MP-01	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0	GTR-MP-02	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0	GTR-MP-03	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0	GTR-MP-04	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																											
GTR-MP-01	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0																											
GTR-MP-02	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0																											
GTR-MP-03	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0																											
GTR-MP-04	Backup Needed Norm	Spare Active	MP GTR_SOAM_NE	DSR (multi-active cluster)	7.0.0.0.0-70.7.0																											
2	<p>Active NOAM VIP:</p> <p>Verify status of Server to be upgraded</p>	<p>For the server to be upgraded:</p> <ol style="list-style-type: none"> Identify the server (NOAM, SOAM, MP, etc) _____ (record name) Verify the Application Version value is the expected source software release version. From the Administration > Software Management > Upgrade screen, select the Server Group of the server to be upgraded. 																														

Procedure 51: Upgrade Single Server – Upgrade Administration

3

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

NSX_NO_SG GTR_MP_SG GTR_SBR_SG_A GTR_SBR_SG_B GTR_SO_SG NSX_IPFE_A NSX_IPFE_B

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Max Allowed HA Role	Network Element		Upgrade ISO
GTR-MP-01	Backup Needed	Spare	MP	DSR (multi-active cluster)	7.0.0.0-70.7.0
	Norm	Active	GTR_SOAM_NE		
GTR-MP-02	Backup Needed	Spare	MP	DSR (multi-active cluster)	7.0.0.0-70.7.0
	Norm	Active	GTR_SOAM_NE		
GTR-MP-03	Backup Needed	Spare	MP	DSR (multi-active cluster)	7.0.0.0-70.7.0
	Norm	Active	GTR_SOAM_NE		
GTR-MP-04	Backup Needed	Spare	MP	DSR (multi-active cluster)	7.0.0.0-70.7.0
	Norm	Active	GTR_SOAM_NE		

4. If the server is in the **“Backup Needed”** state, select the server and click the **“Backup”** button. On the **Upgrade [Backup]** screen, click **‘Ok’**. The Upgrade State changes to **“Backup in Progress”**.
5. Verify the **“OAM Max Ha Role”** is the expected condition (either **Standby or Active**) (this will depend on the server being upgraded)

For Active NOAM on release 6.0 and 7.0.x:
When the backup is complete, verify the server state changes to **“Not Ready”**.
Perform steps 3 thru 10.

For Active NOAM on release 7.1.x and later:
When the backup is complete, verify the server state changes to **“Ready”**.
Proceed to step 11.

3

Active NOAM VIP:

Prepare Upgrade (step 1)

For Active NOAM on release 6.0 or 7.0.x only

This step is for an Active NOAM on release 6.0 or 7.0.x only.

Prepare the server for upgrade.

1. On the Upgrade form, make the server ‘Upgrade Ready’, by selecting the server to be upgraded, and selecting the **Prepare** button.

(In this example, an NOAM with name “NO2” will be made ready for Upgrade)

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

NO_SG IPFE_SG MP_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Max Allowed HA Role	Network Element		Upgrade ISO
NO1	Not Ready	Standby	Network OAM&P	OAM&P	6.0.0-60.24.0
	Norm	Active	NO_DSR_VM		
NO2	Not Ready	Active	Network OAM&P	OAM&P	6.0.0-60.24.0
	Norm	Active	NO_DSR_VM		

Backup ISO Cleanup **Prepare** Initiate Complete Accept Report Report All

Procedure 51: Upgrade Single Server – Upgrade Administration

<p style="margin: 0;">4</p> <p style="margin: 0;">Active NOAM VIP:</p> <p style="margin: 0;">Prepare Upgrade (step 2)</p> <p style="margin: 0;">For Active NOAM on release 6.0 or 7.0.x only</p>	<p style="margin: 0;">This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p style="margin: 0;">Prepare the server for upgrade.</p> <p style="margin: 0;">The Upgrade [Prepare] form is displayed.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="margin: 0;">Main Menu: Administration -> Software Management -> Upgrade [Prepare]</p> <p style="margin: 0;">Info ▾</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <thead> <tr> <th style="text-align: left;">Hostname</th> <th style="text-align: left;">Action</th> <th colspan="3" style="text-align: left;">HA Status</th> </tr> <tr> <th></th> <th></th> <th style="text-align: left;">Max HA Role</th> <th style="text-align: left;">Active Mates</th> <th style="text-align: left;">Standby Mates</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">NO1</td> <td style="text-align: left;">Prepare ▾</td> <td style="text-align: left;">Standby</td> <td style="text-align: left;">NO2</td> <td style="text-align: left;">None</td> </tr> </tbody> </table> <p style="text-align: right; margin: 0;">Ok Cancel</p> </div> <p style="margin: 0;">For the Max Ha Role:</p> <ol style="list-style-type: none"> <li style="margin: 0;">1. Verify the selected server status is the expected condition (either Standby or Active) (this will depend on the server being upgraded) <li style="margin: 0;">2. If the state of the server to be upgraded is as expected, select Ok. <p style="margin: 0;">NOTE: When the Active NOAM is the server being upgraded, selecting OK will initiate an HA switchover, causing the GUI session to log out. Before logging into the Active OAM again, close and re-open the browser using the VIP address for the NOAM, and then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.</p> <p style="margin: 0;">NOTE: If the selected server is the active server in an Active/Standby pair, the Max HA Role column will display “Active” with a red background. This is NOT an alarm condition. This indicator is to make the user aware that the Make Ready action WILL cause an HA switchover.</p>	Hostname	Action	HA Status					Max HA Role	Active Mates	Standby Mates	NO1	Prepare ▾	Standby	NO2	None
Hostname	Action	HA Status														
		Max HA Role	Active Mates	Standby Mates												
NO1	Prepare ▾	Standby	NO2	None												

Procedure 51: Upgrade Single Server – Upgrade Administration

5

Active NOAM VIP:

Verify upgrade status is "Ready"

For Active NOAM on release 6.0 or 7.0.x only

This step is for an Active NOAM on release 6.0 or 7.0.x only.

Verify the server upgrade status is ready.

Upon preparing the selected server, the Upgrade Administration form will refresh, and the server to be upgraded will show Upgrade State = **Ready** (This may take a minute)

Main Menu: Administration -> Software Management -> Upgrade

Filter ▾ Tasks ▾

NO_SG IPFE_SG MP_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
Server Status	Max Allowed HA Role	Network Element	Upgrade ISO		
NO1	Ready Warn	Standby	Network OAM&P	OAM&P	6.0.0-60.24.0
NO2	Not Ready Err	Active	Network OAM&P	OAM&P	6.0.0-60.24.0

Backup ISO Cleanup Prepare Initiate Complete Accept Report Report All

Depending on the server being upgraded, new alarms may occur.

Servers may have a combination of the following expected alarms. NOTE: Not all servers have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)
- Alarm ID = 31101 (DB Replication to slave DB has failed)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31106 (DB Merge to Parent Failure)

Procedure 51: Upgrade Single Server – Upgrade Administration

<p>6</p> <p>Active NOAM VIP:</p> <p>Initiate Upgrade (part 1)</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>Initiate the upgrade on the server.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the server to be upgraded. Click the “Initiate” button <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Max Allowed HA Role</th> <th>Network Element</th> <th>Upgrade ISO</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Ready Warn</td> <td>Standby</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>6.0.0-60.24.0</td> </tr> <tr> <td>NO2</td> <td>Not Ready Err</td> <td>Active</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>6.0.0-60.24.0</td> </tr> </tbody> </table> <p>Backup ISO Cleanup Prepare Initiate Complete Accept Report Report All</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Max Allowed HA Role	Network Element	Upgrade ISO			NO1	Ready Warn	Standby	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0	NO2	Not Ready Err	Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																				
Server Status	Max Allowed HA Role	Network Element	Upgrade ISO																						
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NO2	Not Ready Err	Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0																				
<p>7</p> <p>Active NOAM VIP:</p> <p>Initiate Upgrade (part 2)</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>Initiate the upgrade on the server.</p> <p>The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]</p> <ol style="list-style-type: none"> In the Upgrade Image – Upgrade ISO pick list, select the ISO to use in the server upgrade, Click the Ok button. The upgrade will begin and control will return to the Upgrade Administration screen. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p> <p>Info</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Start upgrade</td> <td>Network Element: NO_DSR_VM Server Group: NO_SG Application Version: 6.0.0-60.24.0</td> </tr> </tbody> </table> <p>Upgrade Image</p> <p>Upgrade ISO: DSR-7.1.0.0.0_71.11.0-x86_64.iso</p> <p>Select the desired upgrade ISO media file.</p> <p>Ok Cancel</p> </div>	Hostname	Action	Status	NO1	Start upgrade	Network Element: NO_DSR_VM Server Group: NO_SG Application Version: 6.0.0-60.24.0																		
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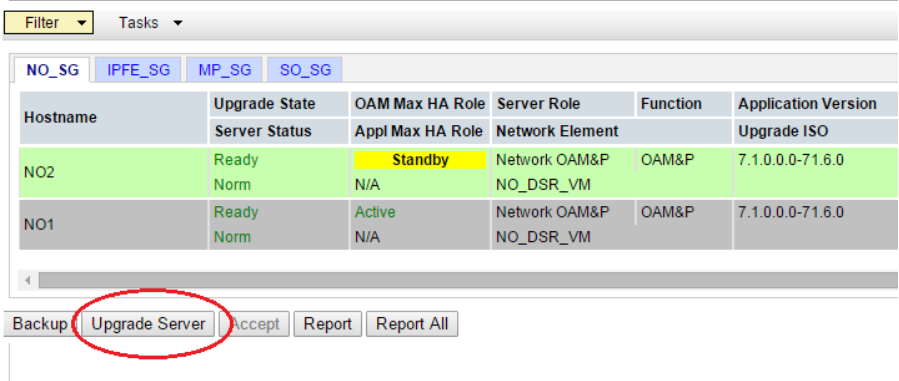
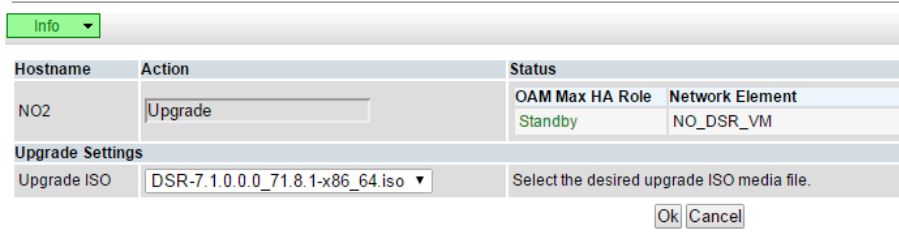
Procedure 51: Upgrade Single Server – Upgrade Administration

8	<p>Active NOAM VIP:</p> <p>View In-Progress Status (monitor)</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>View the Upgrade Administration form to monitor upgrade progress.</p> <p>See step 14 for an optional method of monitoring upgrade progress.</p> <p>See step 15 below for instructions if the Upgrade fails, or if execution time exceeds 60 minutes.</p> <p><i>NOTE: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as “FAILED”. The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.</i></p> <ol style="list-style-type: none"> Observe the Upgrade State of the server of interest. Upgrade status will be displayed under the Status Message column. <p>Main Menu: Administration -> Software Management -> Upgrade</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Filter</td> <td>Status</td> <td>Tasks</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>NO_SG</th> <th>IPFE_SG</th> <th>MP_SG</th> <th>SO_SG</th> </tr> </thead> <tbody> <tr> <td>NO2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>NO1</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> <th>Start Time</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> <th>Status Message</th> </tr> </thead> <tbody> <tr> <td>NO2</td> <td>Upgrading Unk</td> <td>OOS</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>DSR-7.1.0.0_71.8.1-x86_64.iso</td> <td>2015-01-29 10:49:57 EST</td> </tr> <tr> <td>NO1</td> <td>Ready Err</td> <td>Active</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.0.0-71.6.0</td> <td>Upgrade is in progress</td> </tr> </tbody> </table> <p>Servers may have a combination of the following expected alarms. Note: Not all servers will have all alarms:</p> <ul style="list-style-type: none"> Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 10073 (Server Group Max Allowed HA Role Warning) Alarm ID = 32515 (Server HA Failover Inhibited) Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server) Alarm ID = 31283 (Highly available server failed to receive mate heartbeats) Alarm ID = 31106 (DB Merge To Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31233 (HA Secondary Path Down) Alarm ID = 31101 (DB Replication To Slave Failure) Alarm ID = 31104 (DB Replication over SOAP has failed) <ol style="list-style-type: none"> Wait for the upgrade to complete. The “Status Message” column will show “Success”. This step will take approximately 20 to 50 minutes. <p>If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.</p>	Filter	Status	Tasks	NO_SG	IPFE_SG	MP_SG	SO_SG	NO2				NO1				Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Start Time		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	Status Message	NO2	Upgrading Unk	OOS	Network OAM&P	OAM&P	DSR-7.1.0.0_71.8.1-x86_64.iso	2015-01-29 10:49:57 EST	NO1	Ready Err	Active	Network OAM&P	OAM&P	7.1.0.0-71.6.0	Upgrade is in progress
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Procedure 51: Upgrade Single Server – Upgrade Administration

9	<p>Active NOAM VIP:</p> <p>Take the upgraded server out of the upgrade SUCCESS state (part 1)</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>Take the upgraded server out of the upgrade ready state. This step applies to all servers, regardless of type.</p> <ol style="list-style-type: none"> Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed. Verify the Application Version value for this server has been updated to the target software release version. Verify the Upgrade State of the server that was upgraded is Success. Select the server that was upgraded Click the Complete button. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Max Allowed HA Role</th> <th>Network Element</th> <th colspan="3">Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Success Err</td> <td>Standby Standby</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.11.0 DSR-7.1.0.0_71.11.0-x86_64.iso</td> </tr> <tr> <td>NO2</td> <td>Not Ready Err</td> <td>Active Active</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>6.0.0-60.24.0</td> </tr> </tbody> </table> <p>Backup ISO Cleanup Prepare Initiate Complete Accept Report Report All</p> </div>	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Max Allowed HA Role	Network Element	Upgrade ISO			NO1	Success Err	Standby Standby	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.11.0 DSR-7.1.0.0_71.11.0-x86_64.iso	NO2	Not Ready Err	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0																		
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NO2	Not Ready Err	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0																																							
10	<p>Active NOAM VIP:</p> <p>Take the upgraded server out of the upgrade SUCCESS state (part 2)</p> <p>For Active NOAM on release 6.0 or 7.0.x only</p>	<p>This step is for an Active NOAM on release 6.0 or 7.0.x only.</p> <p>The Upgrade[Complete] screen is displayed</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Action</th> <th colspan="4">HA Status</th> </tr> <tr> <th></th> <th></th> <th>Max HA Role</th> <th>Active Mates</th> <th>Standby Mates</th> <th>Spare Mates</th> </tr> </thead> <tbody> <tr> <td>NO2</td> <td>Complete</td> <td>Standby</td> <td>NO1</td> <td>None</td> <td>None</td> </tr> </tbody> </table> <p style="text-align: right;">Ok Cancel</p> </div> <ol style="list-style-type: none"> Click OK. This completes the upgrade action on the server. The Upgrade Administration screen is displayed. Wait for the screen to refresh and show the Upgrade State as Accept or Reject. It may take up to 2 minutes for the Upgrade State to change to Accept or Reject. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter Tasks</p> <p>NO_SG IPFE_SG MP_SG SO_SG</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th>Server Status</th> <th>Max Allowed HA Role</th> <th>Network Element</th> <th colspan="3">Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO1</td> <td>Accept or Reject Err</td> <td>Standby Standby</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.11.0</td> </tr> <tr> <td>NO2</td> <td>Not Ready Err</td> <td>Active Active</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>6.0.0-60.24.0</td> </tr> </tbody> </table> <p>Backup ISO Cleanup Prepare Initiate Complete Accept Report Report All</p> </div> <p style="color: red; margin-top: 10px;">Proceed to step 17 to complete this procedure.</p>	Hostname	Action	HA Status						Max HA Role	Active Mates	Standby Mates	Spare Mates	NO2	Complete	Standby	NO1	None	None	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Server Status	Max Allowed HA Role	Network Element	Upgrade ISO			NO1	Accept or Reject Err	Standby Standby	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.11.0	NO2	Not Ready Err	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0
Hostname	Action	HA Status																																										
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NO2	Not Ready Err	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0																																							

Procedure 51: Upgrade Single Server – Upgrade Administration

<p>11</p> <p>Active NOAM VIP:</p> <p>Initiate Upgrade (part 1)</p> <p>For Active NOAM on release 7.1.x and later</p>	<p>This step is for an Active NOAM on release 7.1.x or later.</p> <p>Initiate the server upgrade.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the server to be upgraded. Click the “Upgrade Server” button. <p>Main Menu: Administration -> Software Management -> Upgrade</p>  <p>The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]</p>
<p>12</p> <p>Active NOAM VIP:</p> <p>Initiate Upgrade (part 2) – Select ISO form</p> <p>For Active NOAM on release 7.1.x and later</p>	<p>This step is for an Active NOAM on release 7.1.x or later.</p> <p>Initiate the server upgrade.</p> <ol style="list-style-type: none"> In the Upgrade Settings – Upgrade ISO pick list, select the ISO to use in the server upgrade, <p>Note: When the Active NOAM is the server being upgraded, selecting OK will initiate an HA switchover, causing the GUI session to log out. Before logging into the Active OAM again, close and re-open the browser using the VIP address for the NOAM, and then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.</p> <p>Note: If the selected server is the active server in an Active/Standby pair, the OAM Max HA Role column will display “Active” with a red background. This is NOT an alarm condition. This indicator is to make the user aware that the Make Ready action WILL cause an HA switchover.</p> <ol style="list-style-type: none"> Click the Ok button. The upgrade will begin and control will return to the Upgrade Administration screen. <p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p> 

Procedure 51: Upgrade Single Server – Upgrade Administration

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Active NOAM VIP:

View In-Progress Status (monitor)

View the Upgrade Administration form to monitor upgrade progress.

See step 14 for an optional method of monitoring upgrade progress.

See step 15 below for instructions if the Upgrade fails, or if execution time exceeds 60 minutes.

NOTE: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as "FAILED". The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.

2. Observe the **Upgrade State** of the server of interest. Upgrade status will be displayed under the **Status Message** column.

Main Menu: Administration -> Software Management -> Upgrade

NO_SG	IPFE_SG	MP_SG	SO_SG	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	Start Time
					Server Status	Appl Max HA Role	Network Element	Upgrade ISO		Status Message
				NO2	Upgrading	OOS	Network: OAM&P	OAM&P	DSR-7.1.0.0.0_71.8.1-x86_64.iso	2015-01-29 10:49:57 EST
					Unk	N/A	NO_DSR_VM			Upgrade is in progress
				NO1	Ready	Active	Network: OAM&P	OAM&P	7.1.0.0-71.8.0	
					Err	N/A	NO_DSR_VM			

Servers may have a combination of the following expected alarms.

Note: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)
- Alarm ID = 31283 (Highly available server failed to receive mate heartbeats)
- Alarm ID = 31106 (DB Merge To Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31233 (HA Secondary Path Down)
- Alarm ID = 31101 (DB Replication To Slave Failure)
- Alarm ID = 31104 (DB Replication over SOAP has failed)

3. Wait for the upgrade to complete. The "Status Message" column will show "Success". This step will take approximately 20 to 50 minutes.

If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.

Procedure 51: Upgrade Single Server – Upgrade Administration

<p>14</p>	<p>Server CLI:</p> <p>Optional : View In-Progress Status from command line of server</p>	<p>An optional method to view Upgrade progress from the command line:</p> <p>To view the detailed progress of the upgrade , access the server command line (via SSH or Console), and enter:</p> <pre>\$ tail -f /var/TKLC/log/upgrade/upgrade.log</pre> <p>Once the server has upgraded, it will re-boot, and then it will take a couple of minutes for the DSR Application processes to start up.</p> <p>This command will show the current rev on the server:</p> <pre>\$ appRev Install Time: Tue Jun 17 08:20:57 2014 Product Name: DSR Product Release: 6.0.0_60.14.6 Base Distro Product: TPD Base Distro Release: 6.7.0.0.1_84.14.0 Base Distro ISO: TPD.install-6.7.0.0.1_84.14.0-OracleLinux6.5-x86_64.iso OS: OracleLinux 6.5</pre> <p>If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.</p>																															
<p>15</p>	<p>Server CLI:</p> <p>If the upgrade fails:</p>	<p>If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files:</p> <pre>/var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log</pre> <p>It is recommended to contact MOS by referring to Appendix P of this document and provide these files.Refer to Appendix N for failed server recovery procedures.</p>																															
<p>16</p>	<p>Active NOAM VIP:</p> <p>Verify post upgrade status</p>	<p>Verify post upgrade status</p> <ol style="list-style-type: none"> Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed. Verify the Application Version value for this server has been updated to the target software release version. <p>If the Active NOAM is on release 6.0 or 7.0.x: Verify the Status Message indicates Success.</p> <p>If the Active NOAM is on release 7.1.x or later: Verify the Upgrade State of the upgraded server is Accept or Reject.</p> <table border="1" data-bbox="516 1465 1404 1696"> <thead> <tr> <th>NO_SG</th> <th>IPFE_SG</th> <th>MP_SG</th> <th>SO_SG</th> <th colspan="3"></th> </tr> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <th></th> <th>Server Status</th> <th>Appl Max HA Role</th> <th>Network Element</th> <th></th> <th>Upgrade ISO</th> </tr> </thead> <tbody> <tr> <td>NO2</td> <td>Accept or Reject Warn</td> <td>Standby N/A</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.6.0 DSR-7.1.0.0_71.8.1-x86_64.iso</td> </tr> <tr> <td>NO1</td> <td>Ready Norm</td> <td>Active N/A</td> <td>Network OAM&P NO_DSR_VM</td> <td>OAM&P</td> <td>7.1.0.0-71.6.0</td> </tr> </tbody> </table> <p>Backup Upgrade Server Accept Report Report All</p>	NO_SG	IPFE_SG	MP_SG	SO_SG				Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		Server Status	Appl Max HA Role	Network Element		Upgrade ISO	NO2	Accept or Reject Warn	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.6.0 DSR-7.1.0.0_71.8.1-x86_64.iso	NO1	Ready Norm	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.6.0
NO_SG	IPFE_SG	MP_SG	SO_SG																														
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																												
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO																												
NO2	Accept or Reject Warn	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.6.0 DSR-7.1.0.0_71.8.1-x86_64.iso																												
NO1	Ready Norm	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0-71.6.0																												

Procedure 51: Upgrade Single Server – Upgrade Administration

<p>17</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify the server was successfully upgraded</p>	<p>View the Post-Upgrade Status of the server:</p> <p>The Active NOAM or SOAM server may have some or all the following expected alarm(s):</p> <p>Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10010 (Stateful database not yet synchronized with mate database) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 31000 (Program impaired by S/W Fault) Alarm ID = 31201 (Process Not Running) for eclipseHelp process Alarm ID = 31282 (The HA manager (cmha) is impaired by a s/w fault) Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</p> <p>The Active NOAM or SOAM will have the following expected alarm until both NOAMs/SOAMs are upgraded: Alarm ID = 31233 – HA Secondary Path Down</p> <p>NOTE: Do Not Accept upgrade at this time. This alarm is OK.</p>
<p>18</p> <p><input type="checkbox"/></p>	<p>Procedure Complete</p>	<p>The single server upgrade is now complete.</p> <p>Return to the DSR upgrade procedure step that directed the execution of Appendix G.</p>

Appendix H UPGRADE MULTIPLE SERVERS – UPGRADE ADMINISTRATION

This Appendix provides the procedure for upgrading multiple servers in parallel.

Note that this procedure will be executed multiple times during the overall upgrade, depending on the number of servers in the DSR. Make multiple copies of Appendix H to mark up, or keep another form of written record of the steps performed.

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

<p>S T E P #</p>	<p>This procedure executes the Upgrade Multiple Servers – Upgrade Administration steps.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND</u> ASK FOR UPGRADE ASSISTANCE.</p>																																		
<p>1.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>View pre-upgrade status</p> <p>View the pre-upgrade status of the servers.</p> <ol style="list-style-type: none"> 1. Log into the NOAM GUI using the VIP. 2. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="6" style="text-align: left;"> NO_SG IPFE_SG MP_SG SO_SG </td> </tr> <tr> <th>Hostname</th> <th>Upgrade State</th> <th>OAM Max HA Role</th> <th>Server Role</th> <th>Function</th> <th>Application Version</th> </tr> <tr> <td rowspan="2">NO1</td> <td style="background-color: #ffcc00;">Backup Needed</td> <td>Active</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.0.0-71.111.001</td> </tr> <tr> <td>Norm</td> <td>N/A</td> <td>NO_DSR_VM</td> <td></td> <td></td> </tr> <tr> <td rowspan="2">NO2</td> <td style="background-color: #ffcc00;">Backup Needed</td> <td style="background-color: #ffff00;">Standby</td> <td>Network OAM&P</td> <td>OAM&P</td> <td>7.1.0.0-71.11.0</td> </tr> <tr> <td>Norm</td> <td>N/A</td> <td>NO_DSR_VM</td> <td></td> <td></td> </tr> </table> <p style="text-align: center;"> <input type="button" value="Backup"/> <input type="button" value="Backup All"/> <input type="button" value="Auto Upgrade"/> <input type="button" value="Accept"/> <input type="button" value="Report"/> <input type="button" value="Report All"/> </p> </div> <p>Active NOAM server may have some or all of the following expected alarms:</p> <ul style="list-style-type: none"> Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 32532 (Server Upgrade Pending Accept/Reject) 	NO_SG IPFE_SG MP_SG SO_SG						Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	NO1	Backup Needed	Active	Network OAM&P	OAM&P	7.1.0.0-71.111.001	Norm	N/A	NO_DSR_VM			NO2	Backup Needed	Standby	Network OAM&P	OAM&P	7.1.0.0-71.11.0	Norm	N/A	NO_DSR_VM		
NO_SG IPFE_SG MP_SG SO_SG																																			
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version																														
NO1	Backup Needed	Active	Network OAM&P	OAM&P	7.1.0.0-71.111.001																														
	Norm	N/A	NO_DSR_VM																																
NO2	Backup Needed	Standby	Network OAM&P	OAM&P	7.1.0.0-71.11.0																														
	Norm	N/A	NO_DSR_VM																																

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

2.

Active NOAM VIP:

Verify status of Servers to be upgraded

For the servers to be upgraded:

1. Identify the servers to be upgraded in parallel _____ (record names)
2. Select the server group associated with the servers identified in step 1.
3. Verify the Application Version value is the expected source software release version for each server to be upgraded.
4. From the **Administration > Software Management > Upgrade** screen, select the Server Group of the server to be upgraded.

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

NO_SG IPFE_SG MP_SG SO_SG

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
SO1	Backup Needed Norm	Active N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0
SO2	Backup Needed Norm	Standby N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0

Backup Backup All Auto Upgrade Accept Report Report All

5. If the server is in “**Backup Needed**” state, select the server and click the “**Backup**” button. The Upgrade State changes to “**Backup in Progress**”. When the backup is complete, the Upgrade State changes to “**Ready**”.
6. Verify the “OAM Max Ha Role” is the expected condition (either **Standby or Active**) (this will depend on the server being upgraded)

3.

Active NOAM VIP:

Verify Upgrade Status is “Ready”

The Upgrade Administration form will be refreshed, and the server to be upgraded will show Upgrade Status = READY (This may take a minute). Depending on the server being upgraded, new alarms may occur.

The Upgrade Administration screen is displayed:

Main Menu: Administration -> Software Management -> Upgrade

Filter Tasks

SO_SG IPFE_SG MP_SG NO_SG

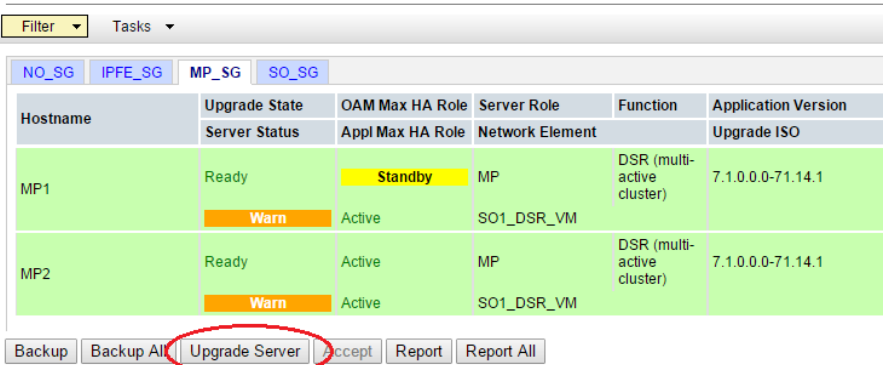
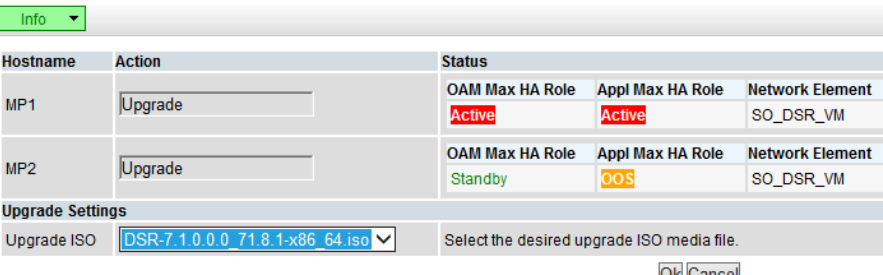
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
SO1	Ready Norm	Active N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0
SO2	Ready Norm	Standby N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0-71.11.0

Backup Backup All Auto Upgrade Accept Report Report All

Servers may have a combination of the following expected alarms. NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 32515 (Server HA Failover Inhibited)
- Alarm ID = 31101 (DB Replication to slave DB has failed)
- Alarm ID = 31106 (DB Merge to Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

<p>4.</p>	<p>Determine upgrade method – manual or automatic</p> <p>Active NOAM VIP:</p> <p>Initiate upgrade (initiate) (part 1)</p>	<p>To upgrade multiple servers in parallel using the manual option, execute steps 4 and 5.</p> <p>To upgrade a server group using the Automated Server Group Upgrade option, proceed to step 6.</p> <p>Initiate the upgrade.</p> <ol style="list-style-type: none"> From the Upgrade Administration screen, select the servers to be upgraded. Click the “Upgrade Server” button. <p>Main Menu: Administration -> Software Management -> Upgrade</p>  <p>The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]</p>
<p>5.</p>	<p>Active NOAM VIP:</p> <p>Initiate Upgrade (part 2) – Select ISO form</p>	<p>Start the upgrade.</p> <ol style="list-style-type: none"> In the Upgrade Settings – Upgrade ISO pick list, select the ISO to use in the server upgrade, <p>Note: When the Active NOAM is the server being upgraded, selecting OK will initiate an HA switchover, causing the GUI session to log out. Before logging into the Active OAM again, close and re-open the browser using the VIP address for the NOAM, and then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.</p> <p>Note: If the selected server is the active server in an Active/Standby pair, the OAM Max HA Role column will display “Active” with a red background. This is NOT an alarm condition. This indicator is to make the user aware that the Make Ready action WILL cause an HA switchover.</p> <ol style="list-style-type: none"> Click the Ok button. The upgrade will begin and control will return to the Upgrade Administration screen. <p>Main Menu: Administration -> Software Management -> Upgrade [Initiate]</p>  <p>Proceed to step 8 to complete this procedure.</p>

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

6.

Active NOAM VIP:

Initiate (part 1) -
**Automated Server
Group Upgrade**

Initiate the Automated Server Group Upgrade option

1. To utilize the Automated Server Group upgrade option, verify that no servers in the server group are selected.

Main Menu: Administration -> Software Management -> Upgrade

The screenshot shows a web interface for server management. At the top, there are tabs for 'MP_SG', 'IPFE_SG', 'NO_SG', and 'SO_SG'. Below the tabs is a table with columns: Hostname, Upgrade State, OAM Max HA Role, Server Role, Function, and Application Version. The table contains two rows for servers MP1 and MP2. Below the table, there are several buttons: 'Backup', 'Backup All', 'Auto Upgrade' (circled in red), 'Accept', 'Report', and 'Report All'.

Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
MP1	Ready Warn	Standby Active	MP SO1_DSR_VM	DSR (multi-active cluster)	7.1.0.0-71.14.1
MP2	Ready Warn	Active Active	MP SO1_DSR_VM	DSR (multi-active cluster)	7.1.0.0-71.14.1

2. Click the **Auto Upgrade** button.
The Upgrade [Initiate] screen is displayed.

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

7.

Active NOAM VIP:

Initiate (part 2) - Automated Server Group Upgrade

Start the Automated Server Group Upgrade.

Note: The settings to be used in this step are specified in the calling procedure.

1. The **Upgrade Settings** section of the Initiate screen controls the behavior of the automated upgrade. Select the settings that apply to the server type being upgraded.

Bulk: Select this option for Active/Standby and multi-active server groups.
For servers in an Active/Standby configuration, the Standby server is upgraded first, followed by the Active. Servers in a multi-active configuration are upgraded in parallel to the extent allowed by the Availability setting.

Serial: Select this option to upgrade multiple servers one at a time.

Grouped Bulk: Select this option for SBR server groups.
Grouped bulk always upgrades the Spare(s), followed by the Standby, followed by the Active.

Availability: This setting determines how many servers will remain in service while servers in the server group are upgraded. For example, a setting of 50% will ensure that *at least* half of the servers *in the server group* remain in service. Note: the Availability setting is not displayed when upgrading OAM servers.

Note: The **Serial** upgrade mode is available as an alternative to Bulk and Grouped Bulk for a more conservative upgrade scenario. Serial mode will upgrade each server in the server group one at a time, and can be used on any server group type.

2. Select the appropriate ISO from the **Upgrade ISO** pick list.
3. Click the **Ok** button to start the upgrade.

Main Menu: Administration -> Software Management -> Upgrade [Initiate]

Info ▾

Hostname	Action	Status
MP1	Auto upgrade	OAM Max HA Role: Standby Appl Max HA Role: Active Network Element: SO1_DSR_VM
MP2	Auto upgrade	OAM Max HA Role: Active Appl Max HA Role: Active Network Element: SO1_DSR_VM

Upgrade Settings

Server group upgrade mode.

Select "Bulk" to upgrade servers in groups according to the availability s
 Select "Serial" to upgrade servers one at a time in HA order.
 Select "Grouped Bulk" to upgrade servers in HA groups according to the
 In all modes, any designated last server will be upgraded last.

HA groups are created according to the "Application HA Role" of the sen
 The HA role order is spare, observer, standby and active.

Select the desired percent availability of servers in the server group duri
 (NONE - all servers with 'Upgrade' action will be unavailable.)

Select the desired upgrade ISO media file.

Ok | Cancel

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

8.

Active NOAM VIP:

View In-Progress Status (monitor)

View the Upgrade Administration form to monitor upgrade progress.

See step 9 for an optional method of monitoring upgrade progress.

See step 10 below for instructions if the Upgrade fails, or if execution time exceeds 60 minutes.

Note: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to the original software release. In this case, the Upgrade will be shown as "FAILED". The execution time may be shorter or longer, depending on the point in the upgrade where there was a problem.

1. Observe the **Upgrade State** of the servers of interest. Upgrade status will be displayed under the **Status Message** column.

Main Menu: Administration -> Software Management -> Upgrade

Filter Status Tasks

MP_SG	IPFE_SG	NO_SG	SO_SG		
Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
MP1	Upgrading Err	Standby OOS	MP SO_DSR_VM	DSR (active/stand by pair)	7.1.0.0.0-71.6.0 DSR-7.1.0.0.0_71.8.1-x86_64.iso
MP2	Upgrading Err	Spare OOS	MP SO_DSR_VM	DSR (active/stand by pair)	7.1.0.0.0-71.6.0 DSR-7.1.0.0.0_71.8.1-x86_64.iso

Backup Backup All Auto Upgrade Accept Report Report All

During the upgrade, the servers may have a combination of the following expected alarms.
NOTE: Not all servers will have all alarms:

- Alarm ID = 10008 (Provisioning Manually Disabled)
- Alarm ID = 10073 (Server Group Max Allowed HA Role Warning)
- Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped)
- Alarm ID = 31101 (DB Replication To Slave Failure)
- Alarm ID = 31106 (DB Merge To Parent Failure)
- Alarm ID = 31107 (DB Merge From Child Failure)
- Alarm ID = 31228 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server)
- Alarm ID = 31233 (HA Secondary Path Down)
- Alarm ID = 31283 (Highly available server failed to receive mate heartbeats)
- Alarm ID = 32515 (Server HA Failover Inhibited)

2. Wait for the upgrades to complete. The "Status Message" column will show "Success". This step will take approximately 20 to 50 minutes.

If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.

Procedure 52: Upgrade Multiple Servers - Upgrade Administration

<p>9.</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Optional : View in-progress status from command line</p>	<p>Optional method to view upgrade progress from a command line:</p> <p>To view the detailed progress of the upgrade – Access the server command line (via ssh or Console), and:</p> <pre>\$ tail -f /var/TKLC/log/upgrade/upgrade.log</pre> <p>Once a server is upgraded, it will re-boot, and then it will take a couple of minutes for the DSR application processes to start up.</p> <p>This command will show the current rev on the upgraded servers:</p> <pre>[admusr@NO1 ~]\$ appRev Install Time: Wed Feb 25 02:52:47 2015 Product Name: DSR Product Release: 7.1.0.0.0_71.10.0 Base Distro Product: TPD Base Distro Release: 7.0.0.0.0_86.14.0 Base Distro ISO: TPD.install-7.0.0.0.0_86.14.0-OracleLinux6.5-x86_64.iso ISO name: DSR-7.1.0.0.0_71.10.0-x86_64.iso OS: OracleLinux 6.5</pre> <p>If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix N for failed server recovery procedures.</p>
<p>10.</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>If upgrade fails:</p>	<p>If a server upgrade fails, access the server command line (via ssh or Console), and collect the following files:</p> <pre>/var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log</pre> <p>It is recommended to contact MOS by referring to Appendix P of this document and provide these files. Refer to Appendix N for failed server recovery procedures.</p>
<p>11.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify post upgrade status</p>	<p>Verify post-upgrade status</p> <ol style="list-style-type: none"> 1. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed. 2. Verify the Application Version value for the servers has been updated to the target software release version. 3. Verify the Status Message indicates success. 4. Verify the Upgrade State of the upgraded servers is Accept or Reject.
<p>12.</p> <p><input type="checkbox"/></p>	<p>Verify the servers were successfully upgraded</p>	<p>View Post-Upgrade Status of the server:</p> <p>The Active SOAM server may have some or all the following expected alarm(s):</p> <pre>Alarm ID = 10008 (Provisioning Manually Disabled) Alarm ID = 10010 (Stateful database not yet synchronized with mate database) Alarm ID = 10075 (The server is no longer providing services because application processes have been manually stopped) Alarm ID = 31000 (Program impaired by S/W Fault) Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)</pre> <p>NOTE: Do Not Accept upgrade at this time. This alarm is OK.</p>
<p>13.</p> <p><input type="checkbox"/></p>	<p>Procedure Complete.</p>	<p>The multiple servers upgrade is now complete. Return to the DSR upgrade procedure step that directed the execution of Appendix H.</p>

THIS PROCEDURE HAS BEEN COMPLETED

Appendix I UPGRADE FIRMWARE

This section is not applicable to Software Centric installations/upgrades.

Firmware upgrade procedures are not included in this document. It is recommended to contact MOS by referring to Appendix P of this document for the latest information on firmware upgrades.

Appendix J UPGRADE TVOE PLATFORM

This Appendix provides the procedure for upgrading TVOE on a host server that supports one or more DSR virtual guests.

If upgrading a DSR server that is deployed as a virtual guest of the TVOE host software, then TVOE itself may have to be upgraded first. Refer to Appendix E to determine if a TVOE upgrade is required.

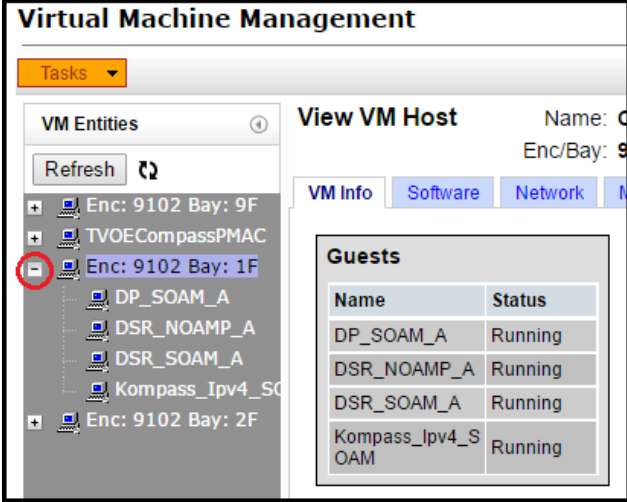
If the server being upgraded is not virtualized, then this Appendix does not apply.

CAUTION	CAUTION: UPGRADE OF THE TVOE HOST CREATES A SNAPSHOT OF THE LOGICAL VOLUMES (LV) PRESENT ON THE DISK. THIS SNAPSHOT IS REQUIRED IN CASE OF "BACKOUT" TO THE PREVIOUS RELEASE.
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CAUTION	CAUTION: UPGRADE OF THE TVOE SHUTS DOWN ALL GUESTS OPERATING IN THE TVOE ENVIRONMENT. ADVANCE PLANNING IS REQUIRED TO ENSURE TRAFFIC PROCESSING IS NOT ADVERSELY AFFECTED.
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The user should be aware that snapshot corruption can occur if large scale changes (such as the deletion or addition of an ISO image) are made on the TVOE host prior to the Upgrade Accept.

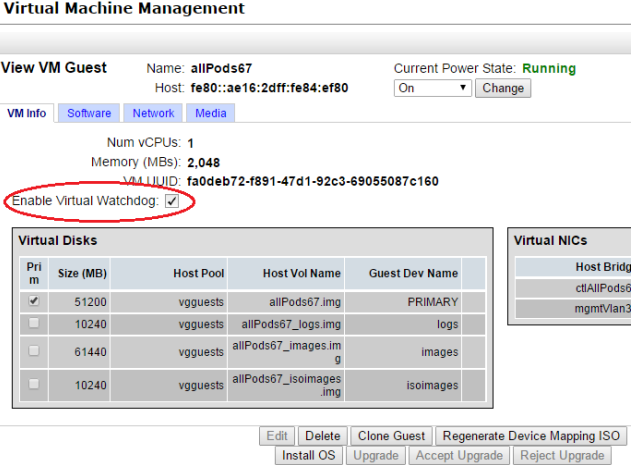
Procedure 53: Upgrade TVOE Platform

S T E P #	<p>This procedure upgrades TVOE.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>
1	<div style="display: flex;"> <div style="width: 25%; border-right: 1px solid black; padding-right: 5px;"> <p>PM&C GUI:</p> <p>Display TVOE guest VMs</p> </div> <div style="padding-left: 5px;"> <p>Display guest VMs of the TVOE to be upgraded.</p> <ol style="list-style-type: none"> 1. Log into the PM&C GUI by navigating to <code>http://<pmac_management_ip></code> 2. Select Main Menu > VM Management. The VM Management screen is displayed. 3. Display the TVOE guest VMs by expanding the TVOE host that is to be upgraded. </div> </div> <div style="margin-top: 10px; border: 1px solid black; padding: 5px;">  </div>


Procedure 53: Upgrade TVOE Platform

<p>2</p> <p><input type="checkbox"/></p>	<p><u>Active DSR NOAM VIP:</u></p> <p>Disable DSR applications</p>	<p>If any DSR applications are guest VMs of the TVOE to be upgraded (as shown in step 1), disable all applications running on the current TVOE.</p> <ol style="list-style-type: none"> 1. Log into the DSR NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select the virtual servers that are running on the TVOE environment to be upgraded, as identified in step 1. 4. Click the 'Stop' button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all the selected servers is changed to 'Disabled'.
<p>3</p> <p><input type="checkbox"/></p>	<p><u>Active SDS NOAM VIP:</u></p> <p><u>Disable SDS applications</u></p>	<p>This step is applicable to the VEDSR configuration only.</p> <p>If any SDS applications are guest VMs of the TVOE to be upgraded (as shown in step 1), coordinate with the SDS team to shutdown the SDS applications.</p> <ol style="list-style-type: none"> 1. Log into the SDS NOAM GUI using the VIP. 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select the virtual servers that are running on the TVOE environment to be upgraded, as identified in step 1. 4. Click the 'Stop' button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all the selected servers is changed to 'Disabled'.
<p>4</p> <p><input type="checkbox"/></p>	<p><u>PM&C GUI:</u></p> <p>Shutdown guest VMs</p>	<p>Shutdown TVOE guest VMs.</p> <ol style="list-style-type: none"> 1. Select a guest VM of the TVOE to be upgraded. 2. Change the power state of the guest VM from Running to Shutdown and click the 'Change' button. Confirm the pop-up and wait for the power state to change to Shutdown. This may take a few moments as this executes a graceful shutdown of the guest VM. <div data-bbox="560 1205 1289 1436" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>View VM Guest Name: DP_SOAM_A Current Power State: Running</p> <p>Host: Enc: 9102 Bay: 1F Shutdown ▾ Change ←</p> <hr/> <p>VM Info Software Network Media</p> <p>Num vCPUs: 4</p> <p>Memory (MBs): 16,384</p> <p>VM UUID: 16431289-47c9-4ce1-bd1f-5d3d30b43672</p> <p>Enable Virtual Watchdog: <input checked="" type="checkbox"/></p> </div> <ol style="list-style-type: none"> 3. Verify the Current Power State changes to 'Shut Down'. 4. Repeat sub-steps 2 and 3 for each guest VM shown in step 1.
<p>5</p> <p><input type="checkbox"/></p>	<p>Upgrade TVOE</p>	<p>Upgrade TVOE using the "PM&C Aided TVOE Upgrade Procedure" from Reference [3].</p> <p>[If the "PM&C Aided TVOE Upgrade" procedure is not possible, it is also possible to upgrade TVOE using the alternate procedure provided in Reference [3].]</p> <p>NOTE: If the Active NOAM is hosted on the TVOE server which is being upgraded, VIP may be lost until TVOE is successfully upgraded.</p>

Procedure 53: Upgrade TVOE Platform

<p>6</p>	<p>After completed ...</p>	<p>After the TVOE upgrade is completed on the Host Server, the Application(s) may not be started automatically.</p> <p>Proceed with the next step to restore service.</p>																									
<p>7</p>	<p>PM&C GUI: Restart guest VMs</p>	<p>Restart the guest VMs following the TVOE upgrade.</p> <ol style="list-style-type: none"> 1. Log into the PM&C GUI by navigating to http://<pmac_management_ip> 2. Select Main Menu > VM Management. The VM Management screen is displayed. 3. Display the TVOE guest VMs by expanding the TVOE host that is to be upgraded. 4. Select a guest VM of the TVOE to be upgraded. 5. If the 'Enable Virtual Watchdog' checkbox is not checked, <ol style="list-style-type: none"> a. Click the Edit button, b. Check the Enable Virtual Watchdog checkbox. c. Click 'Save'.  <p>Virtual Machine Management</p> <p>View VM Guest Name: allPods67 Current Power State: Running Host: fe80::ae16:2dff:fe84:ef80 On Change</p> <p>VM Info Software Network Media</p> <p>Num vCPUs: 1 Memory (MBs): 2,048 VM UUID: fa0deb72-f891-47d1-92c3-69055087c160</p> <p>Enable Virtual Watchdog: <input checked="" type="checkbox"/></p> <table border="1"> <thead> <tr> <th>Pri m</th> <th>Size (MB)</th> <th>Host Pool</th> <th>Host Vol Name</th> <th>Guest Dev Name</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>51200</td> <td>vgguests</td> <td>allPods67.img</td> <td>PRIMARY</td> </tr> <tr> <td><input type="checkbox"/></td> <td>10240</td> <td>vgguests</td> <td>allPods67_logs.img</td> <td>logs</td> </tr> <tr> <td><input type="checkbox"/></td> <td>61440</td> <td>vgguests</td> <td>allPods67_images.im g</td> <td>images</td> </tr> <tr> <td><input type="checkbox"/></td> <td>10240</td> <td>vgguests</td> <td>allPods67_isoimages .img</td> <td>isoimages</td> </tr> </tbody> </table> <p>Virtual NICs: Host Bridg, ctAllPods6, mgmtVlan3</p> <p>Edit Delete Clone Guest Regenerate Device Mapping ISO Install OS Upgrade Accept Upgrade Reject Upgrade</p> <ol style="list-style-type: none"> 5. Change the power state of the guest VM from Shutdown to On and click the 'Change' button. Confirm the pop-up and wait for the power state to change to Running. This may take a few moments as guest VM reboots. 	Pri m	Size (MB)	Host Pool	Host Vol Name	Guest Dev Name	<input checked="" type="checkbox"/>	51200	vgguests	allPods67.img	PRIMARY	<input type="checkbox"/>	10240	vgguests	allPods67_logs.img	logs	<input type="checkbox"/>	61440	vgguests	allPods67_images.im g	images	<input type="checkbox"/>	10240	vgguests	allPods67_isoimages .img	isoimages
Pri m	Size (MB)	Host Pool	Host Vol Name	Guest Dev Name																							
<input checked="" type="checkbox"/>	51200	vgguests	allPods67.img	PRIMARY																							
<input type="checkbox"/>	10240	vgguests	allPods67_logs.img	logs																							
<input type="checkbox"/>	61440	vgguests	allPods67_images.im g	images																							
<input type="checkbox"/>	10240	vgguests	allPods67_isoimages .img	isoimages																							
<p>8</p>	<p>Active DSR NOAM VIP: Enable DSR applications</p>	<p>Enable the DSR applications running on upgraded TVOE</p> <ol style="list-style-type: none"> 1. Log into the DSR NOAM GUI using the VIP 2. Select Status & Manage > Server. The Server Status screen is displayed 3. Select all the applications running on upgraded TVOE, excluding the server which is in upgrade 'Ready' state. The Upgrade State can be verified from the Administration > Upgrade screen. 4. Click the 'Restart' button. 5. Confirm the operation by clicking Ok in the popup dialog box. 6. Verify that the 'Appl State' for all the selected servers is changed to 'Enabled'. 																									

Procedure 53: Upgrade TVOE Platform

9 	<u>Active SDS NOAM VIP:</u> Enable SDS applications	Enable the SDS applications running on upgraded TVOE. <ol style="list-style-type: none">1. Log into the SDS NOAM GUI using the VIP2. Select Status & Manage > Server. The Server Status screen is displayed3. Select all the applications running on upgraded TVOE, excluding the server which is in upgrade 'Ready' state. The Upgrade State can be verified from the Administration > Upgrade screen.4. Click the 'Restart' button.5. Confirm the operation by clicking Ok in the popup dialog box.6. Verify that the 'Appl State' for all the selected servers is changed to 'Enabled'.
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THIS PROCEDURE HAS BEEN COMPLETED.

Appendix K IDIH UPGRADE AT A SITE

In IDIH release 7.1 and later, the mediation and application instance data is stored in the Oracle Database. This allows the Application and Mediation servers to be upgraded by performing a fresh installation. Upon completion of the upgrade, the mediation and application guests will automatically restore the configuration data from the Oracle database.

Table 18 shows the elapsed time estimates for IDIH upgrade.

Table 18. IDIH Upgrade Execution Overview.

Procedure	Elapsed Time (hr:min)		Procedure Title	Impact
	This Step	Cumulative		
Procedure 54	1:15-1:45	1:15-1:45	Oracle Guest Upgrade	None
Procedure 55	0:30-0:45	1:45-2:30	Non-VEDSR Mediation and Application Guest	None
Procedure 56	0:30-0:45	1:45-2:30	VEDSR Mediation and Application Guest Upgrade	None

Appendix K.1 Oracle Guest Upgrade

The Oracle Guest is upgraded first.

Procedure 54: Oracle Guest Upgrade

S T E P #	<p>This procedure performs the IDIH Oracle Guest upgrade.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
	<p>1</p> <p><input type="checkbox"/></p> <p>IDIH CLI</p> <p>Perform a system health check on the Oracle guest</p>	<p>Perform a system health check.</p> <ol style="list-style-type: none"> 1. Login in to the Oracle guest as the admusr user. <pre>ssh <IDIH IP address> login as: admusr password: <enter password></pre> 2. Execute the analyze_server.sh script. <pre>\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i</pre> <p>Sample output:</p> <pre>[admusr@cat-ora ~]\$ /usr/TKLC/xIH/plat/bin/analyze_server.sh -i 13:24:52: STARTING HEALTHCHECK PROCEDURE 13:24:52: date: 03-17-15, hostname: cat-ora 13:24:52: TPD VERSION: 7.0.0.0-86.14.0 13:24:52: ----- 13:24:52: Checking disk free space 13:24:52: No disk space issues found : : 13:25:02: All tests passed! 13:25:02: ENDING HEALTHCHECK PROCEDURE WITH CODE 0</pre> <p>If the output indicates a status failure, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p>

Procedure 54: Oracle Guest Upgrade

2 <input type="checkbox"/>	<p><u>IDIH CLI</u></p> <p>Shutdown Mediation and Application guests</p>	<p>Shutdown the Mediation and Application guests.</p> <ol style="list-style-type: none"> 1. Shutdown the Mediation guest by logging in as admusr and running. <code>\$ sudo init 0</code> 2. Shutdown the Application guest by logging in as admusr and running. <code>\$ sudo init 0</code> <p>The Active SOAM server may have some or all of the following expected alarms: Alarm ID = 19800 Communication Agent Connection Down Alarm ID = 11511 Unable to connect via Comagent to remote DIH server with hostname</p> <p>The Active NOAM server may have some or all of the following expected alarms: Alarm ID = 19800 Communication Agent Connection Down</p>
3 <input type="checkbox"/>	<p><u>PM&C GUI</u></p> <p>Start the upgrade of the Oracle guest via the PM&C GUI.</p>	<p>Initiate the Oracle Guest upgrade</p> <ol style="list-style-type: none"> 1. Navigate to the PM&C VM Management menu. 2. Select the Oracle guest, and click the Upgrade button. 3. On the Select Image screen, select the target image from the list of available images. 4. Click the Start Software Upgrade button to initiate the upgrade.
4 <input type="checkbox"/>	<p><u>PM&C GUI</u></p> <p>Using the PM&C GUI, monitor the upgrade until it finishes.</p>	<p>Navigate to the Task Monitoring menu and wait until the upgrade task finishes. When it finishes, the status will be either Success or Failed.</p> <p>If the upgrade fails, do not proceed with the upgrade. It is recommended to contact MOS for guidance.</p>
5 <input type="checkbox"/>	<p><u>IDIH CLI</u></p> <p>Perform a system health check on the Oracle guest</p>	<p>Wait a few minute to allow the Oracle guest to stabilize after the reboot, and then repeat step 1 to perform the post-upgrade system health check.</p> <p>Note: the following warnings are expected due to the mediation and app servers being shutdown.</p> <pre>Warning: mediation server is not reachable (or ping response exceeds 3 seconds) Warning: app server is not reachable (or ping response exceeds 3 seconds)</pre>
<i>THIS PROCEDURE HAS BEEN COMPLETED</i>		

Appendix K.2 Upgrade the Mediation and Application Guests

The Mediation and Application Guest upgrade is similar to the installation procedure. The procedure varies slightly for VEDSR systems so a separate procedure is provided for that configuration.

For non-VEDSR systems, execute Procedure 55 to upgrade the Mediation and Application guests.

Procedure 56 is used to upgrade the Mediation and Application guests for VEDSR systems.


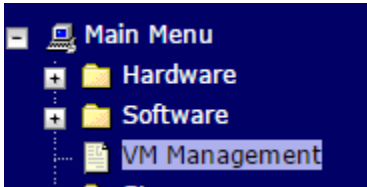
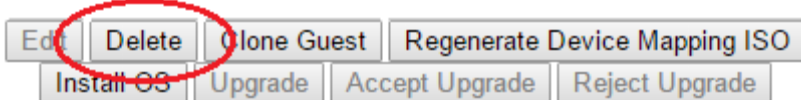
Appendix N.2.1 Non-VEDSR Mediation and Application Guest Upgrade

This procedure updates the Mediation and Application guests in a non-VEDSR system.

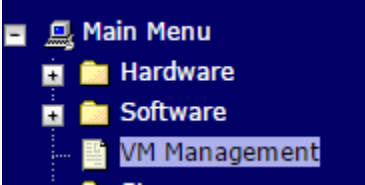
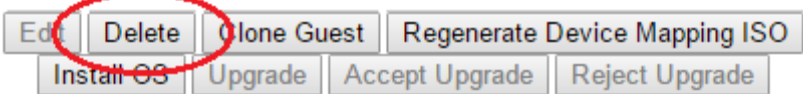
Procedure 55: Non-VEDSR Mediation and Application Guest Upgrade

S T E P #	<p>This procedure performs the IDIH Mediation and Application server upgrade for a non-VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>		
	1	<p>PM&C CLI:</p> <p>Login to the PM&C server</p>	<p>Login in to the PM&C server as the admusr user.</p> <pre>ssh <PM&C IP address> login as: admusr password: <enter password></pre>
	2	<p>PM&C CLI:</p> <p>Save existing fdc.cfg file</p>	<p>If an fdc.cfg file exists in /var/TKLC/smac/guest-dropin, rename the file to 'fdc.cfg-old'. The contents of the file will be referenced in step 4 below.</p>
	3	<p>PM&C CLI:</p> <p>Copy the fdc.cfg file to the guest</p>	<p>Copy the fdc.cfg file to the pmac guest-dropin directory using the command:</p> <pre>> sudo cp /usr/TKLC/smac/html/TPD/mediation-*/fdc.cfg /var/TKLC/smac/guest-dropin</pre>
	4	<p>PM&C CLI:</p> <p>Configure the fdc.cfg file</p>	<p>Edit the fdc.cfg file for the Mediation and Application guest installation.</p> <p>See Appendix O for a breakdown of the fdc.cfg file parameters. Update the software versions, hostnames, bond interfaces, network addresses, and network vlan information for the Mediation and Application guests being installed. The old fdc.cfg file saved in step 2 can be used as a reference for obtaining the hostnames, bond interfaces, network addresses, and network vlan information. Do not copy the software versions from the old fdc.cfg file.</p>
	5	<p>PM&C CLI:</p> <p>Run the FDC creation script</p>	<p>Run the FDC creation script using the config file created in step 4.</p> <pre>\$ cd /var/TKLC/smac/guest-dropin \$ /usr/TKLC/smac/html/TPD/mediation- x.x.x.x_x.x.x - x86_64/fdc.sh fdc.cfg</pre> <p>Note: Rename the fdc.cfg file as desired. Also note that two files are generated by the fdc shell script. One is for the Installation procedure and the other file is used for the upgrade procedure. The upgrade FDC is named upgrade.</p>
6	<p>PM&C CLI:</p> <p>Reset the guest creation timeout</p>	<p>Reset the guest creation timeout.</p> <pre>\$ sudo sqlite3 /usr/TKLC/plat/etc/TKLCfd- config/db/fdcRepo.fdcdb 'update params set value=2000 where name="DEFAULT_CREATE_GUEST_TIMEOUT";</pre>	

Procedure 55: Non-VEDSR Mediation and Application Guest Upgrade

<p>S T E P #</p>	<p>This procedure performs the IDIH Mediation and Application server upgrade for a non-VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>
<p>7</p> <p>PM&C GUI</p> <p>Login to PM&C</p>	<ol style="list-style-type: none"> Using a web browser, navigate to: <pmac ip address> Login as pmacadmin user <div data-bbox="516 562 1377 1178" style="border: 1px solid black; padding: 10px;">  </div>
<p>8</p> <p>PM&C GUI</p> <p>Remove existing Application Server</p>	<ol style="list-style-type: none"> Navigate to Main Menu > VM Management <div data-bbox="558 1266 922 1451" style="border: 1px solid black; padding: 5px;">  </div> <ol style="list-style-type: none"> Select the Application guest Click the Delete button <div data-bbox="532 1556 1328 1654" style="border: 1px solid black; padding: 5px;">  </div>


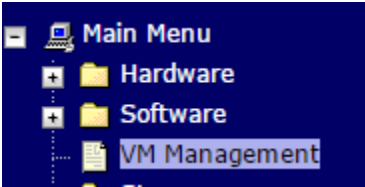
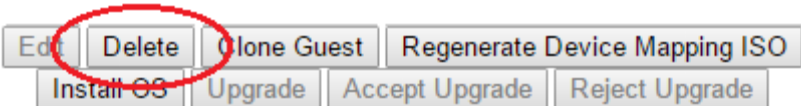
Procedure 55: Non-VEDSR Mediation and Application Guest Upgrade

<p>S T E P #</p>	<p>This procedure performs the IDIH Mediation and Application server upgrade for a non-VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>
<p>9</p> <p>PM&C GUI</p> <p>Remove existing Mediation Server</p>	<p>1. Navigate to Main Menu > VM Management</p>  <p>2. Select the Mediation guest</p> <p>3. Click the Delete button</p> 
<p>10</p> <p>PM&C CLI</p> <p>Establish SSH session and login</p>	<p>Use an SSH client to connect to the PM&C:</p> <pre>ssh <PM&C IP address> login as: admusr password: <enter password></pre>
<p>11</p> <p>PM&C CLI</p> <p>Reinstall the Mediation and Application servers</p>	<div style="border: 2px solid yellow; padding: 5px; text-align: center; width: fit-content; margin: 0 auto;">CAUTION</div> <p style="color: red; text-align: center;">The “upgrade” config file must be used in the following command, or the database will be destroyed, and all database data will be lost.</p> <p>Execute the following command, using the upgrade file:</p> <pre>sudo fdconfig config --file=hostname-upgrade_xx-xx-xx.xml</pre>
<p>12</p> <p>PM&C GUI</p> <p>Monitor installation</p>	<p>From the PM&C GUI, monitor the IDIH installation on the Task Monitoring page until the installation is complete.</p>
<p>13</p> <p>Reconfiguration</p>	<p>Reconfigure the system</p> <p>NOTE: If upgrading from 6.0 to 7.1 and later, all application server and mediation server configuration will be lost. Follow the site configuration steps to re-configure the system.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>	

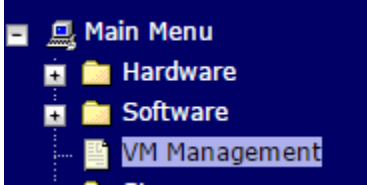
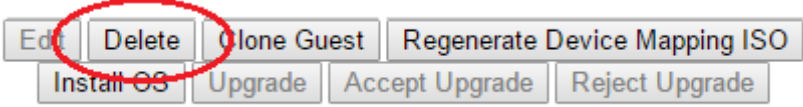
Appendix N.2.2 VEDSR Mediation and Application Guest Upgrade

This procedure updates the Mediation and Application guests in a VEDSR system. In order to upgrade the guests, the installation fdconfig file is copied and modified before the fdconfig utility is run to recreate the guests.

Procedure 56: VEDSR Mediation and Application Guest Upgrade

<p>S T E P #</p>	<p>This procedure performs the IDIH Mediation and Application server upgrade for a VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>	
<p>1</p>	<p>PM&C GUI</p> <p>Login to PM&C</p>	<ol style="list-style-type: none"> Using a web browser, navigate to: <pmac ip address> Login as pmacadmin user 
<p>2</p>	<p>PM&C GUI</p> <p>Remove existing Application Server</p>	<ol style="list-style-type: none"> Navigate to Main Menu > VM Management  <ol style="list-style-type: none"> Select the Application guest Click the Delete button 

Procedure 56: VEDSR Mediation and Application Guest Upgrade

S T E P #	<p>This procedure performs the IDIH Mediation and Application server upgrade for a VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u></p>
3 <input type="checkbox"/>	<p>PM&C GUI</p> <p>Remove existing Mediation Server</p> <ol style="list-style-type: none"> 1. Navigate to Main Menu > VM Management  <ol style="list-style-type: none"> 2. Select the Mediation guest 3. Click the Delete button 
4 <input type="checkbox"/>	<p>PM&C CLI</p> <p>Establish SSH session and login</p> <p>Use an SSH client to connect to the PM&C:</p> <pre>ssh <PM&C IP address> login as: admusr password: <enter password></pre>
5 <input type="checkbox"/>	<p>PM&C CLI</p> <p>Create upgrade fdconfig file</p> <p>An upgrade configuration file is created by copying the installation config file, and modifying the copy to support upgrade.</p> <ol style="list-style-type: none"> 1. Navigate to <code>/var/TKLC/smac/guest-dropin</code> <pre>\$ cd /var/TKLC/smac/guest-dropin</pre> <ol style="list-style-type: none"> 2. Copy the installation config file to an upgrade config file. <pre>\$ sudo cp <hostname>_xx-xx-xx.xml <hostname>-upgrade_xx-xx-xx.xml</pre> <p>where <code><hostname>_xx-xx-xx.xml</code> is the config file used during installation.</p> <p>Note: it is recommended to name the upgrade config file using the pattern specified above.</p> <p>If the upgrade Config file was created from the installation Config file above, proceed to step 7; otherwise, if the installation config file does not exist in <code>/var/TKLC/smac/guest-dropin</code>, perform step 6 to create the upgrade file from a template.</p>
6 <input type="checkbox"/>	<p>PM&C CLI:</p> <p>Create upgrade fdconfig file from a template</p> <p>Create an upgrade configuration file from a template.</p> <ol style="list-style-type: none"> 1. Copy the installation config template to an upgrade config file. <pre>\$ sudo cp /usr/TKLC/smac/html/TPD/mediation- x.x.x.0.0_x.x.x-x86_64/vedsr_idih_upgrade.xml.template ./<hostname>-upgrade_dd-mm-yy.xml</pre> <ol style="list-style-type: none"> 2. Update the software versions, hostnames, bond interfaces, network addresses, and network VLAN information for the TVOE host and IDIH guests to be upgraded. Refer to Appendix O for a breakdown of the config file parameters.

Procedure 56: VEDSR Mediation and Application Guest Upgrade

<p>S T E P #</p>	<p>This procedure performs the IDIH Mediation and Application server upgrade for a VEDSR system.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE</p>	
<p>7 <input type="checkbox"/></p>	<p>PM&C CLI:</p> <p>Reset the guest creation timeout</p>	<p>Reset the guest creation timeout value.</p> <pre>\$ sudo sqlite3 /usr/TKLC/plat/etc/TKLCfd-config/db/fdcRepo.fdcdb 'update params set value=2000 where name="DEFAULT CREATE GUEST TIMEOUT";'</pre>
<p>8 <input type="checkbox"/></p>	<p>PM&C CLI</p> <p>Modify the upgrade config file</p>	<p>The Oracle guest stanza must be removed from the newly created upgrade config file. Failure to do so will cause the Oracle guest server to be re-installed.</p> <ol style="list-style-type: none"> Edit the upgrade config file and locate the Oracle guest stanza. The sections to be removed are highlighted in the config file excerpt shown below: <pre><!--REMOVE_FOR_DR_START (DO NOT remove this line!)--> <!--Oracle Guest Configuration--> <tvoeguest id="ORA"> <infrastructure>PMAC</infrastructure> <tvoehost>mgmtsrvrtvoe</tvoehost> <!--Oracle Guest Profile: Update if hardware is Gen6 default is Gen8--> <!--profile>ORA_GEN6</profile--> <profile>ORA_GEN8</profile> . . <postdeploy> <scriptfile id="oraHealthcheck"> <filename>/usr/bin/sudo</filename> <arguments>/usr/TKLC/xIH/plat/bin/ana... </scriptfile> </postdeploy> </scripts> </tvoeguest> <!--REMOVE_FOR_DR_END (DO NOT remove this line!)--></pre> In the <infrastructures> section of the upgrade config file, update the “tpd”, “ora”, “med”, and “app” release numbers to reflect the target release. <p>Config file excerpt. Update the highlighted values.</p> <pre><image id="tvoe"> <name>TVOE-3.0.2.0.0_86.28.0-x86_64</name> </image></pre>
<p>9 <input type="checkbox"/></p>	<p>PM&C CLI</p> <p>Reinstall the Mediation and Application servers</p>	<div style="text-align: center; border: 2px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>CAUTION</p> </div> <p>The “upgrade” config file must be used in the following command, or the database will be destroyed, and all database data will be lost.</p> <p>Execute the following command, using the upgrade file:</p> <pre>sudo fdconfig config --file=hostname-upgrade_xx-xx-xx.xml</pre>

Procedure 56: VEDSR Mediation and Application Guest Upgrade

S T E P #	This procedure performs the IDIH Mediation and Application server upgrade for a VEDSR system. Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u>	
	10 <input type="checkbox"/>	<u>PM&C GUI</u> Monitor installation

THIS PROCEDURE HAS BEEN COMPLETED

Appendix L ALTERNATE SERVER UPGRADE PROCEDURES

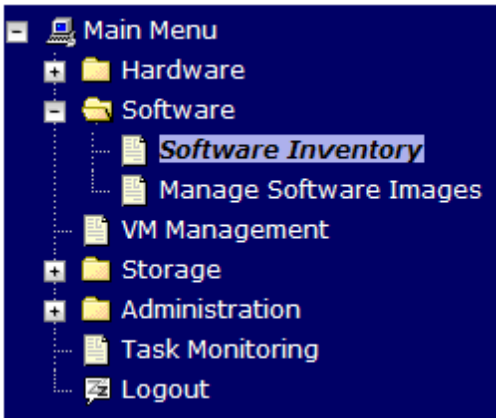
The procedures in this section provide alternative ways of upgrading various server types, using an array of differing methods. All of the procedures in this section are secondary to the upgrade methods provided in Section 4 and Section 5. These procedures should be used only when directed by MOS or by other procedures within this document.

Appendix L.1 Server Upgrade Using PM&C

This appendix provides the procedure for upgrading the Standby NOAM and DR-NOAM using the PM&C interface. This upgrade method is an alternative to using the NOAM Upgrade GUI, and is used only when the NOAM Upgrade GUI refresh is sluggish due to the large number of C-level servers.

NOTE: Before executing this procedure, download the target release ISO to the PM&C image repository in accordance with Appendix F.

Procedure 57: Alternate Server Upgrade using PM&C

S T E P #	<p>This procedure performs an upgrade of one or more servers using the PM&C interface instead of the more typical NOAM Upgrade GUI.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1 <input type="checkbox"/>	<p>PM&C GUI: Login</p>	<p>1. If needed, open a web browser and enter:</p> <p style="text-align: center;"><a href="http://<pmac_management_ip>">http://<pmac_management_ip></p> <p>2. Login as the pmacadmin user.</p>
2 <input type="checkbox"/>	<p>PM&C GUI: Navigate to Software Inventory</p>	<p>1. Navigate to Main Menu > Software > Software Inventory.</p> 

Procedure 57: Alternate Server Upgrade using PM&C

3	<div style="border: 1px solid black; width: 15px; height: 15px; margin: 0 auto;"></div>	<p>PM&C GUI: Select server to be upgraded</p>	<p>1. Select the server(s) to be upgraded. If upgrading more than one server at a time, select multiple servers by individually clicking multiple rows. Selected rows will be highlighted in green.</p> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: right; margin: 0;">Fri Mar 20 1</p> <p>Filter ▼</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Ident</th> <th>IP Address</th> <th>Hostname</th> <th>Plat Name</th> <th>Plat Version</th> <th>App Name</th> <th>App Version</th> <th>Desig</th> <th>Function</th> </tr> </thead> <tbody> <tr><td>Enc:50201 Bay:2F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Enc:50201 Bay:3F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Enc:50201 Bay:4F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Enc:50201 Bay:5F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Enc:50201 Bay:10F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Enc:50201 Bay:11F</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p style="text-align: center; margin-top: 5px;"> <input type="button" value="Install OS"/> <input type="button" value="Upgrade"/> <input type="button" value="Accept Upgrade"/> <input type="button" value="Reject Upgrade"/> <input type="button" value="Refresh"/> </p> </div> <p>2. Press the Upgrade button.</p> <p>NOTE: Until the target servers are fully discovered by PM&C, the user will be unable to start an upgrade on the servers. A server that has not yet been discovered is represented by an empty row on the Software Inventory page (no IP address, hostname, plat name, plat version, etc. is displayed).</p>	Ident	IP Address	Hostname	Plat Name	Plat Version	App Name	App Version	Desig	Function	Enc:50201 Bay:2F									Enc:50201 Bay:3F									Enc:50201 Bay:4F									Enc:50201 Bay:5F									Enc:50201 Bay:10F									Enc:50201 Bay:11F								
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Enc:50201 Bay:11F																																																																		
4	<div style="border: 1px solid black; width: 15px; height: 15px; margin: 0 auto;"></div>	<p>PM&C GUI: Select the target release ISO</p>	<p>1. The left side of the screen displays the servers to be upgraded. From the list of upgrade images on the right side of the screen, select the image to install on the selected servers.</p> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: right; margin: 0;">Fri Mar 20 16:50:0</p> <p>Software Upgrade - Select Image</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Targets</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Entity</th> <th>Status</th> </tr> </thead> <tbody> <tr><td>Enc:50303 Bay:3E</td><td></td></tr> <tr><td>Enc:50303 Bay:3E</td><td></td></tr> <tr><td>Guest:100</td><td></td></tr> </tbody> </table> </div> <div style="width: 50%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Image Name</th> <th>Type</th> <th>Architecture</th> <th>Description</th> </tr> </thead> <tbody> <tr style="background-color: #e0ffe0;"> <td>872-2440-102-11.2.0.2_2.13.0-Oracle-x86_64</td> <td>Upgrade</td> <td>x86_64</td> <td>dih 1.1</td> </tr> <tr> <td>872-2440-104-11.2.0.2_11.8.0-Oracle-x86_64</td> <td>Upgrade</td> <td>x86_64</td> <td>dih 1.2</td> </tr> <tr> <td>872-2440-105-11.2.0.2_11.2.0.2-11.9.0-Oracle-x86_64</td> <td>Upgrade</td> <td>x86_64</td> <td>dih 1.2.0-11.0.0</td> </tr> <tr> <td>872-2464-101-5.0.0_50.55.0-ALEXA-x86_64</td> <td>Upgrade</td> <td>x86_64</td> <td></td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 5px;">Supply Upgrade Arguments (Optional)</p> <div style="border: 1px solid gray; height: 30px; width: 100%;"></div> <p style="text-align: center; margin-top: 5px;"><input type="button" value="Start Upgrade"/></p> </div> </div> </div> <p>2. Press the Start Upgrade button.</p>	Entity	Status	Enc:50303 Bay:3E		Enc:50303 Bay:3E		Guest:100		Image Name	Type	Architecture	Description	872-2440-102-11.2.0.2_2.13.0-Oracle-x86_64	Upgrade	x86_64	dih 1.1	872-2440-104-11.2.0.2_11.8.0-Oracle-x86_64	Upgrade	x86_64	dih 1.2	872-2440-105-11.2.0.2_11.2.0.2-11.9.0-Oracle-x86_64	Upgrade	x86_64	dih 1.2.0-11.0.0	872-2464-101-5.0.0_50.55.0-ALEXA-x86_64	Upgrade	x86_64																																				
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872-2440-104-11.2.0.2_11.8.0-Oracle-x86_64	Upgrade	x86_64	dih 1.2																																																															
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872-2464-101-5.0.0_50.55.0-ALEXA-x86_64	Upgrade	x86_64																																																																
5	<div style="border: 1px solid black; width: 15px; height: 15px; margin: 0 auto;"></div>	<p>PM&C GUI: Start the upgrade</p>	<p>Press the OK button to proceed with the upgrade.</p> <div style="border: 1px solid gray; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: right; margin: 0;">X</p> <p style="text-align: center; margin: 0;">Message from webpage</p> <div style="text-align: center; margin: 10px 0;"> <p>Are you sure you want to upgrade to 872-2440-102-11.2.0.2_2.13.0-Oracle-x86_64 on the listed entities?</p> </div> <p style="text-align: center; margin-top: 10px;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> </p> </div>																																																															


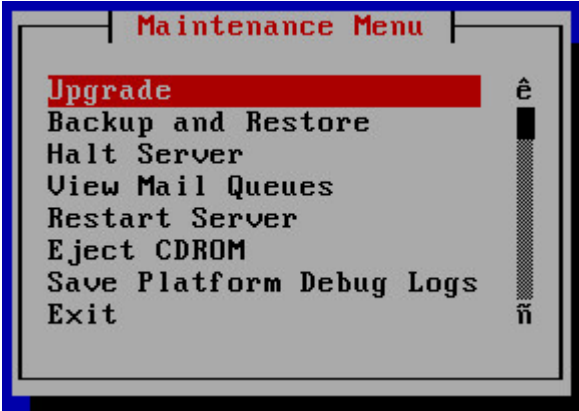
Procedure 57: Alternate Server Upgrade using PM&C

<p>6</p> <p>PM&C GUI:</p> <p>Monitor the upgrade</p>	<p>Navigate to Main Menu > Task Monitoring to monitor the progress of the Upgrade background task. A separate task will appear for each server being upgraded.</p> <div data-bbox="513 315 1404 724" style="border: 1px solid black; padding: 5px;"> <p>Background Task Monitoring Fri M</p> <p>Filter <input type="text"/></p> <table border="1"> <thead> <tr> <th>ID</th> <th>Task</th> <th>Target</th> <th>Status</th> <th>Running Time</th> <th>Start Time</th> <th>Progress</th> </tr> </thead> <tbody> <tr> <td>2847</td> <td>Upgrade</td> <td>Enc:50402 Bay:10F</td> <td>Success</td> <td>0:14:13</td> <td>2014-06-09 05:47:42</td> <td>100%</td> </tr> <tr> <td>2846</td> <td>Upgrade</td> <td>Enc:50402 Bay:9E</td> <td>Success</td> <td>0:09:23</td> <td>2014-06-09 05:47:42</td> <td>100%</td> </tr> <tr> <td>2845</td> <td>Upgrade</td> <td>Enc:50402 Bay:4E</td> <td>Success</td> <td>0:09:30</td> <td>2014-06-09 05:47:41</td> <td>100%</td> </tr> <tr> <td>2844</td> <td>Upgrade</td> <td>Enc:50402 Bay:3E</td> <td>Success</td> <td>0:09:54</td> <td>2014-06-09 05:47:40</td> <td>100%</td> </tr> <tr> <td>2843</td> <td>Upgrade</td> <td>Enc:50402 Bay:2E</td> <td>Success</td> <td>0:09:30</td> <td>2014-06-09 05:47:40</td> <td>100%</td> </tr> <tr> <td>2842</td> <td>Upgrade</td> <td>Enc:50402 Bay:1E</td> <td>Success</td> <td>0:09:33</td> <td>2014-06-09 05:47:39</td> <td>100%</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Delete Completed"/> <input type="button" value="Delete Failed"/> <input type="button" value="Delete Selected"/> </p> </div> <p>When the task is complete and successful, the text will change to green and the Progress column will indicate "100%".</p>	ID	Task	Target	Status	Running Time	Start Time	Progress	2847	Upgrade	Enc:50402 Bay:10F	Success	0:14:13	2014-06-09 05:47:42	100%	2846	Upgrade	Enc:50402 Bay:9E	Success	0:09:23	2014-06-09 05:47:42	100%	2845	Upgrade	Enc:50402 Bay:4E	Success	0:09:30	2014-06-09 05:47:41	100%	2844	Upgrade	Enc:50402 Bay:3E	Success	0:09:54	2014-06-09 05:47:40	100%	2843	Upgrade	Enc:50402 Bay:2E	Success	0:09:30	2014-06-09 05:47:40	100%	2842	Upgrade	Enc:50402 Bay:1E	Success	0:09:33	2014-06-09 05:47:39	100%
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2845	Upgrade	Enc:50402 Bay:4E	Success	0:09:30	2014-06-09 05:47:41	100%																																												
2844	Upgrade	Enc:50402 Bay:3E	Success	0:09:54	2014-06-09 05:47:40	100%																																												
2843	Upgrade	Enc:50402 Bay:2E	Success	0:09:30	2014-06-09 05:47:40	100%																																												
2842	Upgrade	Enc:50402 Bay:1E	Success	0:09:33	2014-06-09 05:47:39	100%																																												
<p>7</p> <p>Procedure Complete</p>	<p>The alternate server upgrade procedure is now complete.</p> <p>Return to the overall DSR upgrade procedure step that directed the execution of Appendix K.</p> <p style="text-align: center;"><i>THIS PROCEDURE HAS BEEN COMPLETED.</i></p>																																																	

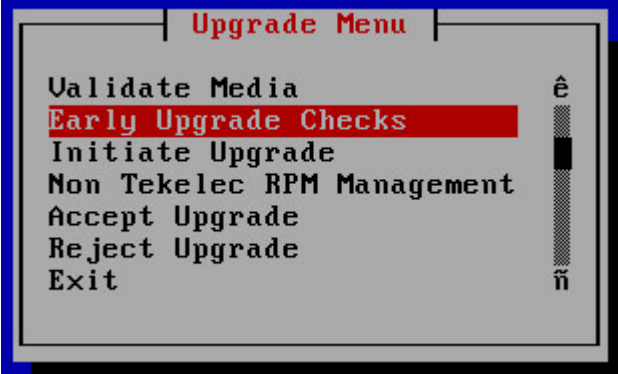
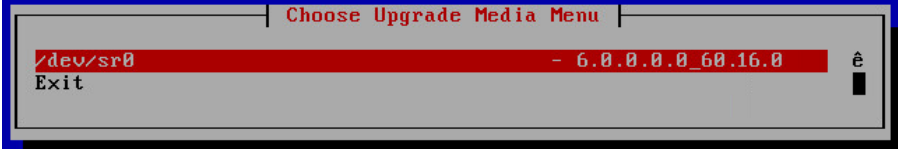
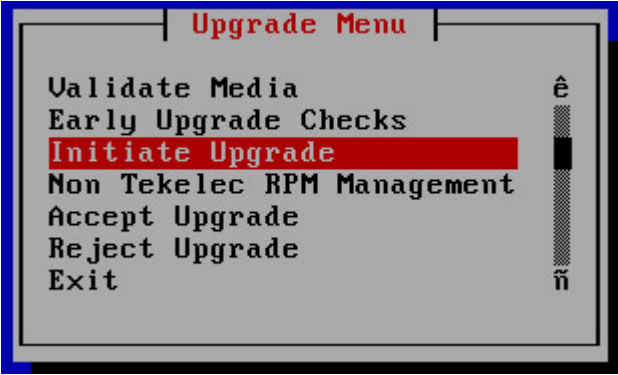
Appendix L.2 Server Upgrade using platcfg

The procedure provided in this appendix enables a server to be upgraded using the Platform Configuration (platcfg) utility. This procedure should be used only under the guidance and direction of MOS.

Procedure 58: Server Upgrade using platcfg

S T E P #	<p>This procedure upgrades a server using the platcfg utility. NOTE: All UI displays are sample representations of upgrade screens. The actual display may vary slightly for those shown.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1 <input type="checkbox"/>	<p>Server CLI:</p> <p>Login to the server to be upgraded</p>	<p>Log into the server console</p> <p>1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the server to be upgraded:</p> <pre>ssh admusr@<server_ip></pre> <p>(Answer 'yes' if prompted to confirm the identity of the server.)</p>
2 <input type="checkbox"/>	<p>Server CLI:</p> <p>Enter the platcfg menu</p>	<p>Switch to the platcfg user to start the configuration menu.</p> <pre>\$ sudo su - platcfg</pre> <p>From the Main Menu, select Maintenance</p>  <p>The screenshot shows a terminal window titled "Main Menu" with a list of options: Maintenance (highlighted in red), Diagnostics, Server Configuration, Network Configuration, Remote Consoles, Security, NetBackup Configuration, and Exit. A vertical cursor is on the right side of the list.</p>
3 <input type="checkbox"/>	<p>Server CLI:</p> <p>Select Upgrade</p>	<p>From the Maintenance Menu, select Upgrade</p>  <p>The screenshot shows a terminal window titled "Maintenance Menu" with a list of options: Upgrade (highlighted in red), Backup and Restore, Halt Server, View Mail Queues, Restart Server, Eject CDROM, Save Platform Debug Logs, and Exit. A vertical cursor is on the right side of the list.</p>

Procedure 58: Server Upgrade using platcfg

<p>4</p> <p>Server CLI:</p> <p>Select Early Upgrade Checks</p>	<p>From the Upgrade Menu, select Early Upgrade Checks</p>  <p>The screenshot shows a terminal window titled 'Upgrade Menu'. The menu items are: Validate Media, Early Upgrade Checks (highlighted in red), Initiate Upgrade, Non Tekelec RPM Management, Accept Upgrade, Reject Upgrade, and Exit. Navigation arrows are visible on the right side.</p>
<p>5</p> <p>Server CLI:</p> <p>Select the Upgrade Media</p>	<ol style="list-style-type: none"> From the Choose Upgrade Media Menu, select the desired target media. This will initiate the early upgrade checks in the console window.  <p>The screenshot shows a terminal window titled 'Choose Upgrade Media Menu'. The menu items are: /dev/sr0 (highlighted in red), - 6.0.0.0_60.16.0, and Exit. A cursor is visible on the right side.</p> <p>Informational messages will be displayed as the checks progress. At the end of a successful test, a message similar to the following will appear:</p> <pre>Running earlyUpgradeChecks() for Upgrade::EarlyPolicy:: TPDEarlyChecks upgrade policy... Verified server is not pending accept of previous upgrade Hardware architectures match Install products match. Verified server is alarm free! Early Upgrade Checks Have Passed!</pre> <ol style="list-style-type: none"> Verify early upgrade checks pass. In case of errors, it is recommended to contact MOS. Press 'q' to exit the screen session and return to the platcfg menu. From the Choose Upgrade Media Menu, select Exit.
<p>6</p> <p>Server CLI:</p> <p>Initiate the upgrade</p>	<p>From the Upgrade Menu, select Initiate Upgrade.</p>  <p>The screenshot shows a terminal window titled 'Upgrade Menu'. The menu items are: Validate Media, Early Upgrade Checks, Initiate Upgrade (highlighted in red), Non Tekelec RPM Management, Accept Upgrade, Reject Upgrade, and Exit. Navigation arrows are visible on the right side.</p>

Procedure 58: Server Upgrade using platcfg

<p>7</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Select the Upgrade Media</p>	<p>The screen will display a message that it is searching for upgrade media. Once the upgrade media is found, an Upgrade Media selection menu will be displayed similar to the example shown below.</p> <p>From the Choose Upgrade Media Menu, select the desired target media. This will initiate the server upgrade.</p> <div data-bbox="513 432 1406 579" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre style="background-color: #f0f0f0; border: 1px solid #ccc;"> Choose Upgrade Media Menu ----- /dev/sr0 - 6.0.0.0.0_60.16.0 Exit</pre> </div> <p>Many informational messages will come across the terminal screen as the upgrade proceeds.</p> <p>Finally, after upgrade is complete, the server will reboot.</p> <pre style="color: blue;"> A reboot of the server is required. The server will be rebooted in 10 seconds</pre>
<p>8</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>SSH to the upgraded server</p>	<p>Use the SSH command (on UNIX systems – or putty if running on Windows) to log into the server just upgraded:</p> <pre style="color: blue;">ssh admusr@<server_IP></pre> <p>(Answer 'yes' if you are prompted to confirm the identity of the server.)</p>
<p>9</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Check for upgrade errors</p>	<p>Examine the upgrade logs in the directory /var/TKLC/log/upgrade and verify that no errors were reported.</p> <pre style="color: blue;">grep -i error /var/TKLC/log/upgrade/upgrade.log</pre> <p>Examine the output of the above command to determine if any errors were reported.</p> <p>If the upgrade fails, collect the following files:</p> <pre style="color: blue;"> /var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log</pre> <p>It is recommended to contact MOS by referring to Appendix P of this document and provide these files.</p>
<p>10</p> <p><input type="checkbox"/></p>	<p>Server CLI:</p> <p>Verify the upgrade</p>	<p>Check the upgrade log for the upgrade complete message</p> <pre style="color: blue;">grep "UPGRADE IS COMPLETE" /var/TKLC/log/upgrade/upgrade.log</pre> <p>Verify that the message "UPGRADE IS COMPLETE" is displayed. If not, it is recommended to contact MOS.</p> <pre style="color: blue;"> [admusr@N02 ~]\$ grep "UPGRADE IS COMPLETE" /var/TKLC/log/ upgrade/upgrade.log 1407786220:: UPGRADE IS COMPLETE</pre>

THIS PROCEDURE HAS BEEN COMPLETED.

Appendix L.3 Manual DA-MP Upgrade Procedure

Procedure 59 is used to upgrade the DA-MP Server Group manually. This procedure is provided as an alternative to the normal DA-MP upgrade procedures in Section 5.

Procedure 59 must be executed for all configured DA-MPs of a site, regardless of how the DA-MPs are grouped for upgrade. So if 16 DA-MPs are upgraded four at a time, then Procedure 59 must be executed four distinct times.

Procedure 59: Manual DA-MP Upgrade Procedure

S T E P #	<p>This procedure upgrades the DA-MP servers using the manual upgrade method.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1. <input type="checkbox"/>	Identify all the DA-MPs to be upgraded together	<p>From the data captured in Table 3,</p> <p>1. Identify the "DSR (multi-active cluster)" Server Group to be upgraded.</p>
2. <input type="checkbox"/>	Upgrade DA-MP servers as identified in step 1	<p>Upgrade up to (½) one half (no more than 50%) of the DA-MP servers in parallel using the Upgrade Multiple Servers procedure :</p> <p>NOTE: When using the manual server upgrade method, it is recommended that the DA-MP Leader be upgraded in the last group of servers to minimize DA-MP Leader role changes.</p> <p>Execute Appendix H : Upgrade Multiple Servers</p> <p>After successfully completing the procedure in Appendix H, return to this point and continue with the next step.</p>
3. <input type="checkbox"/>	Repeat for all servers identified in Step 1 of this procedure.	Repeat step 2 of this procedure for the remaining DA-MP servers.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

Appendix L.4 Manual SBR Upgrade Procedure


Procedure 60 is used to upgrade the SBR Server Group manually. This procedure is provided as an alternative to the normal SBR upgrade procedures in Section 5.

Note: Before upgrading the Active SBR, it is imperative that the database audit of the Spare and Standby servers complete successfully. Failure to comply could result in a loss of session data.

Procedure 60: Manual SBR Upgrade Procedure

S T E P #	<p>This procedure upgrades an SBR Server Group using the manual upgrade option.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR <u>UPGRADE ASSISTANCE</u>.</p>																							
1.	<p>Active NOAM VIP:</p> <p>Identify the SBR Server Group(s) to Upgrade</p>	<p>Identify the Active, Standby, and Spare SBR servers.</p> <ol style="list-style-type: none"> From the data captured in Table 3, identify the server group(s) to upgrade. One server group can be executed at a time or multiple server groups can be executed simultaneously. Log into the NOAM GUI using the VIP. Navigate to Main Menu > Policy and Charging > Maintenance > SBR Status. Open each server group chosen in sub-step 1. Note which server is Active, Standby and Spare (as designated by the Resource HA Role) for each server group chosen for upgrade. The following figure provides an example: <p style="text-align: center;"> GTR-SBR-1A - Active GTR-SBR-1B - Standby GTR-SBR-1Sp - Spare </p> <p>Main Menu: Policy and Charging -> Maintenance -> SBR Status</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Filter ▾</p> <p>PCA_MATED_SITES</p> <table border="1"> <thead> <tr> <th>Server Group Name</th> <th>Resource Domain Name</th> <th>Resource Domain Profile</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> GTR_SBR_SG_A</td> <td>PCA_SESSION</td> <td>Policy and Charging Session</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Server Name</th> <th>Resource HA Role</th> <th>Congestion Level</th> <th>Sub Resources Hosted</th> </tr> </thead> <tbody> <tr> <td>GTR-SBR-1A</td> <td>Active</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> <tr> <td>GTR-SBR-1B</td> <td>Standby</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> <tr> <td>NSX-SBR-1Sp</td> <td>Spare</td> <td>Normal</td> <td>0,1,2,3,4,5,6,7</td> </tr> </tbody> </table> </div> <p>NOTE: SBR servers have two High Availability policies: one for controlling replication of session or binding data, and one for receipt of replicated configuration data from the NOAM and SOAM GUIs. During this upgrade procedure, ONLY the High Availability policy for replication of session or binding data is important. This means that the SBR Status screen MUST be used to determine the High Availability status (Active, Standby, or Spare) of SBR servers. The HA Status screen and the OAM Max HA Role column on the Upgrade screen must NOT be used because they only show the status of the configuration replication policy.</p> <p>Because the two High Availability policies run independently, it is possible that a given server might be Standby or Spare for the session and binding replication policy, but Active for the configuration replication policy. When this happens, it is necessary to ignore warnings on the Upgrade screen about selecting what it views as the Active server (for the configuration replication policy).</p>	Server Group Name	Resource Domain Name	Resource Domain Profile	<input type="checkbox"/> GTR_SBR_SG_A	PCA_SESSION	Policy and Charging Session	Server Name	Resource HA Role	Congestion Level	Sub Resources Hosted	GTR-SBR-1A	Active	Normal	0,1,2,3,4,5,6,7	GTR-SBR-1B	Standby	Normal	0,1,2,3,4,5,6,7	NSX-SBR-1Sp	Spare	Normal	0,1,2,3,4,5,6,7
Server Group Name	Resource Domain Name	Resource Domain Profile																						
<input type="checkbox"/> GTR_SBR_SG_A	PCA_SESSION	Policy and Charging Session																						
Server Name	Resource HA Role	Congestion Level	Sub Resources Hosted																					
GTR-SBR-1A	Active	Normal	0,1,2,3,4,5,6,7																					
GTR-SBR-1B	Standby	Normal	0,1,2,3,4,5,6,7																					
NSX-SBR-1Sp	Spare	Normal	0,1,2,3,4,5,6,7																					

Procedure 60: Manual SBR Upgrade Procedure

<p>2.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Upgrade Spare SBR Server identified in step 1 of this procedure.</p>	<p>NOTE: The Spare SBRs of this server group will be located at different sites.</p> <ol style="list-style-type: none"> Upgrade the Spare SBR server using the Upgrade Single Server procedure : <p>Execute Appendix G—Upgrade Single Server Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point to monitor server status.</p> <p>From the Active NOAM GUI:</p> <ol style="list-style-type: none"> Navigate to Main Menu > Policy and Charging > Maintenance > SBR Status. Open the tab of the server group being upgraded. <p>NOTE: After executing Appendix G, the Spare SBR will temporarily disappear from the SBR Status screen. When the server comes back online, it will reappear on the screen with a status of "Out of Service".</p> <ol style="list-style-type: none"> Monitor the Resource HA Role status of the Spare server. Wait for the status to transition from "Out of Service" to "Spare". If the system is equipped with a second Spare SBR server, repeat sub-steps 1 thru 3 for the other spare. <p>Caution: Do not proceed to step 3 until the Resource HA Role of the Spare SBR server returns to "Spare".</p>
<p>3.</p> <p><input type="checkbox"/></p>	<p>Upgrade Standby SBR Server identified in step 1 of this procedure.</p>	<p>Upgrade the Standby SBR server using the Upgrade Single Server procedure :</p> <p>Execute Appendix G - Upgrade Single Server Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point and continue with the next step.</p>
		<p>!WARNING! Failure to comply with step 4 and step 5 may result in the loss of PCA traffic, resulting in service impact</p>
<p>4.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify Standby SBR server status</p>	<ol style="list-style-type: none"> Navigate to Main Menu > Policy and Charging > Maintenance > SBR Status. Open the tab of the server group being upgraded. <p>NOTE: After executing Appendix G, the Standby SBR will temporarily disappear from the SBR Status screen, and the Spare server will assume the Standby role. When the upgraded server comes back online, it will reappear on the screen with a status of "Out of Service".</p> <ol style="list-style-type: none"> Monitor the Resource HA Role status of the upgraded server. Wait for the status to transition from "Out of Service" to "Standby". <p>Caution: Do not proceed to step 5 until the Resource HA Role of the upgraded server transitions to "Standby".</p>

Procedure 60: Manual SBR Upgrade Procedure

<p>5.</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Verify bulk download completes</p>	<p>Verify that the bulk download from the Active SBR to the Standby and Spare SBRs completes.</p> <ol style="list-style-type: none"> 1. Navigate to Main Menu > Alarm & Event > View History 2. Export the Event Log using the following filter: Server Group: Choose the SBR group that is in upgrade Display Filter: Event ID = 31127 – DB Replication Audit Complete Collection Interval: X hours ending in current time, where X is the time from upgrade completion of the Standby and Spare servers to the current time. 3. Wait for all instances of Event 31127: <ul style="list-style-type: none"> • 1 for the Standby binding SBR • 1 for the Standby session SBR • 1 for the Spare binding SBR • 1 for the Spare session SBR • 1 for the 3rd site Spare binding SBR (if equipped) • 1 for the 3rd site Spare session SBR (if equipped) <p>NOTE: There is an expected loss of traffic depending on size of the bulk download. This must be noted along with events captured.</p>
<p>6.</p> <p><input type="checkbox"/></p>	<p>Upgrade Active SBR Server as identified in Step 1 of this procedure</p>	<p>Upgrade the Active SBR server using the Upgrade Single Server procedure :</p> <p>Execute Appendix G -- Single Server Upgrade Procedure</p> <p>After successfully completing the procedure in Appendix G, return to this point and continue with the next step.</p>
<p>7.</p> <p><input type="checkbox"/></p>	<p>Repeat for all SBR Server Groups with Active, Standby in Site 1 and Spare in Site 2</p>	<p>Repeat steps 1 through 6 for all remaining binding and session server groups to be upgraded.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED.</p>		

Appendix M EXPIRED PASSWORD WORKAROUND PROCEDURE

This appendix provides the procedures to handle password expiration during upgrade. Procedure 61 is a temporary workaround to allow an expired password to be used on a non-upgrade site. This procedure is provided as a workaround when a password expires after the NOAM has been upgraded and before all sites have been upgraded.

The workaround must be removed using Procedure 62 after the site is upgraded. Failure to remove the workaround will inhibit password aging on the server.

Appendix M.1 Inhibit Password Aging

This procedure enacts a workaround that inhibits password aging on the SOAM. This procedure should be used only when the following conditions apply:

- An upgrade is in progress
- The NOAMs have been upgraded, but one or more sites have not been upgraded
- A login password has expired on a non-upgraded site

Once the workaround is enacted, no passwords will expire at that site. It is expected that the workaround will be removed once the site is upgraded.

Procedure 61: Expired Password Workaround Procedure

S T E P #	<p>This procedure disables password aging on a server, allowing “expired” credentials to be used for login.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1 <input type="checkbox"/>	<p>Active SOAM CLI:</p> <p>SSH to Active SOAM server</p>	<p>Disable password aging.</p> <ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active SOAM of the first non-upgraded site: <pre>ssh admusr@<SOAM_VIP></pre> (Answer ‘yes’ if prompted to confirm the identity of the server.) 2. Create a text file with the following content (exactly as formatted): <pre>[production] aw.policy.pwchange.isExpired = aw.policy.db.checkPw = [development : production] [test : development]</pre> 3. Save the file as: <pre>/var/TKLC/appworks/ini/pw.ini</pre> 4. Change the file permissions: <pre>chmod 644 pw.ini</pre> 5. Execute the following command: <pre>clearCache</pre> <p>NOTE: For each server on which this workaround is enacted, the old “expired” password must be used for login. The new password that is used on the NOAM will not work on these servers.</p>
2 <input type="checkbox"/>	<p>Repeat for Standby SOAM</p>	<p>Repeat step 1 for the Standby SOAM</p>

Procedure 61: Expired Password Workaround Procedure

3	Repeat for all non-upgraded sites	Repeat steps 1 and 2 for all non-upgraded sites.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

Appendix M.2 Enable Password Aging

This procedure removes the password expiration workaround that is enabled by Procedure 61.

Procedure 62: Expired Password Workaround Removal Procedure

S T E P #	<p>This procedure removes the password aging workaround and re-enables password aging on a server.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.</p>	
1	<p>Active SOAM CLI:</p> <p>SSH to Active SOAM server</p>	<p>Re-enable password aging.</p> <ol style="list-style-type: none"> 1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active SOAM of the first non-upgraded site: <pre>ssh admusr@<SOAM_VIP></pre> (Answer 'yes' if prompted to confirm the identity of the server.) 2. Delete the pw.ini file: <pre>\$ sudo rm /var/TKLC/appworks/ini/pw.ini</pre> 3. Execute the following command: <pre>\$ sudo clearCache</pre> 4. Repeat sub-steps 1 through 3 for the Standby SOAM
2	Repeat for all non-upgraded sites	Repeat steps 1 for all non-upgraded sites.
<i>THIS PROCEDURE HAS BEEN COMPLETED.</i>		

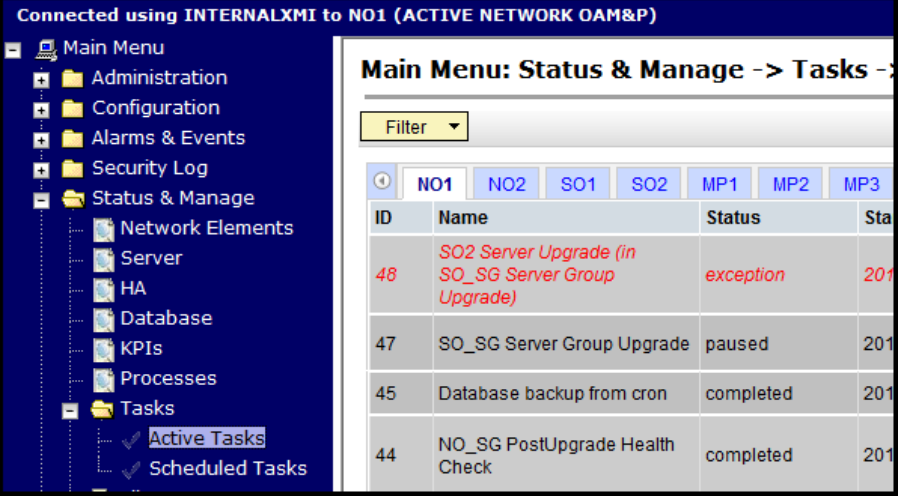
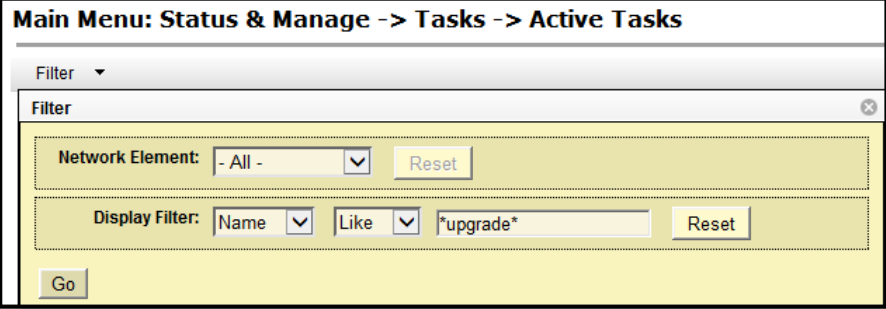
Appendix N RECOVERING FROM A FAILED UPGRADE

This procedure provides the steps required to recover a server after a failed upgrade. Due to the complexity of the DSR system and the nature of troubleshooting, it is recommended to contact MOS for guidance while executing this procedure.

Procedure 63: Recovering from a Failed Upgrade

<p>S T E P #</p>	<p>This procedure provides the basic steps for returning a server to a normal state after an upgrade failure. Note that the server will be returned to the source release by this procedure.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT <u>MOS</u> AND ASK FOR UPGRADE ASSISTANCE.</p>																																																							
<p>1</p> <p><input type="checkbox"/></p>	<p>Active NOAM VIP:</p> <p>Select affected server group</p>	<p>From the Upgrade screen, select the server group containing the failed server.</p> <ol style="list-style-type: none"> Log into the NOAM GUI using the VIP. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed Select the server group tab for the server to be recovered. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Main Menu: Administration -> Software Management -> Upgrade</p> <p>Filter ▾ Tasks ▾</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e6e6fa;"> <th>NO_SG</th> <th>DRNO_SG</th> <th>IPFE_SG1</th> <th>IPFE_SG2</th> <th>IPFE_SG3</th> <th>IPFE_SG4</th> <th>MP_SG1</th> <th>SO_SG</th> <th>S67MP</th> </tr> </thead> <tbody> <tr> <td colspan="2">Hostname</td> <td>Upgrade State</td> <td>OAM Max HA Role</td> <td>Server Role</td> <td>Function</td> <td colspan="3">Application Ve</td> </tr> <tr> <td colspan="2"></td> <td>Server Status</td> <td>Appl Max HA Role</td> <td>Network Element</td> <td colspan="4">Upgrade ISO</td> </tr> <tr> <td colspan="2">SO1</td> <td>Ready Err</td> <td>Active</td> <td>System OAM</td> <td>OAM</td> <td colspan="3">7.0.1.0.0-70.28</td> </tr> <tr> <td colspan="2">SO2</td> <td>Failed Err</td> <td>Standby</td> <td>System OAM</td> <td>OAM</td> <td colspan="3">7.0.1.0.0-70.28</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>N/A</td> <td>SO1_DSR_VM</td> <td colspan="4">DSR-7.2.0.0.0</td> </tr> </tbody> </table> </div>	NO_SG	DRNO_SG	IPFE_SG1	IPFE_SG2	IPFE_SG3	IPFE_SG4	MP_SG1	SO_SG	S67MP	Hostname		Upgrade State	OAM Max HA Role	Server Role	Function	Application Ve					Server Status	Appl Max HA Role	Network Element	Upgrade ISO				SO1		Ready Err	Active	System OAM	OAM	7.0.1.0.0-70.28			SO2		Failed Err	Standby	System OAM	OAM	7.0.1.0.0-70.28						N/A	SO1_DSR_VM	DSR-7.2.0.0.0			
NO_SG	DRNO_SG	IPFE_SG1	IPFE_SG2	IPFE_SG3	IPFE_SG4	MP_SG1	SO_SG	S67MP																																																
Hostname		Upgrade State	OAM Max HA Role	Server Role	Function	Application Ve																																																		
		Server Status	Appl Max HA Role	Network Element	Upgrade ISO																																																			
SO1		Ready Err	Active	System OAM	OAM	7.0.1.0.0-70.28																																																		
SO2		Failed Err	Standby	System OAM	OAM	7.0.1.0.0-70.28																																																		
			N/A	SO1_DSR_VM	DSR-7.2.0.0.0																																																			
		<ul style="list-style-type: none"> If the failed server was upgraded using the “Upgrade Server” option, then skip to step 7 of this procedure If the failed server was upgraded using the “Auto Upgrade” option, then continue with step 2 of this procedure. 																																																						


Procedure 63: Recovering from a Failed Upgrade

<p>2</p> <p>Active NOAM VIP:</p> <p>View Active Tasks</p>	<p>Navigate to the Active Tasks screen to view the tasks.</p> <ol style="list-style-type: none"> Navigate to Status & Manage > Tasks > Active Tasks The Active Tasks screen is displayed.  <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Status</th> <th>Start</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>SO2 Server Upgrade (in SO_SG Server Group Upgrade)</td> <td>exception</td> <td>201...</td> </tr> <tr> <td>47</td> <td>SO_SG Server Group Upgrade</td> <td>paused</td> <td>201...</td> </tr> <tr> <td>45</td> <td>Database backup from cron</td> <td>completed</td> <td>201...</td> </tr> <tr> <td>44</td> <td>NO_SG PostUpgrade Health Check</td> <td>completed</td> <td>201...</td> </tr> </tbody> </table>	ID	Name	Status	Start	48	SO2 Server Upgrade (in SO_SG Server Group Upgrade)	exception	201...	47	SO_SG Server Group Upgrade	paused	201...	45	Database backup from cron	completed	201...	44	NO_SG PostUpgrade Health Check	completed	201...
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44	NO_SG PostUpgrade Health Check	completed	201...																		
<p>3</p> <p>Active NOAM VIP:</p> <p>Search for upgrade task</p>	<p>Use the filter to locate the server group upgrade task.</p> <ol style="list-style-type: none"> Click the Filter dropdown and enter the following filter values: <ol style="list-style-type: none"> Network Element: All Display Filter: Name Like *upgrade* Click the Go button. 																				

Procedure 63: Recovering from a Failed Upgrade

<p>4</p> <p>Active NOAM VIP:</p> <p>Identify the upgrade task</p>	<p>In the search results list, locate the Server Group Upgrade task.</p> <ol style="list-style-type: none"> 1. If not already selected, select the tab displaying the hostname of the Active NOAM server. 2. Locate the task for the Server Group Upgrade. It will show a status of "paused". <div data-bbox="516 394 1404 829" data-label="Table"> <p>Main Menu: Status & Manage -> Tasks -> Active Tasks (Filtered)</p> <p>Filter ▾</p> <p>NO1 NO2 SO1 SO2 MP1 MP2 MP3 MP4 MP6 MP8 MP9 MP10 MP11 MP12</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Status</th> <th>Start Time</th> <th>Update Time</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>SO2 Server Upgrade (in SO_SG Server Group Upgrade)</td> <td>exception</td> <td>2016-03-23 13:38:36 UTC</td> <td>2016-03-23 13:40:11 UTC</td> </tr> <tr> <td>47</td> <td>SO_SG Server Group Upgrade</td> <td>paused</td> <td>2016-03-23 13:38:26 UTC</td> <td>2016-03-23 13:40:07 UTC</td> </tr> <tr> <td>46</td> <td>SO2 Server Upgrade</td> <td>exception</td> <td>2016-03-23 13:14:10 UTC</td> <td>2016-03-23 13:16:01 UTC</td> </tr> <tr> <td>44</td> <td>NO_SG PostUpgrade Health Check</td> <td>completed</td> <td>2016-03-22 17:14:51 UTC</td> <td>2016-03-22 17:15:06 UTC</td> </tr> <tr> <td>42</td> <td>NO_SG PreUpgrade Health Check</td> <td>completed</td> <td>2016-03-21 14:56:08 UTC</td> <td>2016-03-21 14:56:19 UTC</td> </tr> </tbody> </table> </div>	ID	Name	Status	Start Time	Update Time	48	SO2 Server Upgrade (in SO_SG Server Group Upgrade)	exception	2016-03-23 13:38:36 UTC	2016-03-23 13:40:11 UTC	47	SO_SG Server Group Upgrade	paused	2016-03-23 13:38:26 UTC	2016-03-23 13:40:07 UTC	46	SO2 Server Upgrade	exception	2016-03-23 13:14:10 UTC	2016-03-23 13:16:01 UTC	44	NO_SG PostUpgrade Health Check	completed	2016-03-22 17:14:51 UTC	2016-03-22 17:15:06 UTC	42	NO_SG PreUpgrade Health Check	completed	2016-03-21 14:56:08 UTC	2016-03-21 14:56:19 UTC
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42	NO_SG PreUpgrade Health Check	completed	2016-03-21 14:56:08 UTC	2016-03-21 14:56:19 UTC																											
<p>5</p> <p>Active NOAM VIP:</p> <p>Cancel the upgrade task</p>	<p>Cancel the Server Group Upgrade task.</p> <ol style="list-style-type: none"> 1. Click the Server Group Upgrade task to select it. It will become highlighted on the screen. 2. Click the Cancel button to cancel the task. 3. Click OK on the confirmation dialog box to confirm the cancellation. <div data-bbox="516 987 1404 1438" data-label="Table"> <p>Main Menu: Status & Manage -> Tasks -> Active Tasks (Filtered)</p> <p>Filter ▾</p> <p>NO1 NO2 SO1 SO2 MP1 MP2 MP3 MP4 MP6 MP8 MP9 MP12</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Status</th> <th>Start Time</th> <th>Update Time</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>SO2 Server Upgrade (in SO_SG Server Group Upgrade)</td> <td>exception</td> <td>2016-03-23 13:38:36 UTC</td> <td>2016-03-</td> </tr> <tr> <td>47</td> <td>SO_SG Server Group Upgrade</td> <td>paused</td> <td>2016-03-23 13:38:26 UTC</td> <td>2016-03-</td> </tr> <tr> <td>46</td> <td>SO2 Server Upgrade</td> <td>exception</td> <td>2016-03-23 13:14:10 UTC</td> <td>2016-03-</td> </tr> </tbody> </table> <p>Pause Restart Cancel Delete Report Delete All Completed Delete All Exce</p> </div>	ID	Name	Status	Start Time	Update Time	48	SO2 Server Upgrade (in SO_SG Server Group Upgrade)	exception	2016-03-23 13:38:36 UTC	2016-03-	47	SO_SG Server Group Upgrade	paused	2016-03-23 13:38:26 UTC	2016-03-	46	SO2 Server Upgrade	exception	2016-03-23 13:14:10 UTC	2016-03-										
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<p>6</p> <p>Active NOAM VIP:</p> <p>Verify task cancellation</p>	<p>Verify the Server Group Upgrade task is canceled.</p> <ol style="list-style-type: none"> 1. On the Active Tasks screen, verify the task that was canceled in step 5 shows a status of "completed". <div data-bbox="516 1638 1404 1816" data-label="Table"> <table border="1"> <tbody> <tr> <td>47</td> <td>SO_SG Server Group Upgrade</td> <td>completed</td> <td>2016-03-23 13:38:26 UTC</td> </tr> </tbody> </table> <p>2016-03-23 16:24:27 UTC SG upgrade task cancelled by user. 5%</p> </div>	47	SO_SG Server Group Upgrade	completed	2016-03-23 13:38:26 UTC																										
47	SO_SG Server Group Upgrade	completed	2016-03-23 13:38:26 UTC																												

Procedure 63: Recovering from a Failed Upgrade

<p>7</p> <p>Inspect upgrade log</p>	<p>Failed server CLI:</p>	<p>Login to the failed server to inspect the upgrade log for the cause of the failure.</p> <ol style="list-style-type: none"> 1. Use an SSH client to connect to the failed server: <pre>ssh <XMI IP address> login as: admusr password: <enter password></pre> <p>Note: The static XMI IP address for each server should be available in Table 3.</p> 2. View or edit the upgrade log at <code>/var/TKLC/log/upgrade/upgrade.log</code> for clues to the cause of the upgrade failure. 3. If the upgrade log contains a message similar to the following, inspect the early upgrade log at <code>/var/TKLC/log/upgrade/earlyChecks.log</code> for additional clues. <pre>1440613685::Early Checks failed for the next upgrade 1440613691::Look at earlyChecks.log for more info</pre>
<div style="display: flex; align-items: center;">  <ul style="list-style-type: none"> Although outside of the scope of this document, the user is expected to use standard troubleshooting techniques to clear the alarm condition from the failed server. If troubleshooting assistance is needed, it is recommended to contact MOS as described in Appendix P - Accessing Oracle Customer Support Site. </div> <p style="background-color: yellow; padding: 5px; margin-top: 10px;">DO NOT PROCEED TO STEP 8 OF THIS PROCEDURE UNTIL THE ALARM CONDITION HAS BEEN CLEARED!</p>		
<p>8</p> <p>Verify Platform alarms are cleared</p>	<p>Failed Server CLI:</p>	<p>Verify all Platform alarms have been cleared from the failed server.</p> <ol style="list-style-type: none"> 1. Use the alarmMgr utility to verify that all Platform alarms have been cleared from the system. <pre>\$ sudo alarmMgr --alarmstatus</pre> <p>Example output:</p> <pre>[admusr@SO2 ~]\$ sudo alarmMgr --alarmstatus SEQ: 2 UPTIME: 827913 BIRTH: 1458738821 TYPE: SET ALARM: TKSPLATMI10 tpdNTPDaemonNotSynchronizedWarning 1.3.6.1.4.1.323 .5.3.18.3.1.3.10 32509 Communications Communications Subsystem Failure</pre> <p>***** user troubleshoots alarm and is able to resolve NTP sync issue and clear alarm *****</p> <pre>[admusr@SO2 ~]\$ sudo alarmMgr --alarmstatus [admusr@SO2 ~]\$</pre>
<p>9</p> <p>Re-execute the server upgrade</p>	<p>Active NOAM VIP:</p>	<p>Return to the upgrade procedure being executed when the failure occurred. Re-execute the upgrade for the failed server using the “Upgrade Server” option.</p> <p>Note: Once a server has failed while using the Automated Server Group Upgrade option, the “Auto Upgrade” option cannot be used again on that server group. The remaining servers in that server group must be upgraded using the “Upgrade Server” option.</p>

Appendix O FAST DEPLOYMENT CONFIGURATION FILE DESCRIPTION

An XML configuration file is the primary source of automated deployment and configuration information for the feature. The configuration defines one or more infrastructures that represent a set of hardware, software and TVOE hosts associated with a PM&C. The file also defines one or more application servers that are to be deployed to a specified infrastructure.

The sections to be modified are identified below with a brief description

Note: Any sub-element that is not described should not be modified.

More information on the FDC Fast deployment configuration file can be found in [11].

Software Element

The optional software element contains one or more image elements representing deployable ISO images. Each image element has a required id attribute used to uniquely reference that image in the configuration file. The only element that should be modified is the name.

Name defines the ISO version of TVOE, Application, Mediation, Oracle or TPD image. Verify that the versions match the version of software that to be installed. If they do not match, modify the configuration file as needed.

Enclosure Element

The enclosure element specifies the enclosure for a set of blade servers.

cabhwid refers to the cabinet identification used at each site.

encid refers to the enclosure identification used at each site.

oa1 refers to the IP Address for the first OA within an enclosure.

oa2 refers to the IP Address for the second OA within an enclosure.

Blade Element

The blade element specifies the blade within an enclosure, on which an IDIH system will be installed.

Use the enchwid that has been specified within the PM&C to be IPM'd.

bay is the bay location of the blade to be IPM'd.

type is the hardware type, e.g., Gen 6 or Gen 8 blade.

RMS Element

The rms element specifies a rack-mount server in the infrastructure, and provisions it in PM&C if not already present. The rmsOOBIP, rmsname, and cabhwid elements should be modified.

The rmsOOBIP sub-element is the only required sub-element, and it specifies the IP address of the RMS iLO.

The rmsname sub-element specifies the name of the RMS when provisioned in PM&C. The cabhwid sub-element specifies the ID of the cabinet.

TVOE Software Element

The TVOE software stanza should not be added to an IDIH system where the IDIH guest is co-located with a PM&C guest.

Note: Do not IPM the TVOE host when the IDIH guest and PM&C guest are on the same TVOE host.

TVOE Serverinfo Element

A `serverinfo` element specifies configuration information for TVOE hosts, guests, and native application servers. The only subelements that should be changed are the TVOE hostname and TVOE `ntpserver` `ipaddress`.

The `hostname` subelement sets the hostname for the TVOE host.

The `ntpserver` subelement sets NTP servers for the system. It may contain up to five `ntpserver` subelements. Each `ntpserver` element contains `name` and `ipaddress` subelements which are the host name and IP address of the NTP servers.

TVOE tpdinterface Sub-Element

The `tpdinterface` subelement specifies the TVOE interface configuration. The only subelements that should be modified are the `device`, `type`, `vlandata` and `vlandid` elements.

`device` contains the name of the TVOE interface device.

`type` can be either `Vlan` or `Bonding`.

`vlandata` contains a `vlandid` sub-element with the ID of the vlan.

TVOE tpdbridge Sub-Element

Each `tpdbridge` subelement specifies the TVOE bridge configuration. The subelements that should be modified are `interfaces`, `address`, and `netmask`.

`interfaces` defines the interfaces in the TVOE host bridge.

`address` defines the IP address of the TVOE host bridge.

`netmask` defines the network mask for the TVOE host bridge.

TVOE tpdroute Sub-Element

This `tpdroute` subelement specifies the TVOE route configuration. The only subelement that should be modified is the `gateway`.

`gateway` specifies the gateway for the XMI route used by the TVOE host.

Oracle Guest Scripts Element Network

The `scripts` element defines files that will be executed as part of the IPM process. Currently, network configuration of the TVOE guest is not directly supported by the Fast Deployment. Instead, the `netAdm` script is called with arguments. The only arguments that should be modified are the `address`, `netmask`, and `gateway`.

`address` defines the IP XMI address of the Oracle guest.

`netmask` defines the Oracle guest XMI netmask.

`gateway` defines the XMI default route used by the Oracle guest.

Mediation Guest Scripts Element Network

The `scripts` element defines files that will be executed as part of the IPM process. Currently, network configuration of the TVOE guest is not directly supported by the Fast Deployment. Instead, the `netAdm` script is called with arguments. The only arguments that should be modified are the `address`, `netmask`, and `gateway`.

`address` defines the IP XMI and IMI address of the Mediation guest.

`netmask` defines the Mediation guest XMI and IMI netmask.

`gateway` defines the XMI default route used by the mediation guest.

Application Guest Scripts Element Network

The `scripts` element defines files that will be executed as part of the IPM process. Currently, network configuration of the TVOE guest is not directly supported by the Fast Deployment. Instead, the `netAdm` script is called with arguments. The only arguments that should be modified are the `address`, `netmask`, and `gateway`.

`address` defines the IP XMI address of the Application guest.

`netmask` defines the Application guest XMI netmask.

`gateway` defines the XMI default route used by the Application guest.

Appendix O.1 Sample FDC Configuration File

```

<fdc>
  <infrastructures>
    <infrastructure name="PMAC">
      <!--Software Elements-->
      <software>
        <image id="tvoe">
          <name>872-2525-101-2.5.0_82.12.1-TVOE-x86_64</name>
        </image>
        <image id="app">
          <name>872-2427-102-7.0.0_7.0.0-apps-x86_64</name>
        </image>
        <image id="med">
          <name>872-2427-101-7.0.0_7.0.0-mediation-x86_64</name>
        </image>
        <image id="ora">
          <name>872-2440-104-7.0.0_7.0.0-oracle-x86_64</name>
        </image>
        <image id="tpd">
          <name>TPD.install-7.5.0_82.15.0-CentOS6.4-x86_64</name>
        </image>
      </software>

      <hardware>
        <cabinet id="cab1">
          <cabid>1</cabid>
        </cabinet>

        <!--Enclosure Element: Update cabhwid, endid and oa ip's-->
        <enclosure id="encl">
          <cabhwid>cab1</cabhwid>
          <encid>1401</encid>
          <oa1>10.240.71.197</oa1>
          <oa2>10.240.71.198</oa2>
        </enclosure>

        <!--Blade Element: Update enchwid, bay and type-->
        <blade id="blade7">
          <enchwid>encl</enchwid>
          <bay>7F</bay>
          <type>ProLiant BL460c G6</type>
        </blade>

        <!--Rack Mount Server Element: update rmsOOBIP with ILO IP-->
        <rms id="mgmtsrvr">
          <rmsOOBIP>10.250.36.27</rmsOOBIP>
          <rmsname>d-ray</rmsname>
          <cabhwid>cab1</cabhwid>
          <rmsuser>root</rmsuser>
          <rmspassword>TkklcRoot</rmspassword>
          <type>ProLiant DL380 G8</type>
        </rms>
      </hardware>

      <tvoehost id="mgmtsrvrtvoe">
        <!--TVOE Hardware Element: Update the name of the tvoe device-->
        <!--In this example we are configuring a rms server-->
        <hardware>
          <rmshwid>mgmtsrvr</rmshwid>
          <!--bladehwid>blade7</bladehwid-->
        </hardware>

        <!--TVOE Software Element-->
        <!--Do Not Use this element when the PM&C host co-exist with IDIH-->
        <software>
          <baseimage>tvoe</baseimage>
        </software-->

        <serverinfo>
          <!--tvoe hostname: Update hostname-->
          <hostname>d-ray</hostname>
          <!--tvoe ntpservers: Update ip address-->
          <ntpservers>
            <ntpserver>
              <name>ntpserver1</name>
              <ipaddress>10.250.32.10</ipaddress>
            </ntpserver>
          </ntpservers>
        </serverinfo>

        <tpdnetworking>

```

```

<tpdinterfaces>
  <!--tvoe xmi interface: Update device and vlanid-->
  <tpdinterface id="xmi">
    <device>bond0.3</device>
    <type>Vlan</type>
    <vlandata>
      <vlanid>3</vlanid>
    </vlandata>
    <onboot>yes</onboot>
    <bootproto>none</bootproto>
  </tpdinterface>

  <!--Tvoe imi interface: Update device and vlanid-->
  <tpdinterface id="imi">
    <device>bond0.4</device>
    <type>Vlan</type>
    <vlandata>
      <vlanid>4</vlanid>
    </vlandata>
    <onboot>yes</onboot>
    <bootproto>none</bootproto>
  </tpdinterface>
</tpdinterfaces>

<tpdbridges>
  <!--Tvoe xmi bridge: Update interfaces, ipaddress and netmask-->
  <tpdbridge id="xmibr">
    <name>xmi</name>
    <!--Make sure this value matches the imi tpdinterface-->
    <interfaces>bond0.3</interfaces>
    <bootproto>none</bootproto>
    <address>10.240.51.39</address>
    <netmask>255.255.255.0</netmask>
    <onboot>yes</onboot>
  </tpdbridge>

  <!--Tvoe imi bridge: Update interfaces, ipaddress and netmask-->
  <tpdbridge id="imibr">
    <name>imi</name>
    <!--Make sure this value matches the imi tpdinterface-->
    <interfaces>bond0.4</interfaces>
    <bootproto>none</bootproto>
    <onboot>yes</onboot>
  </tpdbridge>
  <tpdbridge id="intbr">
    <name>int</name>
    <bootproto>none</bootproto>
    <onboot>yes</onboot>
  </tpdbridge>
</tpdbridges>

<tpdroutes>
  <!--Tvoe default gateway address: Update gateway-->
  <tpdroute id="default">
    <type>default</type>
    <device>xmi</device>
    <gateway>10.240.30.3</gateway>
  </tpdroute>
</tpdroutes>
</tpdnetworking>

<scripts>
  <predeploy>
    <!--configExt configures external disk-->
    <scriptfile id="configExt">
      <image>med</image>
      <imagefile>external.pl</imagefile>
      <filename>/root/external.pl</filename>
    </scriptfile>
  </predeploy>
</scripts>
</tvoehost>
</infrastructure>
</infrastructures>

<servers>
  <!--Oracle Guest Configuration-->
  <tvoequest id="Oracle">
    <infrastructure>PMAC</infrastructure>
    <tvoehost>mgmtrsrvrtvoe</tvoehost>

    <!--Oracle Guest Profile: Update if hardware is Gen6 default is Gen8-->
    <!--profile>ORA_GEN6</profile-->
    <profile>ORA_GEN8</profile>
  </tvoequest>

```

```

<name>oracle</name>
<software>
  <baseimage>tpd</baseimage>
  <appimage>ora</appimage>
</software>
<serverinfo>

  <!--Oracle guest hostname-->
  <hostname>mamie</hostname>
</serverinfo>

<scripts>
  <presrvapp>
    <scriptfile id="oracleInt">
      <filename>/usr/TKLC/plat/bin/netAdm</filename>
      <arguments>set --device=int --address=10.254.254.2 --netmask=255.255.255.224
        --onboot=yes --bootproto=none</arguments>
    </scriptfile>

    <!--Oracle Guest xmi network: Update address and netmask-->
    <scriptfile id="oracleXmi">
      <filename>/usr/TKLC/plat/bin/netAdm</filename>
      <arguments>set --device=xmi --address=10.250.51.184 --netmask=255.255.255.0
        --onboot=yes --bootproto=none</arguments>
    </scriptfile>

    <!--Oracle Guest xmi default route: Update gateway-->
    <scriptfile id="oracleRoute">
      <filename>/usr/TKLC/plat/bin/netAdm</filename>
      <arguments>add --route=default --device=xmi --gateway=10.250.51.1</arguments>
    </scriptfile>
  </presrvapp>
  <postsrvapp>
    <!--Oracle Post Server Application Configuration Script-->
    <scriptfile id="oracleConfig">
      <filename>/opt/xIH/oracle/configureOracle.sh</filename>
      <timeout>2700</timeout>
    </scriptfile>
  </postsrvapp>
</scripts>
</tvoeguest>

<!--Mediation Guest Configuration-->
<tvoeguest id="Mediation">
  <infrastructure>PMAC</infrastructure>
  <tvoehost>mgmstrsvrtvoe</tvoehost>

  <!--Mediation Guest Profile: Update if hardware is Gen6 default is Gen8-->
  <!--profile>MED_GEN6</profile-->
  <profile>MED_GEN8</profile>
  <name>mediation</name>
  <software>
    <baseimage>tpd</baseimage>
    <appimage>med</appimage>
  </software>

  <!--Mediation guest hostname-->
  <serverinfo>
    <hostname>poney</hostname>
  </serverinfo>
  <scripts>
    <presrvapp>
      <scriptfile id="medInt">
        <filename>/usr/TKLC/plat/bin/netAdm</filename>
        <arguments>set --device=int --address=10.254.254.3 --netmask=255.255.255.224
          --onboot=yes --bootproto=none</arguments>
      </scriptfile>

      <!--Mediation Guest xmi network: Update address and netmask-->
      <scriptfile id="medXmi">
        <filename>/usr/TKLC/plat/bin/netAdm</filename>
        <arguments>set --device=xmi --address=10.250.51.185 --netmask=255.255.255.0
          --onboot=yes --bootproto=none</arguments>
      </scriptfile>

      <!--Mediation Guest xmi default route: Update gateway-->
      <scriptfile id="medRoute">
        <filename>/usr/TKLC/plat/bin/netAdm</filename>
        <arguments>add --route=default --device=xmi --gateway=10.250.51.1</arguments>
      </scriptfile>

      <!--Mediation Guest imi network: Update address and netmask-->
      <scriptfile id="medImi">
        <filename>/usr/TKLC/plat/bin/netAdm</filename>

```

```

        <arguments>set --device=imi --address=192.168.10.55 --netmask=255.255.255.0
        --onboot=yes --bootproto=none</arguments>
    </scriptfile>
</presrvapp>

<!--Mediation Post Deploy Database Configuration Script-->
<postdeploy>
    <scriptfile id="medConfig">
        <filename>/opt/xIH/mediation/xdrDbInstall/install.sh</filename>
    </scriptfile>
</postdeploy>
</scripts>
</tvoeguest>

<!--Application Guest Configuration-->
<tvoeguest id="Application">
    <infrastructure>PMAC</infrastructure>
    <tvoehost>mgmtsrvrtvoe</tvoehost>

    <!--Application Guest Profile: Update if hardware is Gen6 default is Gen8-->
    <!--profile>APP_GEN6</profile-->
    <profile>APP_GEN8</profile>
    <profile>application</profile>
    <name>application</name>
    <software>
        <baseimage>tpd</baseimage>
        <appimage>app</appimage>
    </software>

    <!--Application guest hostname: Update hostname-->
    <serverinfo>
        <hostname>jesco</hostname>
    </serverinfo>
    <scripts>
        <presrvapp>
            <scriptfile id="appInt">
                <filename>/usr/TKLC/plat/bin/netAdm</filename>
                <arguments>set --device=int --address=10.254.254.4 --netmask=255.255.255.224
                --onboot=yes --bootproto=none</arguments>
            </scriptfile>

            <!--Application Guest xmi network: Update address and netmask-->
            <scriptfile id="appXmi">
                <filename>/usr/TKLC/plat/bin/netAdm</filename>
                <arguments>set --device=xmi --address=10.250.51.186 --netmask=255.255.255.0
                --onboot=yes --bootproto=none</arguments>
            </scriptfile>

            <!--Application Guest xmi default route: Update gateway-->
            <scriptfile id="appRoute">
                <filename>/usr/TKLC/plat/bin/netAdm</filename>
                <arguments>add --route=default --device=xmi --gateway=10.250.51.1</arguments>
            </scriptfile>
        </presrvapp>
    </postdeploy>

    <!--Sleep allows time for mediation scripts completion-->
    <scriptfile id="appSleep">
        <filename>/bin/sleep</filename>
        <arguments>60</arguments>
    </scriptfile>

    <!--Application Post Deploy Configuration Script-->
    <scriptfile id="appConfig">
        <filename>/opt/xIH/apps/install.sh</filename>
        <timeout>3000</timeout>
    </scriptfile>
</postdeploy>
</scripts>
</tvoeguest>
</servers>
</fdc>

```

Appendix P ACCESSING ORACLE CUSTOMER SUPPORT SITE

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 menu 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

Oracle Communications 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 **Oracle Help Center** 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 on your 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.