Oracle® Communications Diameter Signaling Router DSR Cloud Software Upgrade Guide

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Oracle® Communications Diameter Signaling Router, DSR Cloud 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 the following upgrades:

- Major upgrade from DSR 7.0.1, 7.1.x, or 7.2 to 7.3
- Incremental upgrade from an earlier DSR 7.3 release to a later 7.3 release

The upgrade of cloud deployments 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 cloud software upgrade.

The execution of this procedure assumes that the target DSR 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 7.3 software loads. It is recommended to contact MOS for the software loads as described in Appendix J
- Initial installation of DSR software. Refer to [1]
- SDS upgrade. Refer to [2]

1.2 References

- [1] DSR 7.2/7.3 Cloud Installation Guide, E64814, Oracle
- [2] SDS 7.3 Upgrade document. E76623, Oracle
- [3] Maintenance Window Analysis Tool CGBU_010314, Oracle
- [4] IPFE Feature Activation and Configuration, CGBU_694, Oracle
- [5] DSR 6.0 to 7.0 Migration IPFE Aspects, CGBU_770, Oracle
- [6] Fast Deployment and Configuration Tool Technical Reference, CGBU_ENG_24_2353, Oracle
- [7] Cloud DSR 7.3 Disaster Recovery Guide, E64815, 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
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
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
MOP	Method of Procedure
MP	Message Processing or Message Processor
MW	Maintenance Window
NE	Network Element
NOAM	Network OAM
OAM	Operations, Administration and Maintenance
OFCS	Offline Charging Solution
PCA	Policy and Charging Agent (formerly known as PDRA)
PDRA	Policy Diameter Routing Agent
SBR	Session Binding Repository
SDS	Subscriber Database Server
SOAM	System OAM
TPD	Tekelec Platform Distribution
UI	User Interface
VIP	Virtual IP
VPN	Virtual Private Network
XMI	External Management Interface
XSI	External Signaling Interface

Table 1: Acronyms

1.4 Terminology

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

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 7.1.x 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 Ungrade	The process of converting a DSR 7.0.1 server from its current release to a newer
Single Berver Opgrade	release
De cherret	
Баскош	The process of converting a single DSR 7.5 server to a prior version. This could
	be performed due to failure in Single Server Opgrade 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	The network element that contains the Active and Standby NOAM servers in a
Element	DSR. In a 2-tier DSR, there is only a single network element, and it contains the
	NOAMs and all MPs. So this single network element is both the primary NOAM
	network element and the signaling network element. In a 3-tier DSR, there are
	more possible combinations.
Signaling Network	Any network element that contains DA-MPs (and possibly other C-level servers).
Element	thus carrying out Diameter signaling functions. In a 2-tier DSR, the signaling
	network element and the "site" are one and the same. In a 3-tier DSR, 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. For a 2-tier DSR
Site	the site is defined by the NOAM. For a 3 tier DSR, the site is defined by the
	SOAM
Tangat valaasa	SOAM.
Target Telease	Software release to upgrade to.
Haalth Chaala	Describer and the determine the backtoon deteters of the DCD's internal national
неани спеск	This includes status displayed from the DSP GUL. This can be observed are
	This includes status displayed from the DSK GOI. This can be observed pre-
Use and the Decision	State that allows for an and a state and post-server upgrade.
Upgrade Keady	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:
	• 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.
1+1	Setup with one Active and one Standby server.
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
11161 411011	from 1+1 (Active/Standby) policy to N+ 0 (Multiple Active) policies.

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. It is recommended to contact MOS for assistance, as described in Appendix J, 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 Di	rective Steps
1	Change directory	Change of the backout directory.
	\checkmark	\$ cd /var/TKLC/backout
2	Verify Network Element	View the Network Elements configuration data; verify the data; save and print report.
	data	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.

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 J 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 C: 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.x or 7.2 to 7.3 (in this case, pooling migration has already completed)
- 3. DSR 7.3 incremental upgrade.

1.7.2 Review Release Notes

Before starting the upgrade, it is recommended to review the Release Notes for the target 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 source release 7.0.1, 7.1.x, or 7.2 to target release 7.3. An incremental upgrade advances the DSR from an earlier DSR 7.3 source release to a more recent 7.3 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 7.3.0.0.0-73.5.0 to 7.3.0.0.0-73.6.0 is an incremental upgrade. But advancing a DSR running a 7.0.1 release to a 7.3 target release constitutes a major upgrade.

2.1 Supported Upgrade Paths to Release 7.3

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.

















2.2 Geo-diverse 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.

2.3 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.

2.4 Traffic Management during Upgrade

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

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

2.5 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 a 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 for 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.

2.5.1 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.

Filter						
NO1	N01 N02 S01 S02 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		
Pause	Restart Cancel Delete	Report Delete All C	Completed Delete All Exception			

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

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 backout_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 resume 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 section 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.

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 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.

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 ISO image file name will be in the following format (version will change from release to release):

DSR-7.1.1.0.0_71.28.0-x86_64.iso

NOTE: Prior to the execution of this upgrade procedure it is assumed that the DSR 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.

Item	Description	Recorded Value
Target Release	Target DSR upgrade release	
Credentials	GUI Admin Username ¹	
	GUI Admin Password	
	DSR admusr Password ²	
VPN Access Details	Customer VPN information (if needed)	
NOAM	XMI VIP address ²	
	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	
Binding SBR Server	Binding SBR SR1 Server Group Servers (Site 1)	
Groups	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	PCA MP Server Group Servers (Site 1)	
Group	PCA MP Server Group Servers (Site 1)	
IPFE Server	PCA IPFE A1 Server Group Server (Site 1)	
Groups(For PDRA)	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	Binding SBR SR1 Server Group Servers (Site 2)	
Groups	Binding SBR SR2 Server Group Servers (Site 2)	
	Binding SBR SR3 Server Group Servers (Site 2)	
	Binding SBR SR4 Server Group Servers (Site 2)	

Table 3: Logins, Passwords and Server IP Addresses

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

² NOTE: All logins into the NOAM servers are made via the External Management VIP unless otherwise stated.

PCA MP Server Group	PCA MP Server Group Servers (Site 2)
IPFE Server Groups	PCA IPFE A1 Server Group Server (Site 2)
(For PCA)	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	SS7-IWF Server Group Server
Groups	SS7-IWF Server Group Server
	SS7-IWF Server Group Server
Software	Target Release Number
	ISO Image (.iso) file name
Misc. ³	Miscellaneous additional data

³ 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.







3.2.1 Calculating Maintenance Windows Required

The number of maintenance windows required for DSR setup and upgrade can be calculated by using the Maintenance Window Analysis Tool (see ref [3]).

This Excel spreadsheet takes setup details as input from the user and accordingly calculates the number of maintenance windows required for upgrade. The spreadsheet also specifies, in detail, which servers need to be upgraded in which maintenance window. Complete DSR upgrade maintenance window details and timings can be found in Reference [3]. Please see the instructions tab of the spreadsheet for more information and details.

3.2.2 Maintenance Window 1 (NOAM Site Upgrades)

During the first maintenance window, the NOAM servers are upgraded.

Maintenance Window 1 <i>(NOAM Sites)</i> Date:	1. 2.	Record the Site NE Name of the DSR NOAM to be upgraded during Maintenance Window 1 in the space provided below: "Check off" the associated Check Box as upgrade is completed for each server.
NOTE 1: The NE Name may be viewed from the DSR NOAM GUI under [Main Menu → Configuration → Network Elements].		Primary Standby NOAM <i>(Guest)</i> : Primary Active NOAM <i>(Guest)</i> :

3.2.3 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.

WARNING	It is strongly recommended that Mated pair SC NOT upgraded in the same Maintenance Wind	DAM Sites are dow.
Maintenance Window (SOAM Sites)	 Record the Site NE Name of the DSR SOAM and the MF during Maintenance Window 2 in the space provided. 	P(s) to be upgraded
Date:	 "Check off" the associated Check Box as upgrade is co server. 	ompleted for each
	SOAM Site:	
	Spare SOAM1 (Guest):	(If equipped)
	Spare SOAM2 (Guest):	(If equipped)
	Standby SOAM (Guest):	
	Active SOAM (Guest):	_
	DA-MP1:	
	DA-MP2:	
	DA-MP3:	
	DA-MP4:	
	DA-MP5:	
	DA-MP6:	
	DA-MP7:	
	DA-MP8:	
	DA-MP9:	
	DA-MP10:	
	DA-MP11:	
	DA-MP12:	
	DA-MP13:	
	DA-MP14:	
	DA-MP15:	
	DA-MP16:	

IPFE1:
IPFE2:
□ IPFE3:
IPFE4:
SS7-MP1:
SS7-MP2:
SS7-MP3:
SS7-MP4:
SS7-MP5:
SS7-MP6:
SS7-MP7:
SS7-MP8:

Binding Server Group 1 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 2 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 3 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 4 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 5 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 6 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 7 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Binding Server Group 8 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)

Session Server Group 1 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate): Session Server Group 2 Standby SBR:	(If equipped)
Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate): Session Server Group 3	(If equipped)
Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Session Server Group 4 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Session Server Group 5 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Session Server Group 6 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Session Server Group 7 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)
Session Server Group 8 Standby SBR: Active SBR: Spare SBR1 (Mate): Spare SBR2 (Mate):	(If equipped)

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.

Dreadure	Elapsed Time (hr:min)		Broodure Title	lunnaat
Procedure	This Step	Cum.	Procedure Inte	Impact
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 7.0.1	None
or Procedure 4 or	0:45-1:00	1:15-2:00	Data Collection for Source Release 7.1.x	None
Procedure 5	0:15-0:20	0:45-1:20	Data Collection for Source Release 7.2 and later	None
Procedure 6	0:15-3:00	1:00-6:00	DSR ISO Administration	None
Procedure 7	0:10-2:00	1:10-8:00	Full Backup of DB Rbun Environment for Release 7.0.1	None
or Procedure 8			or Full Backup of DB Run Environment for Release 7.1.x and later	None
Procedure 9	0:03-2:30	1:13-10:30	Network Interface Workaround	None

Table 4: Prerequisite Procedures Overview	Table 4:	Prerequisite	Procedures	Overview
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* 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	This procedure verifies that all required materials are present.		
E P	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	Verify all required	Materials are listed in Section 3.1: Required Materials. Verify required materials are	
	materiais are present	present.	
2	Verify all administration data needed during upgrade	Double-check that all information in Section 3.2 is filled-in and accurate.	
3	Contact MOS	It is recommended to contact MOS and inform them of plans to upgrade this system. See	
		Note that obtaining a new online support account can take up to 48 hours.	
		THIS PROCEDURE HAS BEEN COMPLETED.	

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.

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	This procedure checks the configuration data and server status.						
E	Check off (\checkmark) each step as it	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.					
Р #	SHOULD THIS PROCEDUR	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE				ISTANCE	
# 1	SHOULD THIS PROCEDUR	 Select Administ Verify that the U Verify that the U Select the NOAN Select the NOAN Main Menu: Admi Filter Tasks Tasks NO_SG IPFE_SG Hostname NO1 NO2 Backup Backup All 	IDED TO CONT. IT ation > Softw pgrade path to Upgrade Path A Server Group nistration -> MP_SG SO_SG Upgrade State Server Status Backup Needed Norm Auto Upgrade	ACT MOS AND are Manageme the target relea <i>hs</i>). and verify the Software Ma OAM Max HA Role Appl Max HA Role Active N/A Standby N/A Report	ASK FOR UPGI ent > Upgrade se is supporter Application Ve anagement - Server Role Network Element Network CAM&P No_DSR_VM Network OAM&P No_DSR_VM Report All	ADE ASS d as docu rsion > Upgrad Function OAM&P OAM&P	ISTANCE mented in Section de Application Version Upgrade ISO 7.1.1.0.0-71.31.0 7.1.1.0.0-71.31.0
2	Server CLI: Check if the setup has customer supplied Apache certificate installed and protected with a passphrase.	Backup All Auto Upgrade Accept Report All 1. Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active NOAM ssh admusr@ <noam_vip> (Answer 'yes' if you are prompted to confirm the identity of the server.) 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 procedure. 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</noam_vip>					

3.3.2.2 Data Collection for Source Release 7.0.1

This procedure collects and archives system status data for analysis. Perform this procedure only if the source release is 7.0.1.

Procedure 3: Data Collection for Source Release 7.0.1

S T	This procedure retrieves and retains system status data for analysis and future use.		
Ē	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.		
Р #	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE		
1	Active SOAM CLI	 Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active SOAM: 	
	Database consistency check	ssh admusr@ <soam_vip></soam_vip>	
		Check the transport connections tables.	
		2. Enter the following commands to count the number of entries in the ConnectionAdmin and TransportConnection tables.	
		iqt -zhp ConnectionAdmin wc -l iqt -zhp TransportConnection wc -l	
	Sample output:		
		[admusr@EVO-SO-1 ~]\$ iqt -zhp ConnectionAdmin wc -1 7196	
		[admusr@EVO-SO-1 ~]\$ iqt -zhp TransportConnection wc -1 7196	
		3. If the entry counts match, proceed to the next step .	
		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.	
2	Server CLI:	 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. 	
	server in the topology.	<pre>ssh admusr@<target_server_xmi_ip></target_server_xmi_ip></pre>	
		(Answer 'yes' if you are prompted to confirm the identity of the server.)	
		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.	
		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".	
3	Repeat Port Check	Repeat steps 1 and 2 for each SOAM site in the topology.	

Procedure 3: Data Collection for Source Release 7.0.1

4	Active NOAM VIP:	Check for the presence of alarm 19901 – CFG-DB Validation Error.		
	Alarm Check	 From the Active NOAM GUI: Navigate to Alarms & Events > View Active. Click Filter to open the filter selection box. Enter the following values and click Go. 		
		Filter		
		 Scope: - Network Element Server Group Resource Domain Play Display Filter: Event ID = = 19901 Reset Collection Interval: Days Ending 2015 Jan 01 00 1 Go 4. If the filter returns no results, the database is consistent; proceed to the next step. Otherwise, do not continue 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. 		
_				
5		venity the HPFE Server Groups are properly configured.		
	Verify IPFE Server Groups	 Login to the NOAM GUI using the VIP. Navigate to Configuration > Server Groups. Examine each IPFE Server Group. Verify that each IPFE Server Group is configured with one, and only one, IPFE server. If any IPFE Server Group contains more than one IPFE server, refer to the Server Group Configuration procedure of [4] to correct the configuration. 		
6	Active NOAM VIP:	1. Select Configuration > Network Elements to view Network Elements Configuration		
	Verify and collect Network Element Configuration data	 Click Report at the bottom of the table to generate a report for all entries. Verify the configuration data is correct for the network. Save the report and/or print the report. Keep these copies for future reference. 		
7	Active NOAM VIP:	 Select Configuration > Server Groups to view the Server Group screen. Click Report at the bottom of the table to screents a strengt for all acting 		
	Verify and collect Server Group Configuration data	 Click Report at the bottom of the table to generate a report for all entries. Verify the configuration data is correct for the network. Save the report and/or print the report. Keep these copies for future reference. 		
8	Active NOAM VIP:	 Select Configuration > Servers to view the Server screen Click Report at the bottom of the table to generate a report for all antrice 		
	Verify and collect Server Configuration data	 Once Report at the bottom of the table to generate a report for all entries. Verify the configuration data is correct for the network. Save the report and/or print the report. Keep these copies for future reference. 		
9	Active NOAM VIP:	 Select Configuration > Services to view Services screen. Click Report at the bottom of the table to generate a report for all entries. 		
	Verify and collect Services Configuration	 Verify the configuration data is correct for the network. 		
	data	4. Save the report and/or print the report. Keep these copies for future reference.		

Procedure 3: Data Collection for Source Release 7.0.1

10	Active NOAM VIP: Verify and collect Signaling Network Configuration data for DSR	 Select Configuration > Network to view the Signaling Networks. Click "Report" at the bottom of the table to generate a report for all entries. Verify the configuration data is correct for the network. Save the report and/or print the report. Keep these copies for future reference. Select Configuration > Network > Devices. 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. Select Configuration > Network > Devices. Click "Report All" at the bottom of the table to generate a report for all entries. Select Configuration > Network > Routes. 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. Select Configuration > Network > Routes. 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.
11	Active NOAM VIP: Verify Server Status is Normal - NOAM	 Select Status & Manage > Server. The Server Status screen is displayed. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). Do not proceed with the upgrade if any server status displayed is not Norm. Do not proceed if there are any Major or Critical alarms.
12	Active NOAM VIP: Log all current alarms at NOAM.	 Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. Click the Report button to generate an Alarms report. Save the report and/or print the report. Keep these copies for future reference. 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.
13	Active NOAM VIP: View Communication Agent status for all connections	 Select Communication Agent > Maintenance > Connection Status; The Communication Agent > Connection Status screen is displayed. Verify the Connection Status of each connection is InService.
14	Active NOAM VIP: View SBR status (if equipped)	 View SBR status if PDRA/PCA is enabled. If the Active NOAM is on release 7.0.1, 7.1.x: Select Policy and Charging > Maintenance > SBR Status The SBR Status screen is displayed. Select the Binding tab. Expand each Server Group. Verify Congestion Level is 'Normal' for all servers. Repeat sub-steps 3 and 4 for the PDRA Mated Triplet tab. If the Active NOAM is on release 7.2 and later: Select SBR > Maintenance > SBR Status The SBR Status screen is displayed. Select SBR > Maintenance > SBR Status The SBR Status screen is displayed. Select the Binding tab. Expand each Server Group. Verify Congestion Level is 'Normal' for all servers. Repeat sub-steps 3 and 4 for the PCA Mated Triplet tab
15	Analyze and plan MP upgrade sequence	 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. 1. Analyze system topology data gathered in Steps 1 through 16. 2. It is recommended to plan for any 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.

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

S T	This procedure retrieves and retains system status data for analysis and future use.			
E	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.			
#	SHOULD THIS PROCEDUR	E FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE		
1	Active NOAM VIP:	Verify the IPFE Server Groups are properly configured. From the Active NOAM GUI:		
	Groups	1. Login to the NOAM GUI using the VIP.		
		 Navigate to Configuration > Server Groups. Examine cosh IDEE Server Croup, Varify that each IDEE Server Croup is configured with 		
		one, and only one, IPFE server.		
		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.		
2	Active NOAM VIP:	Check for the presence of alarm 19901 – CFG-DB Validation Error.		
	Alarm Check	From the Active NOAM GUI:		
		 Navigate to Alarms & Events > View Active. Click Filter to open the filter selection box. 		
		3. Enter the following values and click Go .		
		Filter		
		- Plan - Plan		
		Display Filter: Event ID V = V 19901 Reset		
		Collection Interval: Days V Ending V 2015 Jan V 01 V 00 V		
		Go		
		 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
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3		Execute the following commands on the Active DSR NOAM and Active DR NOAM servers		
3	Active NOAM CLI:			
	Verify NOAM pre-	From the Active NOAM CLI:		
	Upgrade Status	1. Use an SSH client to connect to the Active NOAM:		
		ssh <noam address="" ip="" xmi=""></noam>		
		login as: admusr		
		password: <enter password=""></enter>		
		Note: The static XMI IP address for each server should be available in Table 3.		
		2. Enter the command:		
		<pre>\$ upgradeHealthCheck preUpgradeHealthCheck</pre>		
		This command creates files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:		
		<noserver_name>_ServerStatusReport_<date-time>.xml <noserver_name>_ComAgentConnStatusReport_<date-time>.xml</date-time></noserver_name></date-time></noserver_name>		
		<pre>If there are alarms on the system:</pre>		
		<pre>If the system is PDRA:</pre>		
		Note: The message " FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.		
		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.</hostname></hostname>		
		Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.		
		 Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete. 		
4	Server CLI:	 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. 		
	Verify uptime for each server in the topology	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.).		
		<pre>ssh admusr@<target_server_xmi_ip></target_server_xmi_ip></pre>		
		(Answer 'yes' if you are prompted to confirm the identity of the server.)		
		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 \geq 200 days.		
		 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. 		
		NOTE: This is required response due to <u>Red Hat Bug 765720</u> . It is recommended to contact MOS if instruction is needed on how to gracefully perform a "Cold Reboot".		
Procedure 4: Data Collection for Source Release 7.1.x

5	Active SOAM CLI:	Check the transport connections tables.						
	Database consistency check	 From the Active SOAM CLI: Use the SSH command (on UNIX systems – or putty if running on windows) to login to the Active SOAM 						
		ssh admusr@ <soam_vip></soam_vip>						
		(Answer 'yes' if you are prompted to confirm the identity of the server.)						
		 Enter the following commands to count the number of entries in the ConnectionAdmin and TransportConnection tables. 						
		iqt -zhp ConnectionAdmin wc -l iqt -zhp TransportConnection wc -l						
		Sample output:						
		[admusr@EVO-SO-1 ~]\$ iqt -zhp ConnectionAdmin wc -1						
		[admusr@EVO-SO-1 ~]\$ iqt -zhp TransportConnection wc -1 7196						
		3. If the entry counts match, proceed to step 6 .						
		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.						
6	Active SOAM CLI:	From the Active SOAM CLI: 1. Use an SSH client to connect to the Active SOAM:						
	Log SOAM Alarm Status	ssh <soam address="" ip="" xmi=""> login as: admusr password: <enter password=""></enter></soam>						
		Note: The static XMI IP address for each server should be available in Table 3.						
		2. Enter the command:						
		<pre>\$ upgradeHealthCheck preUpgradeHealthCheckOnSoam</pre>						
		This command creates files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:						
		<soserver_name>_ServerStatusReport_<date-time>.xml</date-time></soserver_name>						
		<pre>If there are alarms on the system: <soserver_name>_AlarmStatusReport_<date-time>.xml</date-time></soserver_name></pre>						
		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.</hostname>						
		 Verify all Peer MPs are available Note the number of Total Connections Established 						
		 Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete. 						

7	Active SOAM CLI: Verify PCA status (if equipped)	 From the Active SOAM CLI: Enter the command: upgradeHealthCheck pcaStatus This command outputs status to the screen for review. Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored. Verify Operational Status is 'Available' for all applications
8	Repeat for each Network Element	Repeat Steps 5 - 7 for each SOAM site in the topology.
9	Analyze and plan MP upgrade sequence	 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. Analyze system topology data gathered in Section 3.3.1 and steps 1 through 10 of this procedure. It is recommended to plan for MP upgrades by consulting MOS to assess the impact of out-of-service MP servers Determine the exact sequence in which MP servers will be upgraded for each site.

Procedure 4: Data Collection for Source Release 7.1.x

3.3.2.4 Data Collection for Source Release 7.2 and later

This procedure collects and archives system status data for analysis. Perform this procedure only if the source release is 7.2 or later.

S	This procedure retrie	ves and reta	ins system status	data for ana	lysis and fut	ure use.					
T E	Check off (\mathbf{y}) each stop as it is	completed Boyes	have been provided for	this nurness und	or each stop num	hor					
P	check on (v) each step as it is	completed. boxes		uns purpose uno							
#	SHOULD THIS PROCEDURE	FAIL, IT IS RECO	DMMENDED TO CONT	ACT MOS AND	ASK FOR UPGR	RADE ASSI	STANCE				
	Active NOAM VIP:	NOAM VIP:									
	Initate NOAM health	1. Select Ad	Iministration > Softv	vare Managem	ent > Upgrade						
	check	The Upgrade screen is displayed.									
		2. Select the Active NOAM.									
		Main Menu: Administration -> Software Management -> Upgrade									
		Filter Tasks T									
		NO SG IPFE	SG MP SG SO SG								
			Upgrade State	OAM Max HA Role	Server Role	Function	Application Version				
		Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO				
		NO1	Ready Norm	Active N/A	Network OAM&P	OAM&P	7.2.0.0.72.16.5				
		NO2	Ready	Standby	Network OAM&P	OAM&P	7.2.0.0.0-72.16.5				
		1102	Norm	N/A	NO_DSR_VM						
		Backup Back	up Al Checkup Che	ckup All Upgrad	e Server Accept	Report	Report All				
		3. Click the	Checkup button.								
		The Upgra	ade [Checkup] screer	n is displayed.	a Advance Linc	rrade onti	on				
		5. If the ISO	Administration proce	dure has alread	ly been perform	led for the	target ISO, use				
		the Upgra	ade ISO pulldown to s	elect the target	release ISO. O	therwise,	do not select an				
		ISO. 6 Click Ok	Control returns to the	l Ingrade scree	'n						
		O. Olick OK.		opgrade seree							
		Main Menu:	Administration ->	Software M	anagement -	> Upgra	de [Checkup]				
		Info 🔻									
		Hostname	Action	St	atus						
		NO1	Health Check	0	AM Max HA Role	Network Eler	nent				
			, ineditir Oneck	4	ctive	NO_DSR_VI	И				
		Health check opt	Advance Upgrade								
		Checkup Type	OPre Upgrade OPost Upgrade	U	pgrade health check	type.					
		Upgrade ISO	DSR-7.2.0.0.0_72.16.5-x8	6_64.iso 🗸 S	elect the desired upg	grade ISO me	dia file.				
					Ok Ca	ancel					

2	Active NOAM VIP:	Monitor for the com	npletio	n of the Hea	alth Check.						
	Monitor health check progress	 Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <noservergroup> AdvanceUpgrade Health Check.</noservergroup> 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. 									
		Main Menu: Administration -> Software Management -> Upgrade									
		Filter Status	Tasks	•							
		Status	Tasks	Hostnamo	Namo	Tack State	Dotaile	Drogroce	8		
		• NO_SG: Adva	3	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthChec k_NO_SG_20160308-124312- EST.bt	100%	∧ s		
		NO1	3	NO2	Pre-upgrade full backup	completed	Full backup on NO2	100%			
		NO2	2	N01	Pre-upgrade full backup	completed	Full backup on NO1	100%			
			2	NO2	NO1 Server Upgrade	completed	Server upgrade execution complete.	100%	\sim		
3	Active NOAM VIP: Analyze any Health Check failure	If the Health Check analyzed to determ 1. Select Status The Files scree 2. Select the file i 3. Locate the log 4. Review the log upgrade. If neo Appendix J.	c repon hine if & Man en is c named entrie g for fa cessar	rt status is a the upgrade nage > Files displayed. d "Upgrade- is for the mo ilures. Analy ry, it is recor	nything other tha can proceed. 5. lealthCheck.log" ist recent health o yze the failures an nmended to conta	n "Pass" and click heck. nd detern act MOS	, the Health Check lo View . mine if it is safe to co for guidance as des	ogs can ontinue t cribed ir	be he		

4		This procedure	will run the outemat	ad Haalth Char	ka on the Activ	0 SOAM						
-	Active NOAM VIP:											
	Initate SOAM health	1. Select Ad	Iministration > Soft	ware Managem	ent > Upgrad	e.						
	check	The Upgra	ade screen is display	ed.								
		2. Select the	SOAM server group	tab.								
		3. Select the	Active SOAM.									
		Main Menu:	Administration ->	Software Mai	nagement ->	Upgrade	:					
		Filter 🔻 Ta	isks 🔻									
		SO_SG IPFE_SG MP_SG NO_SG										
			Upgrade State	OAM Max HA Role	Server Role	Function	Application Version					
		Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO					
		502	Ready	Active	System OAM	OAM	7.2.0.0.0-72.16.5					
		502	Err	N/A	SO1_DSR_VM							
		S01	Ready	Standby	System OAM	OAM	7.2.0.0.0-72.16.5					
			Norm	N/A	SO1_DSR_VM							
		Backup Al Checkup Al Checkup All Upgrade Server Accept Report Report All										
		i i i i i i i i i i i i i i i i i i i										
		 Click the C The Upgra In the 'He For a maj not select Click Ok. 	Checkup button. ade [Checkup] scree alth check options' so or upgrade, use the U an ISO for an incren Control returns to the	reen is displayed. s' section, select the Advance Upgrade option. he Upgrade ISO pulldown to select the target release ISO. remental upgrade. the Upgrade screen.								
		Main Menu:	Administration ->	• Software M	anagement	-> Upgra	ade [Checkup]					
		Info 🔻										
		Hostname	Action	St	atus							
			Lisekk Obsels	C	AM Max HA Role	Network Ele	ment					
		502	nealth Check		Active	SO1_DSR_	VM					
		Health check opt	ions									
		Checkup Type	Advance Upgrade Opgrade OPst Upgrade OPost Upgrade	U	pgrade health checl	k type.						
		Upgrade ISO	DSR-7.2.0.0_72.16.5-x8	36_64.iso 🗸 S	elect the desired up	grade ISO me	edia file.					
					OkC	ancel						

5	Active NOAM VIP:	Μ	lonitor fo	or the co	mpleti	on of the H	ealth Check.						
	Monitor health check progress	 Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <soservergroup> AdvanceUpgrade Health Check.</soservergroup> 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. 											
			There Status Tasks										
			50.50		Tasks					8	Ē.		
			30_30	IFFE_30	D	Hostname	Name	Task State	Details	Progress	Ti		
			Hostname		14	NO1	SO_SG AdvanceUpgrade Health Check	completed	k_SO_SG_20160310-125700- EST.txt	100%	s		
			S02		9	MP2	Pre-upgrade full backup	completed	Full backup on MP2	100%			
			S01		4	NO2	Pre-upgrade full backup	completed	Full backup on IPEE	100%			
					9	IFFE	Fie-upgrade fuil backup	completed	Full backup on IFFE	100%			
											_		
	Active NOAM VIP: 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. 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 J. If the health check log contains the message "Unable to execute Health Check on <active hostname="" noam="">", perform health checks in accordance with Procedure 3 or Procedure 4, depending on the source release.</active> 									re e		
	upgrade sequence	 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. 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 for each site. 									d		
		7	HIS P	ROCE	DUR	E HAS B	EEN COMPLE	TED.					

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.

S T	This procedure verifies	s that ISO Administration steps have been completed.							
E P	Check off ($$) each step as it	is completed. Boxes have been provided for this purpose under each step number.							
#	SHOULD THIS PROCEDURE	E FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE							
1	Active NOAM VIP:	Use the NOAM GUI Upload function for ISO file transfer over the network							
	Transfer via NOAM GUI	Upload the target release ISO image file to the File Management Area of the Active NOAM server:							
		 Log into the Active NOAM GUI. Select Status & Manage > Files The Files menu is displayed Click the Active NOAM server in the network. All files stored in the file management storage area of this server display on the screen. 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. Click the Upload button. The Browse window will open: 							

2 Active NOAM VIP:	 Browse to select the file to upload. The Choose File window displays, allowing selection of the file to upload.
	File Upload
	Storth Desktop P
	Organize 🔹 New folder
	Favorites Adobe Reader 9 Adobe Reader 9 gl/im 7.2 gl/im Read only 7.2 gl/im Read only 7.2 gl/im Read only 7.2 Mozila Firefox Ubert VPN Udent VPN usage Music Pictures Videos Videos Videos Journeter Local Disk (C) Local Disk (C) Local Disk (C) Mozila Firefox
	File name: 872-2526-101-5.0.0_50.5.0-DSR-x86_6 All Files
	 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.
	 wait for the screen to refresh and display the uploaded ISO filename in the files This will usually take between 2 to 10 minutes, but more if the network upload sp is slow.

3	Active NOAM VIP: Copy ISO to the Standby NOAM For an Active NOAM on release 7.0.1	<pre>If the Active NOAM is on release 7.0.1, perform this step; otherwise, proceed to step 6. Copy the ISO file to the Standby NOAM. 1. Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active NOAM: ssh admusr@<noam_vip> login as: admusr password: <enter password=""> 2. Copy the ISO file to the Standby NOAM scp -p /var/TKLC/db/filemgmt/<dsr_iso_filename> admusr@<standby_noam_ip>:/var/TKLC/db/filemgmt</standby_noam_ip></dsr_iso_filename></enter></noam_vip></pre>
4	Active NOAM VIP: Using NOAM GUI, transfer ISO to all servers to be upgraded. For Active NOAM on release 7.0.1	If the Active NOAM is on release 7.0.1: Transfer the target release ISO image file from the Active NOAM to all other DSR servers. 1. Navigate to Administration >Software Management > ISO Deployment 2. Click "Transfer ISO" Main Menu: Administration -> ISO Display Filter: -None

5	Active NOAM VIP:	If the Active NOAM is on release 7.0.1:							
	ISO transfer continued	 Under the "Select ISO to Transfer:" drop down menu select the target release ISO. Under the "Select Target System(s):" select "Select All". Select the checkbox next to "Perform Media Validation before Transfer" 							
	release 7.0.1	2. Select the checkbox next to "Perform Media Validation before Transfer".							
		Main Menu: Administration -> ISO [Transfer ISO] Help Tue May 28 08:31:34 2013 UTC • Note: ISOs are located in the connected server's File Management Area. Target Systems are configured via Systems Configuration. If GU • Outconnection is to Standalone Server, ISO must be transferred to self before Upgrade.							
		Select ISO to Transfer: 872-2526-101-5.0.0_50.5.0-DSR-x86_64.iso Select All Deselect All MP1 MP2 MP3 MP4 N01 N02 S01 S02							
		Perform Media Validation before Transfer 🗹							
		3. Click Ok							
		 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.							

6	Active NOAM VIP:	Deploy ISO to all servers.
	Using NOAM GUI,	1. Select Status & Manage > Files
	servers to be upgraded.	The Files menu is displayed
	For Active NOAM on	2. Click the Active NOAM server tab.
	release 7.1.1 or later	All files stored in the file management storage area of this server display on the screen.
		 Select the target release ISO, and click the View ISO Deployment Report button. In the resulting report, determine if the ISO has been deployed to all servers in the system. If the ISO has been deployed to all servers, this procedure is complete. Proceed to the next procedure per Table 4 If the ISO has not been deployed, select the target release ISO in the file list, and click the Validate ISO button. Click Ok on the resulting confirmation dialog box. Verify the ISO status is valid. If the ISO is not valid, repeat this procedure beginning with start 4 if the ISO for file used to the next procedure beginning with start 4 if the ISO for file used to the sector.
		 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.
		Main Menu: Status & Manage -> Files
		Filter Info Status Tasks
		NO1 NO2 SO1 SO2 MP1 MP2 IPFE
		File Name Backup.DSR.NO1.FullDBParts.NETWORK_OAMP.20150319_125752.UPG.tar.bz2
		Backup.DSR.NO1.FullRunEnv.NETWORK_OAMP.20150319_125752.UPG.tar.bz2
		DSB-7 1 0 0 0 71 12 0-y86 64 iso
		upgrade.log
		Delete View ISO Deployment Report Upload Download Deploy ISO Validate ISO 907.6 MB used (9.39%) of 9.4 GB available System utilization: 640.8 MB (6.63%) of 9.4 GB available.
7	Active NOAM VIP:	The deployment progress can be monitored by viewing the tasks dropdown list on the
	Monitor ISO deployment	Status & Manage > Files screen.
	For Active NOAM on release 7.1.1 or later	 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.
		Main Menu: Status & Manage -> Files [View]
		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.
		NO1: Deployed NO2: Deployed
		S01: Deployed S02: Deployed
		MP1: Deployed
		IPFE: Deployed
		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).

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!! 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 7.0.1

This procedure is used to backup the DB run environment when the Active NOAM is on release 7.0.1.

Procedure	7: Full	Backup	of DB	Rbun	Environment	for	Release	7.0.	1

S T 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. Check off (\checkmark) 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	Active NOAM CLI: Log into the Active NOAM	Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the Active NOAM: ssh_admusr@ <noam_vip></noam_vip>	
2	Active NOAM CLI: Start a screen session.	Enter the following commands: \$ screen (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.)	

S T 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. Check off (1) 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 UPGRADE ASSISTANCE			
	Active NOAM CLI:	each server managed by the NOAM, and run the backup command for that server.		
	all servers (managed from this NOAM)	<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>		
		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.		
		Output similar to the following will indicate successful completion:		
		Script Completed. Status: HOSTNAME STATUS		
		HPC3blade02 PASS		
		HPC3blade01 PASS		
		HPC3blade03 PASS		
		HPC3blade04 PASS		
		(Errors will also report back to the command line.)		
		NOTE: There is no progress indication for this command; only the final report when it completes.		
4	Active NOAM CLI:	\$ exit		
	Exit the screen session.	[screen is terminating]		
		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.		
5	ALTERNATIVE METHOD (Optional)	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:		
	<u>Server CLI:</u>	<pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup</pre>		
	alternative backup	Output similar to the following will indicate successful completion:		
	executed on each individual server instead of using the "backupAllHosts" script.	<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.</pre>		
		Archive file /var/TKLC/db/filemgmt/Backup.dsr.blade01.FullRunEnv. SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in /var/TKLC/db/filemgmt.		

Procedure 7: Full Backup of DB Rbun Environment for Release 7.0.1

Procedure 7: Full Backup of DB Rbun Environment for Release 7.0.1

S T 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. Check off (\checkmark) 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>		
6	Active NOAM VIP: Verify that backup files are present on each server.	 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: Backup.DSR.<server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>.UPG. tar.bz2</time_stamp></server_name> Backup.DSR.<server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.UPG.tar.bz2</time_stamp></server_name> 	
		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	This procedure (executed from the Active NOAM server) conducts a full backup of the run						
Т	environment on each	ronment on each server, so that each server has the required data to perform a backout.					
E D	, 1 1						
r #	Check off (\checkmark) each step as it is	completed. Boxes have	been provide	d for this purpose und	er each step nun	nber.	
	SHOULD THIS PROCEDURE	FAIL, IT IS RECOMMI	ENDED TO CO	ONTACT MOS AND	ASK FOR UPG	RADE AS	SISTANCE
1	Active NOAM VIP:						
		1. Login to the	NOAM GUI	using the VIP.			
	Start backup of all	2. Navigate to	Administrat	ion > Software Ma	nagement > L	Ipgrade.	
	servers	3. Click the Ba	ckup All but	ton.			
		Main Manue Ada	inistration	S Coffmana Ma	nagement >	Uparod	la.
		Main Menu; Au	innistratioi	1-> Software Ma	nagement ->	• Opgrad	
		Filter Tasks	,				
		NO_SG IPFE_SG	MP_SG SO	_SG			
			Upgrade Sta	te OAM Max HA Role	Server Role	Function	Application Version
		Hostname	Server Statu	Appl Max HA Role	Network Element		Upgrade ISO
		NO1	Backup Ne	eded Active	Network OAM&P	OAM&P	7.1.0.0.0-71.14.1
			Err	N/A	NO_DSR_VM		
		NO2	Backup Ne Warn	eded Standby	Network OAM&P	OAM&P	7.1.0.0.0-71.14.1
					http://www.internationality.com		
		Backup Backup All	Juto Upgrade	Accept Report Re	eport All		
		\sim					
2	Active NOAM VIP	The Ungrade IBa	ackup All1 so	reen is displayed	This screen dis	solays the	various Network
	<u>riouvo rioruu vii i</u>	Elements, and ide	entifies which	servers are ready	for backup.	playe the	
	Select network elements						
	to backup	1. In the Action	n column, se	lect the Back up ch	heckbox for ea	ch Netwo	rk Element.
		2. Ensure the 1 3 Click the Ok	Exclude rad	initiates a full back	1. Un on each elir	nihla sarv	or
		5. Olick the O K	button. This				01.
		Main Menu: Adm	inistration -	> Software Manag	jement -> Upg	jrade [Ba	ackup All]
		Network element	Action	Server(s) in the proper state	for backup		
		NO_DSR_VM	Back up	NO1 NO2	for buckup		
		SOL DSR VM	✓Back up	SO1 SO2 MP1 MP2 IPFE			
		Full backup options	Duck up		1		
		P - P		Select "Exclude" to perform a	full backup of the CON	ICOL run envir	onment, excluding the datab
		Detabase	Exclude	/usi/TREC/appworks/etc/exclu	de_pans.d/.		
		Database parts exclusion	ODo not exclude	Select "Do not exclude" to per larger backup files in /var/TKL	form a full backup of th C/db/filemomt	ie COMCOL ru	in environment without exclu
				anger buokup lites in /val/TKE	or administragine.		
					Ok	Cancel	

S T E	This procedure (exec environment on each	procedure (executed from the Active NOAM server) conducts a full backup of the run onment on each server, so that each server has the required data to perform a backout.					
Р #	Check off (\checkmark) 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					
3	Active NOAM VIP:	Monitor the upgrade progress.					
	Monitor backup progress	 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. 					
		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					
		Backup In Progress Active Network OAM&P OAM&P 7.1.1.0.0-71.31.0 Norm N/A NO_DSR_VM VM VM <th></th>					
		Backup In Progress Standby Network OAM&P OAM&P 7.1.1.0.0-71.31.0 Norm N/A NO_DSR_VM 7.1.1.0.0-71.31.0 7.1.1.0.0-71.31.0					
		Backup Backup All Auto Upgrade Accept Report Report All					
4	ALTERNATIVE METHOD (Optional)	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 apparents a full backup on that some					
	Server CLI:	<pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup</pre>					
	If needed, the Alternative backup	Output similar to the following will indicate successful completion:					
	method can be	Success: Full backup of COMCOL run env has completed.					
	individual server instead	SYSTEM_OAM.20140617_021502.UPG.tar.bz2 written in					
	of using the "backupAllHosts"	/var/TKLC/db/filemgmt.					
	script.	Archive file /var/TKLC/db/filemgmt/Backup.dsr.01.FullRunEnv.					
		/var/TKLC/db/filemgmt.					
5	Active NOAM VIP:	1. Log into the Active NOAM.					
	Verify that backup files	The Files menu is displayed					
	are present on each	3. Click on each Server tab, in turn 4. For each Server, verify that the following (2) files have been created:					
	361761.						
		Backup.DSR. <server_name>.FullDBParts.NETWORK_OAMP.<time_stamp>. UPG.tar.bz2</time_stamp></server_name>					
		Backup.DSR. <server_name>.FullRunEnv.NETWORK_OAMP.<time_stamp>.U PG.tar.bz2</time_stamp></server_name>					
		HIS PROCEDURE HAS BEEN COMPLETED					

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

3.3.5 Network Interface Workaround

In some Cloud environments, the network interface names are not persistent across a server boot or upgrade. Interface renaming can result in the loss of IP access to the server. To prevent this from occurring, this procedure creates a network persistence rules file on each server. This procedure is required prior to upgrading to DSR Release 7.3.



!! WARNING!!

THIS PROCEDURE MUST BE COMPLETED PRIOR TO UPGRADING TO DSR RELEASE 7.3

Procedure 9: Network Interface Workaround

S T	This procedure creates a network persistence rules file.				
E P	Check off (\checkmark) each step as it i	heck off (ψ) each step as it is completed. Boxes have been provided for this purpose under each step number.			
#	SHOULD THIS PROCEDUR	E FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE			
1	Server CLI	Execute the following commands on the server.			
	Create network rules file	1. Use an SSH client to connect to the Active NOAM:			
		<pre>ssh admusr@<server_ip></server_ip></pre>			
		password: <enter password=""></enter>			
		2. Enter the following command to create the rules file:			
		<pre>\$ sudo udevadm triggersubsystem-match=net</pre>			
		Verify the rules file "70-persistent-net.rules" is created:			
		<pre>\$ ls /etc/udev/rules.d /etc/udev/rules.d/70-persistent-net.rules</pre>			
2	Repeat for all servers	Repeat step 1 for each server in the Cloud deployment.			

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 F and may be performed at any time after Section 3.3.6.1 has been completed.

Table 5: IDIH Upgrade Preparation Overview.

Procedure	This Step	Cum.	Procedure Title	Impact
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 Mediation and Application guests for upgrade.

Procedure 10: IDIH Upgrade Preparation

S T	This procedure prepares the Mediation and Application guests for upgrade. Check off (λ) each step as it is completed. Boxes have been provided for this purpose under each step number.				
E P #	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE				
1	Place the Mediation and Application OVAs in the Cloud repository.	1.	Follow the hypervisor's instructions to add the Mediation and Application OVAs to the cloud software repository.		

3.4 Software Upgrade Execution Overview

It is recommended to contact MOS as described in Appendix J *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 upgrade 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 new version to be applied?

Is this a Major or Incremental Upgrade?

Are there IPFE servers to upgrade? _____

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 42 "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 to upgrade the DSR application without the upgrade of the corresponding TVOE. If the TVOE Host upgrades are performed with the application, an additional 60 minutes should be added to the estimated time. All times are estimates.

Due oo duune	Elapsed Ti	me (hr:min)	Procedure Title	Impact	
Procedure	This Step	Cumulative	riocedure inte		
Procedure 11	0:30-0:45	0:30-0:45	NOAM Health Check for Source Release 7.0.1, 7.1.x	None	
or Procedure 12	0:20-0:30	0:20-0:30	NOAM Health Check for Source Release 7.2 and later	None	
Procedure 13	0:05-0:10	0:25-0:55	NOAM Pre-Upgrade Backup	None	
Procedure 14	0:01-0:05	0:26-1:00	Disable Global Provisioning	Global Provisioning Disabled	
Procedure 15	0:40-1:20	1:06-2:20	NOAM Upgrade	No Traffic Impact	
Procedure 16	0:01-0:05	1:07-2:25	PCA (formerly PDRA) Topology Hiding Configuration	No Traffic Impact	
Procedure 17	0:05-0:15	1:12-2:40	Verify NOAM Post Upgrade Status	None	
Procedure 18	0:05-0:10	1:17-2:50	Allow Provisioning (post NOAM Upgrade)	Global Provisioning Enabled	

Table 6: NOAM Upgrade Execution Overview

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 15.

4.1.1 NOAM Health Check for Source Release 7.0.1, 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 7.0.1 or 7.1.x. This procedure must be executed on the Active NOAM.

S	This procedure perfo	redure performs a Health Check of the system prior to upgrading the NOAMs.				
E E	Check off (\checkmark) each step as it is	completed. Boxes have been provided for this purpose under each step number.				
Р #	SHOULD THIS PROCEDURE	FAIL, IT IS RECOMME	NDED TO CONTACT MOS AND ASI	K FOR UPGRADE ASSISTANCE.		
1.	Active NOAM VIP:	This step is for an proceed to step 2.	his step is for an Active NOAM on release 7.0.1. If the Active NOAM is on release 7.1.x, proceed to step 2.			
	Verify ISO for Upgrade has been deployed	Verify the DSR ISO	file has been transferred to all serv	vers.		
	For Active NOAM on release 7.0.1.only	 Navigate to Ac Verify the "Tra If any server sl 	Iministration > Software Manage nsfer Status" is "Complete" for ea hows "Not Complete", perform Sec	ment > ISO Deployment ch server in the topology. ction 3.3.3 - DSR ISO Administration		
		Example:				
		Main Menu: Adı	ministration -> ISO	🋷 Help		
		Display Filter: - None -	▼ = ▼	Wed Sep 25 17:39:13 2013 UTC Go (LIKE wildcard: "*")		
		• Transfer ISO: 872 7 of 7 Tr: 0 of 7 Tr:	ISO Complete. 2-2526-101-5.0.0_50.12.0-DSR-x86_64.iso ansfers Successful. ansfers Failed.			
		Table description: List of	Systems for ISO transfer.			
		Displaying Records 1-7 o	f 7 total First Prev Next Last			
		System Name / Hostnan	ne ISO	Transfer Status		
		MP1	872-2526-101-5.0.0_50.12.0-DSR-x86_64.iso	Complete		
		MP2	872-2526-101-5.0.0_50.12.0-DSR-x86_64.iso	Complete		
		MP3	872-2526-101-5.0.0_50.12.0-DSR-X86_64.iso	Complete		
		T2-NO-228-R	872-2526-101-5.0.0_50.12.0-DSR-x86_64 iso	Complete		
		infe1	872-2526-101-5.0.0_50.12.0-DSR-x86_64 iso	Complete		
		ipfe2	872-2526-101-5.0.0 50.12.0-DSR-x86 64.iso	Complete		
		Displaying Records 1-7 o	f 7 total First Prev Next Last			
		[Transfer ISO]				
		Proceed to step 3	to complete this procedure.			

_		r			
2.	Active NOAM VIP:	Veri	fy the DSR ISO file has been transferred to all servers.		
	Verify ISO for Upgrade has been deployed	1. 2. 3.	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		
	For Active NOAM on release 7.1.x only	Sample report:			
			Deployment report for DSR-7.1.1.0.0_71.27.0-x86_64.iso:		
			Deployed on 7/7 servers.		
			NO1: Deployed NO2: Deployed SO1: Deployed SO2: Deployed		
			MP1: Deployed MP2: Deployed		
			IPFE: Deployed		
3.	Active NOAM CLI:	Exe	cute the following commands on the Active DSR NOAM and Active DR NOAM servers.		
	Verify NOAM pre-	1.	Use an SSH client to connect to the Active NOAM:		
	Opgrade Status		ssh <noam address="" ip="" xmi=""> login as: admusr</noam>		
			password: <enter password=""></enter>		
			Note: The static XMI IP address for each server should be available in Table 3.		
		2.	Enter the command:		
			<pre>\$ upgradeHealthCheck preUpgradeHealthCheck</pre>		
			This command creates two files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:		
			<noserver_name>_ServerStatusReport_<date-time>.xml <noserver_name>_ComAgentConnStatusReport_<date-time>.xml</date-time></noserver_name></date-time></noserver_name>		
			<pre>If any alarms are present in the system:</pre>		
			If the system is PDRA, one additional file is generated: <noserver_name>_SBRStatusReport_<date-time>.xml</date-time></noserver_name>		
			Note: The message " FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.		
		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.</hostname></hostname>		
			Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.		
		4.	Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.		

4.	Active NOAM VIP:	Export Diameter configuration data.
	Export and archive the Diameter configuration data	 Select Main Menu > Diameter Common > Export Capture and archive the Diameter data by choosing the drop down entry labeled "ALL". 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.
5.	Active SOAM CLI:	Execute SOAM pre-upgrade alarm status health checks.
	Pre-upgrade health checks	1. Use an SSH client to connect to the Active SOAM: ssh <soam address="" ip="" xmi=""> login as: admusr password: <enter password=""></enter></soam>
		Note: The static XMI IP address for each server should be available in Table 3.
		2. Enter the command:
		<pre>\$ upgradeHealthCheck alarmStatusOnSoam</pre>
		If any alarms are present in the system, this command creates a file in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:
		<soserver_name>_AlarmStatusReport_<date-time>.xml</date-time></soserver_name>
		Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.
		3. Keep this report for future reference. This report will be compared to alarm and status reports after the upgrade is complete.
6.	Active SOAM CLI:	Execute SOAM pre-upgrade DA-MP status health checks.
	Pre-upgrade health	1. Enter the command:
	Checks	<pre>\$ upgradeHealthCheck daMpStatus</pre>
		This command outputs status to the screen for review.
		Note: The message " FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.
		 Verify all Peer MPs are available Note the number of Total Connections Established
7.	Active SOAM CLI:	Execute SOAM pre-upgrade PCA status health checks, if equipped.
	Verify PCA status (if	1. Enter the command:
	equipped)	<pre>\$ upgradeHealthCheck pcaStatus</pre>
		This command outputs status to the screen for review.
		Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.
		2. Verify Operational Status is 'Available' for all applications
8.	Repeat for each Network Element	Repeat Steps 5 - 7 for each SOAM site in the topology.

9.	Active NOAM VIP:	Ve	erify that a recent COMCOL Environment backup has been performed.			
	Verify that backups are created for all servers	1. 2. 3.	Select Status and Manage > Files. Select each server tab, in turn. Verify the following two files have been created and have a current timestamp:			
			Backup.DSR. <hostname>.FullRunEnv.NETWORK_OAMP.<timestamp>.UPG.tar.b z2</timestamp></hostname>			
			<pre>Backup.DSR.<hostname>.FullDBParts.NETWORK_OAMP.<timestamp>.UPG.tar. bz2</timestamp></hostname></pre>			
		4.	Repeat this procedure for each site.			
		Se	See Section 3.3.4 to perform (or repeat) a full Backup, if needed.			
		ΤI	HIS PROCEDURE HAS BEEN COMPLETED.			

4.1.2 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 release 7.2 and later. This procedure must be executed on the Active NOAM.

Note: This procedure may be executed outside of the maintenance window, but should be executed within 6 to 8 hours prior to Procedure 15.

Procedure 12: NOAM Health Check for Source Release 7.2 and later

S	This procedure perfo	rms a Health Check on the NOAM					
Т	rins procedure perio						
E	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.						
P	check on (wear step us 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	Active NOAM VIP:	Verify the DSR ISO file has been transferred to all servers.					
	Verify Upgrade ISO has been deployed	 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 					
		Sample report:					
		Deployment report for DSR-7.2.0.0.0_72.27.0-x86_64.iso:					
		Deployed on 7/7 servers.					
		NO1: Deployed					
		NO2: Deployed					
		SO1: Deployed					
		SO2: Deployed					
		MP1: Deployed					
		MP2: Deployed					
		тын: пертолеа					
2	Active NOAM VIP:	Export Diameter configuration data.					
	Export and archive the	1. Select Main Menu > Diameter Common > Export					
	Diameter configuration	2. Capture and archive the Diameter data by choosing the drop down entry labeled "ALL".					
	data	3. Verify the data export is complete using the tasks button at the top of the screen.					
		4. 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.					

		cks.	alth Che	rade He	pre-upg	the automated	edure runs	This proce		3					
 Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. Select the Active NOAM. 								Initiate NOAM health checks							
Main Menu: Administration -> Software Management -> Upgrade															
ion Version	Function Applicatio	le Fun	Server Ro	IX HA Role	OAM Ma	Upgrade State		Hostname							
-72.16.5	OAM&P 7.2.0.0.0-7	AM&P OAN	Network C	x HA Role	Appl Ma	Server Status Ready		NO1							
-72.16.5	OAM&P 7.2.0.0.0-7	VM AM&P OAN	NO_DSR_ Network C	andby	N/A St	Ready		NO2							
	Report Report All	Accept R	e Server	Upgrade	eckup All	Checkup Ch	Backup A	Backup							
				layed.	n is disp	kup button. Checkup] scree	the Checl Upgrade [0	3. Click The U							
	Э.	ption. ease ISO.	grade o arget rele	• Pre Up ect the ta	elect the	neck options, s de ISO pulldov	er Health c the Upgra	 Unde Use t 							
6. Click Ok . Control returns to the Upgrade screen.															
heckup]	> Upgrade [Ch	ment ->	anage	vare M	> Soft	inistration -	enu: Adn	Main Me							
							•	Info 🔻							
			atus	St			Action	Hostname							
	Network Element NO_DSR_VM	A Role Netv NO)AM Max H <mark>Active</mark>	0		Check	Health	NO1							
	type.	alth check type	Ipgrade he	U		nce Upgrade Jpgrade Upgrade	Type Pre Constant	Health che Checkup T							
	ırade ISO media file.	esired upgrade	elect the d	× s	<86_64.isc	7.2.0.0.0_72.16.5-	so DSR-	Upgrade IS							
	ancel	Ok Cance													
	Network Element NO_DSR_VM type. prade ISO media file. ancel	A Role Netv NO_ alth check type esired upgrad(Ok Cance	atus)AM Max H Active Ipgrade he elect the di	St O U U S	(86_64.isc)	Check nce Unorrade Jpgrade Upgrade 7.2.0.0.0_72.16.5-	Action Health eck options CAdva Type OPre I OPost SO DSR-	Hostname NO1 Health che Checkup T Upgrade K							

Procedure 12: NOAM Health Check for Source Release 7.2 and later

Active NOAM VIP:	Monitor for the completion of the Health Check.							
Monitor health check progress	 Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <noservergroup> PreUpgrade Health Check.</noservergroup> 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. 							
	Eilter V Status	Task	-	g				— w.
	- Titler - Status	Task	s					×
	NO_SG IPFE_SG	ID	Hostname	Name	Task State	Details	Progress	
	Hostname	6	N01	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NC _SG_20160309-115634- EST.bt	100%	^ T s
	N01	4	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheck k_NO_SG_20160308-125508 EST.txt	- 100%	
	NOZ	3	N01	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthCheo k_NO_SG_20160308-124312 EST tot	- 100%	~
Active NOAM VIP: Analyze health check results	Analyze Health (than "Pass", the 1. Select Statt The Files so 2. Select the fi 3. Locate the I Review the I upgrade. If r Appendix J. If the health NOAM hostr	Check I Health Is & M Is reen is le nam og enti og for hecess check name>	report for fai Check logs anage > Fil a displayed. ed "Upgrad ries for the r failures. Ana ary, it is reco log contains ', perform h	ilures. If the Health must be analyzed les. eHealthCheck.log" nost recent health of alyze the failures ar ommended to conta s the message "Una ealth checks in acc	Check ro to deterr and click check. ad deterr act MOS able to e: ordance	eport status is anyth nine if the upgrade of View . nine if it is safe to co for guidance as des xecute Health Checl with Procedure 11.	ing other can proce ontinue th scribed in < on <act< th=""><th>ie</th></act<>	ie

Procedure 12: NOAM Health Check for Source Release 7.2 and later

4.1.3 NOAM Pre-Upgrade Backup

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

Procedure 13: NOAM Pre-Upgrade Backup

This procedure takes	a backup of the NOAM.						
Check off (\checkmark) each step as it is	Check off (\checkmark) each step as it is completed. Boxes have been provided for this purpose under each step number.						
SHOULD THIS PROCEDURE							
	Backup NOAM database.						
Active NOAM VIP:							
Backup all global	1. Select Status & Manage > Database to return to the Database Status screen.						
configuration databases	2. Click to highlight the Active NOAM server; click Backup. NOTE: the Backup button						
	will only be enabled when the Active server is selected.						
IMPORTANT: Required	The Database [Backup] screen is displayed.						
for Disaster Recovery	Recovery 3. Select the Configuration checkbox.						
	 Select the desired compression type. Retain the default selection unless there is a specific reason or direction to change it 						
	5 Enter Comments (ontional)						
	6 Click OK						
	NOTE: On the Status & Manage >Database screen, the Active NOAM server will display the word "Active" in the "OAM Max HA Role" column.						
	Download database files from the NOAM.						
Active NOAM VIP:							
Save database backups	1. Select Status & Manage > Files						
for NOAM	The Files menu is displayed.						
IMPORTANT: Required	2. Click on the Active NOAM server tab.						
for Disaster Recovery	3. Select the configuration database backup file and click the Download button.						
2	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.						
	o. In a bownload complete commation is displayed, click close.						

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 14: Disable Global Provisioning

S T	This procedure disables provisioning for the NOAM servers.							
E P	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.							
#	SHOULD THIS PROCEDURE	EFAIL,	IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.					
1.	Active NOAM VIP:	Disal	ble global provisioning and configuration updates on the entire network:					
	Disable global provisioning and configuration.	1. 2. 3. 4. 5.	Log into the Active NOAM GUI using the VIP. Select Status & Manage > Database . The Database Status screen is displayed Click the Disable Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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 .					
			Alarm ID = 10008 (Provisioning Manually Disabled)					
		ΤH	S PROCEDURE HAS BEEN COMPLETED.					

4.3 NOAM Upgrade

This procedure is used to upgrade the NOAM and DR NOAM servers.

Procedure 15: NOAM Upgrade

S T	This procedure upgrade	is procedure upgrades the NOAM servers.						
E P	Check off (\mathbf{v}) each step as it	heck off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.						
#	SHOULD THIS PROCEDURE	OCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.						
1.	Upgrade Standby DSR NOAM servers or standalone NOAM	1. Upgrade the Standby DSR NOAM server using Upgrade Single Server procedure:						
	server.	Execute Appendix D Single Server Upgrade Procedure						
		Note: If the DSR deployment does not have a Standby NOAM then perform Appendix G.1 for the standalone NOAM.						
		Execute Appendix G.1 – Server Upgrade Using platcfg						
		2. After successfully completing the procedure in Appendix D or Appendix G.1 , return this point and continue with the next step.						
		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 = 31225 (HA Service Start Failure) Alarm ID = 31226 (HA Availability Status Degraded)						
		Alarm ID = 31226 (HA Availability Status Degraded) Alarm ID = 31233 (HA Path Down)						
		Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)						
		If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action.						
		If the Active NOAM is on release 7.1.1 or later, proceed to step 3.						
2.	Active NOAM VIP:	This step is for an Active NOAM on release 7.0.1 only.						
	Prepare the Active NOAM for upgrade	Prepare the Active NOAM for Upgrade.						
	For NOAM on release	The Upgrade Administration screen is displayed						
	7.0.1 only	 Select the NOAM Server Group: Select the Active NOAM. 						
		4. On the upgrade form, make the Active NOAM 'Upgrade Ready', by selecting the Prepare						
		 button. On the Upgrade [Prepare] form, select 'Prepare' in the Action dropdown list. Click the button. This starts the Prepare action on the Active NOAM and forces an HA failover. Log out of the GUI, clear the browser cache, and log back into the Active NOAM via the						
		Clear the 'Prepared' state for the now-standby NOAM. This is required due to the transition from release 7.0.1 to release 7.3.						
		 Select Status & Manage > HA. The HA status screen is displayed. Click the Edit button. For the NOAM to be upgraded (now the Standby), set the Max Allowed HA Role to Active, and click Ok. Select Status & Manage > Server. The server status screen is displayed. Select the Standby NOAM and click the Restart button. Click Ok and verify the Appl State changes to Enabled. 						

Procedure 15: NOAM Upgrade

3.	Upgrade Active NOAM	
	servers	Upgrade the second NOAM server using the Upgrade Single Server procedure:
		Execute Appendix D Single Server Upgrade Procedure
		After successfully completing the procedure in Appendix D, continue to the next procedure per Table 6.
		If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action.
4.	Upgrade Standby DR	Upgrade the Standby DR NOAM server using the Upgrade Single Server procedure:
	NOAM	Execute Appendix D Single Server Upgrade Procedure
		After successfully completing the procedure in Appendix D, return to this point and continue with the next step.
5.	Upgrade Active DR	Upgrade the second DR NOAM server using the Upgrade Single Server procedure:
	NOAM	Execute Annandix D Single Server I Ingrade Procedure
		After successfully completing the procedure in Appendix D, return to this point and continue with the next procedure per Table 6.
		THIS PROCLOOKE HAS BEEN COMPLETED.

4.3.1 PCA (formerly PDRA) 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 7.0.1 to DSR 7.3.

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 networkwide settings.

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

Procedure 16: PCA (formerly PDRA) Topology Hiding Configuration

S T P #	This procedure sets the systems with the Policy Check off $()$ each step as it SHOULD THIS PROCEDURE	network-wide Topology Hiding configuration. This procedure applies only to v and Charging feature enabled. is completed. Boxes have been provided for this purpose under each step number. FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.
1.	Active NOAM VIP: Enable Global Provisioning	 Before the Topology Hiding configuration can be modified, Global Provisioning must be enabled temporarily. Log into the NOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed. Click the Enable Provisioning button. Verify the button text changes to Disable Provisioning.

_								
2.	Active NOAM VIP:	Configure the topology hiding settings.						
	Configure Topology Hiding settings	 Navigate to Policy and Charging > Configuration > Policy DRA > Network-Wide Options. In the Topology Hiding Options section, select the Enable Topology Hiding checkmark. Select the appropriate Topology Hiding Scope setting. 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. Select Apply. 						
		Topology Hiding Options						
		Enable Topology Hiding	v					
		Topology Hiding Scope	Specific Clients · Select - All Messages All Foreign Realms Specific Clients All Foreign Realms + Specific Clients					
		Default Topology Hiding Virtual Name	FQDN					
			Apply Cancel					
3.	Active NOAM VIP: Disable global provisioning and configuration.	 Disable global provisioning. 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. The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled) 						

Procedure 16: PCA (formerly PDRA) Topology Hiding Configuration

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 17: Verify NOAM Post Upgrade Status

S	This procedure verifies Post Upgrade Status for NOAM upgrade									
Т	This procedure verm	es i ost opgiade s	101 1	vormi upg	jiauc.					
E P	Check off (\checkmark) each step as it is	completed. Boxes have be	een provided f	or this purpose	under each step	p number.				
#	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.									
# SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSIST 1 Active NOAM VIP: Post-upgrade health checks This procedure will run the automated post-upgrade Health Checks. From the Active NOAM GUI: 1. Select Administration > Software Management > Upgrade. The Upgrade screen is displayed. 2. Select the Active NOAM. Main Menu: Administration -> Software Management -> Upgrade Filter Tasks T Tasks T NO_SG IPFE_SG NO1 Accept or Reject NO1 Accept or Reject NO1 Accept or Reject NO2 Vorm NO2 Vorm NO2 Vorm Standby No_DSR_VM DBackup All Checkup Dutton. 3. Click the Checkup button.						Application Version Upgrade ISO 7.3.0.0.73.18.0 DSR-7.3.0.0.73.18.0-x86_64.iso 7.3.0.0.73.18.0-x86_64.iso Report All				
 4. Under Health check options, select the Post Upgrade option. 5. Click Ok. Control returns to the Upgrade screen. Main Menu: Administration -> Software Management -> Upgrade Hostname Action Status No1 Health Check Otions OAM Max HA Role Network Elemen Active No_DSR_VM Health check options Checkup Type Organde Upgrade health check type. OPost Upgrade Upgrade ISO Select - Select the desired upgrade ISO media 							Upgrade [Checkup] work Element _DSR_VM e. e ISO media file.			

Procedure 17: Verify NOAM Post Upgrade Status

Active NOAM VIP:	Monitor for the co	mpleti	on of the H	ealth Check.				
Monitor health check progress	 From the Active NOAM GUI: Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <noservergroup> PostUpgrade Health Check.</noservergroup> 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. 							
	Main Menu: Administration -> Software Management -> Upgrade							
	Filter Status Tasks							
	NO_SG IPFE_SG	Tasks	lloofnama	Namo	Took State	Dataila	Drogroop	8
	Hostname	7	NO1	NO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_N O_SG_20160309-122153- EST.bt	100%	∧ Tim s M
	N01	6	NO1	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NC _SG_20160309-115634- EST.txt	100%	
		4	NO1	NO_SG AdvanceUpgrade Health Check	completed	AdvanceUpgrade_HealthChec k_NO_SG_20160308-125508- EST tvt	100%	~
Active NOAM VIP: Analyze health check results	Analyze Health C the Health Check From the Active 1. Select Statu The Files scr 2. Select the file 3. Locate the lo 4. Review the lo upgrade. If n Appendix J.	heck f logs n NOAN s & M een is e nam ig entr og for ecess	ailure. If the nust be ana I GUI: anage > Fil displayed. ed "Upgrad ies for the r failures. An ary, it is rec	Health Check rep lyzed to determine es. eHealthCheck.log' nost recent health alyze the failures a ommended to con	ort statu e if the up ' and clic check. and dete tact MO:	is is anything other t pgrade can proceed ck View . rmine if it is safe to o S for guidance as de	han "Pa continue	ss", e the in
4.5 Allow Provisioning (post NOAM Upgrade)

The following procedure enables Global Provisioning after the NOAM upgrade.

CAUTION ANY NETWORK-WIDE PROVISIONING CHANGES MADE AT THE NOAM SITE BEFORE THE UPGRADE IS ACCEPTED WILL BE LOST IF THE UPGRADE IS BACKED OUT

Procedure 18: Allow Provisioning (post NOAM Upgrade)

a								
S ' T	This procedure enables	This procedure enables provisioning for the NOAM and DR NOAM servers.						
E (P	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.							
# 9	SHOULD THIS PROCEDURE	FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.						
	Active NOAM VIP:	Enable global provisioning and configuration updates on the entire network:						
E	Enable global	1. Log into the Active NOAM GUI using the VIP.						
ĥ	provisioning and	2. Select Status & Manage > Database.						
C	configuration.	The Database Status screen is displayed						
		3. Click the Enable Provisioning button.						
		Confirm the operation by clicking Ok in the popup dialog box.						
		5. Verify the button text changes to Disable Provisioning.						
	Note: After e display a bar ignored – glo when the SC	enabling provisioning at the NOAM, it is possible that the SOAM GUI(s) will nner indicating that global provisioning is disabled. This message can be obal provisioning is enabled. This is a display issue only and will be corrected DAMs are upgraded.						
	Active NOAM VIP:	Perform this step only if the addition of a new Network Element is required at this time						
	Add new Network Element (if required).	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 in reference [1] 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).						

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 7 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 7. Site Upgrade Plan

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

5.1 Site Pre-Upgrade Activities

SOAM 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 8 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.

	Iteration 1	Notes		
Standby SOAM Hostname:		If a Spare SOAM exists, the Spare and		
Spare SOAM Hostname:		Standby SOAMs will be upgraded		
		have an add with ASC		
		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)	standby SBR(s) ASG will automatical			
		Standby SBR(s) for upgrade		
	Iteration 5	Notes		
Active SBR(s)		ASG will automatically select the		
		Active SBR(s) for upgrade		

Table 8. Site Upgrade Planning Sheet.

Table 9 shows the procedures to be executed for the site upgrade, along with the estimated time to complete each step. Use Table 9 as a guide for determining the order in which the procedures are to be executed.

Deve et deve	Elapsed Time (hr:min)		Drocodyne Title	. .	
Procedure	This Step	Cumulative	Procedure litte	Impaci	
Procedure 19	0:10-0:20	0:10-0:20	Site Pre-Upgrade Backups	None	
Procedure 21	0:05-0:10	0:15-0:30	Site Pre-Upgrade Health	None	
			Check for Release 7.2 and		
			later		
or					
Procedure 22	0:10-0:15	0:20-0:25	Site Pre-Upgrade Health	None	
			Check for Release 7.0.1, 7.1.x		
Procedure 23	0:01-0:05	0:16-0:45	Disable Site Provisioning	Site Provisioning Disabled,	
Decordumo 24	0.01 0.05	0.17 0.50	SOAM Unamada Dro Chastra	No Traffic Impact	
Procedure 24	0:01-0:05	0:17-0:30	SOAM Opgrade Pie-Checks	No Tranic impact	
Iteration 1	0:40-1:00		Standby SOAM, Spare SOAM	Refer to Section 5.2 for	
			(if equipped)	details	
Iteration 2	0:40-1:00		Active SOAM	Refer to Section 5.2 for	
	0.40.4.00			details	
Iteration 3	0:40-1:00		$\frac{1}{2}$ DA-MPs, $\frac{1}{2}$ SS7-MPs,	Refer to Section 5.3 for	
			¹ / ₂ IPFEs, Spare SBR(s)		
Iteration 4	0:40-1:00		¹ ⁄ ₂ DA-MPs, ¹ ⁄ ₂ SS7-MPs,	Refer to Section 5.4 for	
			¹ / ₂ IPFEs, Standby SBR(s)	details	
Iteration 5 0:00-1:00			Active SBR(s)	Refer to Section 5.5 for	
				details	
Procedure 30	0:02		Allow Site Provisioning	Site Provisioning Enabled, No Traffic Impact	
Procedure 31	0:10-0:15		Site Post-Upgrade Health	None	
			Check		

Table 9: Site Upgrade Execution Overview.

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 20 is an alternate procedure that can be used to backup a site using the command line. Procedure 20 should only be used by direction of MOS.

Procedure 19: Site Pre-Upgrade Backups

S T E	This procedure co site being upgrad	onducts a full backup of the Configuration database and run environment on ed, so that each server has the latest data to perform a backout, if necessary.							
P #	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.								
	SHOULD THIS PROCED	DURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE							
1.	Active SOAM VIP:	Backup SOAM database.							
	Backup Site configuration data	 Log into the SOAM GUI using the VIP. Select Status & Manage > Database to return to the Database Status screen. 							
	IMPORTANT: Required for Disaster Recovery	3. Click to highlight the Active SOAM server, and then click Backup. The Backup and Archive screen is displayed. (NOTE: the Backup button will only be enabled when the Active server is selected.)							
		 Select the Configuration checkbox. Select the desired compression type. Retain the default selection unless there is a specific reason or direction to change it. Enter Comments (optional). Click OK. 							
		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.							
2.	Active SOAM VIP:	Download and save backup files.							
	Save database backup	 Select Status & Manage > Files The Files menu is displayed. 							
	IMPORTANT: Required for Disaster Recovery	 Click on the Active SOAM server tab. Select the configuration database backup file and click the Download button. If a confirmation window is displayed, click Save. 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 .							

Procedure 19: Site Pre-Upgrade Backups

S T E	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 #	Check off (\checkmark) each step as it is completed. Boxes have been provided for this purpose under each step number.								
	SHOULD THIS PROCED	URE FAIL, IT IS RECOMM	ENDED TO CO	NTACT MOS A	AND ASK FOR	UPGRADI	E ASSISTANCE		
3.	Active NOAM VIP:	Backup run environme	nt for site beir	ng upgraded.					
		 Login to the NOAM GUI using the VIP. Navigate to Administration > Software Management > Upgrade. Click the Backup All button. 							
		Filter - Tasks -							
		NO_SG IPFE_SG MF	SG SO_SG						
		Hostname	Jpgrade State Server Status	OAM Max HA Role	Server Role	Function	Application Version		
		NO1	Backup Needed Err	Active N/A	Network OAM&P	OAM&P	7.1.0.0.0-71.14.1		
		NO2	Backup Needed Warn	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.14.1		
		Backup Backup All	ito Upgrade Acc	ept Report Re	eport All				
4.	 Active NOAM VIP: The Upgrade [Backup AII] screen is displayed. This screen displays the various Network Elements, and identifies which servers are ready for backup. 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. Note: Backing up the NOAM servers at this point will overwrite the pre-upgrade back files that are needed for backing out the target release. Do NOT backup the NOAM servers. 								
		 In the Full back Click the Ok but 	up options se ton. This initia	ection, verify th tes a full back	ne 'Exclude' or up on each eli	otion is se gible serv	ected. er.		
		Network element	Action	Server(s) in	the proper state	for backu	p		
		NO_DSR_VM	Back up	None					
		SO1_DSR_VM ✓Back up SO1_SO2_MP1_MP2_MP3 MP4_IPFE MP4_IPFE							
		Full backup options							
	Database parts exclusion Exclude Do not exclude Select "Exclude" to perform a full backup of the CC in /usr/TKLC/appworks/etc/exclude_parts.d/. Select "Do not exclude" to perform a full backup of backup files in /var/TKLC/db/filemgmt.								
							Ok Cancel		

Procedure 19: Site Pre-Upgrade Backups

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. Check off (ψ) each step as it is completed. Boxes have been provided for this purpose under each step number.									
									SHOULD THIS PROCED
Active NOAM VIP: Monitor for backup completion	 Monitor the backup tasks From the Active NOAM GUI: 1. From the Upgrade screen, select the Tasks pulldown. 2. Monitor the progress of the backups until the Network Element(s) selected in step 4 are complete. 								
	Main Mer	Tasks	ministration	n -> Software Man	agement	-> Upgrade	×		
	NO_SG	ID	Hostname	Name	Task State	Details	Progress		
	Hostname	1	MP6	Pre-upgrade full backup	running	Full backup on MP6	10%		
		1	MP11	Pre-upgrade full backup	running	Full backup on MP11	10%		
	NO2	1	MP12	Pre-upgrade full backup	running	Full backup on MP12	10%		
	NO1	1	MP13	Pre-upgrade full backup	running	Full backup on MP13	10%		
		1	MP14	Pre-upgrade full backup	running	Full backup on MP14	10%		
 6. <u>Active NOAM VIP:</u> Verify that backup files are present on each server. 1. Log into the Active NOAM or SOAM GUI. 2. Select Status & Manage > Files (<i>The Files menu is dis</i> 3. Click on each Server tab, in turn 4. For each Server, verify that the following (2) files have been Backup.DSR.<server_name>.FullDBParts.NETWOF tar.bz2</server_name> Backup.DSR.<server_name>.FullBParts.NETWOF ar.bz2</server_name> 5. Repeat sub-steps 1 through 4 for each site being upgrade 							e_stamp>.UPG. _stamp>.UPG.t		
	This procedure co site being upgrade Check off (♦) each step as SHOULD THIS PROCED Active NOAM VIP: Monitor for backup completion	This procedure conducts a site being upgraded, so that Check off (1) each step as it is completion SHOULD THIS PROCEDURE FAIL, IT Active NOAM VIP: Monitor for backup completion Main Men 2: Monitor for backup completion Main Men 2: Monitor for backup completion Active NOAM VIP: Main Men 2: Monitor for backup completion Prime 1: From the 1: I: From the 1: I: Notities and the server. Main Men 2: Notities and the server. Monitor for backup files are present on each server. 1. Log i Selection Back ar. backup files are present on each server. Back ar. backup files are present on each server.	This procedure conducts a full b site being upgraded, so that each Check off (1) each step as it is completed. Box SHOULD THIS PROCEDURE FAIL, IT IS REC Active NOAM VIP: Monitor for backup completion Monitor the back From the Active 1. From the U 2. Monitor the complete. Main Menu: Ad Filter Tasks Image: Strength of the backup complete. Main Menu: Ad Filter Tasks Image: Strength of the backup complete. Active NOAM VIP: Verify that backup files are present on each server. Backup. DS Backup. DS Backup. DS Backup. DS Backup. DS Backup. DS Backup. DS	This procedure conducts a full backup of the site being upgraded, so that each server has the set of	Active NOAM VIP: Verify that backup 1. Log into the Active NOAM or SOAM GUI. 1. Log into the Active NOAM or SOAM GUI. 2. Select Status & Manage > Files (The File 1. Verify that backup files are present on each server. 1. Log into the Active NOAM or SOAM GUI. 2. Backup. DSR. <server_name>.FullDBPa tar.bz2</server_name>	Active NOAM VIP: Main Menu: Administration -> Software Management Nonitor for backup Image: State of the server is th	Active NOAM VIP: Verify that backup 1 Log into the Active NOAM or SOAM GUI. Active NOAM VIP: Verify that backup iles are present or 1 No1 1 No1 1 1 NP12 Pre-upgrade full backup running 1 Full backup on MP12 1 NP12 Pre-upgrade full backup running 1 NP12 2 No1 1 MP12 1 NP14 Pre-upgrade full backup running 1 NP14 2 0 1 NP12 1 NP14 Pre-upgrade full backup running 1 NP14 1 NP14 Pre-upgrade full backup running 1 NP14 1 NP14 Pre-upgrade full backup running 1 NP14 2 Select Status & Manage > Files (The Files menu is displayed) 3. 3. Click on each Server verify that the following (2) files have been created: Backup.DBS. <server_name>.FullDBParts.NETWORK_OAMP.<time ar.bz2</time </server_name>		

5.1.3 Alternate SOAM Pre-Upgrade Backup

Procedure 20 creates a backup of some or all servers in the topology. This procedure is a manual command line alternative to the GUI backup in Procedure 19.

Procedure 20: Alternate SOAM Pre-Upgrade Backup

S T 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. Check off (𝔄) 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.	Active SOAM CLI: SSH to the Active SOAM	Use the SSH command (on UNIX systems – or putty if running on Windows) to log into the Active SOAM: ssh_admusr@ <soam_vip></soam_vip>				
2.	Active SOAM CLI: Start a screen session.	Enter the following commands: # screen (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.)				

Procedure 20: Alternate SOAM Pre-Upgrade Backup

S T E P #	This procedure is a m Configuration databa the latest data to perf Check off (1) each step as it is	his 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. Check off (I) 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					
3.	Active SOAM CLI: Execute a backup of all	Execute the backupAllHosts utility on the Active SOAM. This utility will remotely access each specified server, and run the backup command for that server.					
	servers managed from the SOAM to be	site to be upgraded:					
	upgraded.	WARNING: Failure to include thesite 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.					
		<pre>\$ /usr/TKLC/dpi/bin/backupAllHostssite=<nename></nename></pre>					
		where <nename></nename> is the Network Element Name (NEName) as seen using the following command:					
		<pre>\$ iqt NetworkElement</pre>					
		The following output will be generated upon execution of either of the above options:					
		Do you want to remove the old backup files (if exists) from all the servers (y/[n]) $?{\bm y}$					
		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.					
		Output similar to the following will indicate successful completion:					
		Script Completed. Status: HOSTNAME STATUS					
		HPC3blade02 PASSHPC3blade01 PASSHPC3blade03 PASSHPC3blade04 PASS					
		(Errors will also report back to the command line.)					
		NOTE: There is no progress indication for this command; only the final report when it completes.					
4.	Active SOAM CLI:	# exit					
	Exit the screen session.	[screen is terminating]					
		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.					

Procedure 20: Alternate SOAM Pre-Upgrade Backup

S T P #	This procedure is a m Configuration databa the latest data to perf Check off (1) each step as it is SHOULD THIS PROCEDURE	is procedure is a manual alternative backup. The procedure conducts a full backup of the onfiguration database and run environment on site being upgraded, so that each server has a latest data to perform a backout, if necessary. eck off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.					
5.	ALTERNATIVE METHOD (Optional) Server CLI:	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:					
	If needed, the Alternative backup method can be executed on each individual server instead of using the "backupAllHosts" script.	<pre>\$ sudo /usr/TKLC/appworks/sbin/full_backup Output similar to the following will indicate successful completion: Success: Full backup of COMCOL run env has completed. Archive file /var/TKLC/db/filemgmt/Backup.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.	Active NOAM VIP: Verify that backup files are present on each server.	 Log into the Active NOAM GUI using the VIP. 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: 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</time_stamp></server_name></time_stamp></server_name> Repeat sub-steps 1 through 4 for each site. 					

5.1.4 Site Pre-Upgrade Health Checks

This section provides procedures to verify the health of the SOAM site prior to upgrade. Procedure 21 is the primary procedure to be executed when the Active NOAM is on release 7.2 and later. Alternate release-specific procedures are 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 21: Site Pre-Upgrade Health Check for Release 7.2 and later	Ith Check for Release 7.2 and later	-Upgrade Health	Procedure 21:
--	-------------------------------------	-----------------	----------------------

S T	This procedure perform	ns a Health Chee	ck prior to upgradi	ng the SOAM	ls.			
E	Check off ($\sqrt{2}$) each step as it is completed. Boxes have been provided for this purpose under each step number.							
Р #	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.							
1	Active NOAM VIP	This procedure	will run the automated	d pre-upgrade I	Health Checks			
	Run health checks	1. Select Adr	ninistration > Softwa	are Manageme	ent > Upgrade			
		The Upgra	de screen is displaye	d.	opg.uue			
		2. Select the	SOAM server group t	ab.				
		3. Select the Active SOAM.						
		Main Menu: A	Administration -> S	oftware Man	nagement ->	Upgrade	:	
		Filter v Stat	tus 🔻 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	OAM	Upgrade ISO 7 1 1 0 0-71 31 0	
		SO2	Norm	N/A	SO1_DSR_VM	C/ III		
		SO1	Ready	Standby	System OAM	OAM	7.1.1.0.0-71.31.0	
		Backup Back	up A Checkup Chec	kup All Upgrade	e Server Accept	Report	Report All	
		 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. 						
		Main Menu:	Administration ->	Software Ma	anagement -	> Upgra	de [Checkup]	
		Info 🔻						
		Hostname Action Status						
		SO2 Health Check OAM Max HA Role Network Element						
		Health check ontic	ons	A	ctive	SO1_DSR_V	М	
		Health check options OAdvance Upgrade Checkup Type Pre Upgrade Upgrade bealth check type. OPost Upgrade						
		Upgrade ISO	DSR-7.2.0.0.0_72.16.5-x86	_64.iso 🗸 Sel	lect the desired up <u>o</u>	grade ISO med	dia file.	
					Ok C	ancel		

Active NOAM VIP:	Monitor for the co	mpletio	on of the He	ealth Check.			
Monitor health check progress	 Click the Ta: task name a Monitor the H display a hyp Click the hyp results. 	 Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <SOServerGroup> PreUpgrade 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. 					
	Main Menu: Adm	inistrati	on -> Softv	ware Management	t -> Upgra	ade	Wee
	Filter Status	Tasks	•				
	SO_SG IPFE_SG	Tasks	Hostname	Name	Task State	Details P	Progress
	Hostname	8	N01	SO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_SO _SG_20160309-132455- EST.txt	100%
	S02	7	N01	NO_SG PostUpgrade Health Check	completed	PostUpgrade_HealthCheck_N O_SG_20160309-122153- EST.txt	100%
	301	6	N01	NO_SG PreUpgrade Health Check	completed	PreUpgrade_HealthCheck_NO _SG_20160309-115634- EST tot	100%
Active NOAM VIP: Analyze health check results	Analyze Health C than "Pass", the H 1. Select Statu The Files sc 2. Select the fil 3. Locate the k 4. Review the H upgrade. If r Appendix J. If the health of SOAM hostn	heck re Health (as & Ma reen is e name og entri og for f hecessa check lo ame>",	eport for fai Check logs anage > Fil displayed. ed "Upgrad es for the r ailures. An ary, it is rec og contains perform th E HAS B	lures. If the Health must be analyzed les. eHealthCheck.log nost recent health alyze the failures ommended to cor the message "Ur e alternate health EEN COMPLE	and clice and clice and clice and dete and dete bract MOS mable to e check in	report status is anythir mine if the upgrade ca ck View . rmine if it is safe to co S for guidance as deso execute Health Check I Procedure 22.	ng other an proceed. ntinue the cribed in on <active< th=""></active<>

Procedure 21: Site Pre-Upgrade Health Check for Release 7.2 and later

5.1.4.2 Site Pre-Upgrade Health Check for Release 7.0.1, 7.1.x

This procedure is an alternate health check that is used when upgrading to Release 7.3 and the Active SOAM is on Release 7.0.1 or 7.1.x. The procedure is non-intrusive and performs a health check of the site prior to upgrading.

Procedure 22: Site Pre-Upgrade Health Check for Release 7.0.1, 7.1.x

S T	This procedure perform	ure performs a Health Check prior to upgrading the SOAMs.							
E P	Check off (1) each step as it	is com	pleted. 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.	ACTIVE SOAM CLI:	Run health checks on Active SOAM.							
	Verify SOAM pre-	1.	Use an SSH client to connect to the Active SOAM:						
	Upgrade Status		ssh <soam address="" ip="" xmi=""> login as: admusr</soam>						
		password: <enter password=""></enter>							
		2	Note: The static XMI IP address for each server should be available in Table 3.						
		2.	Litter the command.						
			<pre>\$ upgradeHealthCheck preUpgradeHealthCheckOnSoam</pre>						
			This command creates three files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:						
			<soserver_name>_ServerStatusReport_<date-time>.xml <soserver_name>_ComAgentConnStatusReport_<date-time>.xml</date-time></soserver_name></date-time></soserver_name>						
			<pre>If any alarms are present in the system:</pre>						
			If the system is PDRA, one additional file is generated: <soserver_name>_SBRStatusReport_<date-time>.xml</date-time></soserver_name>						
			Note: The message " FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.						
		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.</hostname></hostname>						
			Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.						
		4.	Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete.						
		Сар	ture Diameter Maintenance status.						
	ACTIVE SOAM CLI:	1	Enter the command:						
	Capture Diameter Maintenance Status		<pre>\$ upgradeHealthCheck diameterMaintStatus</pre>						
	This command will output a series of messages, providing Diameter Maintenan Capture this output and save for later use. Note: the output is also captured in /var/TKLC/db/filemgmt/UpgradeHealthCheck.log.								
		Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.							

3.	ACTIVE SOAM CLI	Capture DA-MP status.
		1. Enter the command:
	View DA-IMP Status	<pre>\$ upgradeHealthCheck daMpStatus</pre>
		This command outputs status to the screen for review.
		Note: The message " FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.
		 Verify all Peer MPs are available Note the number of Total Connections Established
4.	ACTIVE SOAM VIP:	Export configuration data.
	Capture configuration on Active SOAM GUI	 Select Main Menu > Diameter Common > Export. Capture and archive the configuration data by setting the Export Application drop down entry to "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 requested data is exported using the tasks button at the top of the screen. 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.
5.	Capture Data for each SOAM Site	Repeat steps 1 through 11 for each configured SOAM Site to be upgraded.
		THIS PROCEDURE HAS BEEN COMPLETED.

Procedure 22: Site Pre-Upgrade Health Check for Release 7.0.1, 7.1.x

5.1.5 Disable Site Provisioning

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



THIS PROCEDURE MAY ONLY BE PERFORMED IN THE MAINTENANCE WINDOW IMMEDIATELY BEFORE THE START OF THE SOAM SITE UPGRADE.

Procedure 23: Disable Site Provisioning

S T	This procedure disables provisioning for the SOAM.								
E P	Check off (\checkmark) 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.	Active SOAM VIP:	Disable Site Provisioning at the SOAM.							
	Disable Site Provisioning	 Log into the SOAM GUI of the site to be upgraded. Select Status & Manage > Database. The Database Status screen is displayed. Click the Disable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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. The Active SOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled) 							
		THIS PROCEDURE HAS BEEN COMPLETED.							

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.

During the site upgrade, 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 10 shows the estimated execution times for the SOAM upgrade. Procedure 25: 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 26: 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.

Duccodunc	Elapsed Tim	e (hr:min)	Procedure Title	Impost	
Procedure	This Step Cumulative		Trocedure Thie	Impaci	
Iteration 1 & 2 Procedure 25	1:20-2:40	1:20-2:40	Automated SOAM Upgrade (Active/Standby)	No traffic impact	
or Procedure 26	1:20-2:40	1:20-2:40	Manual SOAM Upgrade (Active/Standby/Spare)		

Table 10: SOAM Upgrade Execution Overview



THE FOLLOWING PROCEDURES MUST BE COMPLETED BEFORE THE START OF SOAM UPGRADE:

Procedure 19; [Procedure 21 or Procedure 22]; Procedure 23

5.2.1 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 26 is required to ensure site provisioning is disabled.

If the site does ***not*** include a Spare SOAM, use the automated SOAM upgrade in Procedure 25. If the site does include a Spare SOAM, use the manual SOAM upgrade in Procedure 26.

Procedure 24: SOAM Upgrade Pre-Checks

S T E	This procedure verifies traffic status, and verifies that Site Provisioning is disabled, in preparation for upgrading the SOAMs. Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.							
P #								
	SHOULD THIS PROCEDUR	E FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.						
	Active SOAM VIP:	View KPIs to verify traffic status.						
	Verify Traffic status	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.						
	Active SOAM VIP:	Verify that Site Provisioning was properly disabled in Procedure 23.						
	Verify Site Provisioning is disabled	 In the GUI status bar, where it says "Connected using", check for the message "Site Provisioning disabled" 						
		If the message is present, continue with the next procedure per Table 9, otherwise, execute:						
		Procedure 23: Disable Site Provisioning						
		THIS PROCEDURE HAS BEEN COMPLETED.						

5.2.1.1 Automated SOAM Upgrade (Active/Standby)

Procedure 25 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 9.

Procedure 25: Automated SOAM Upgrade (Active/Standby)

S T	This procedure upgrades the SOAM(s) using the Automated Server Group Upgrade option.								
E P	Check off ($\sqrt{2}$) 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.	 Upgrade SOAM Server Group Upgrade the SOAM Server Group using the Upgrade Multiple Servers procedure with the following options: Use the Automated Server Group Upgrade option Select the Serial upgrade mode 								
		Execute Appendix E — Upgrade Multiple Servers Procedure							
		After successfully completing the procedure in Appendix E, return to this point and continue with the next procedure per Table 9.							
		THIS PROCEDURE HAS BEEN COMPLETED.							

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.

5.2.1.2 Manual SOAM Upgrade (Active/Standby/Spare)

Procedure 26 is used to upgrade the SOAM Server Group if the site includes a Spare SOAM. If the SOAM Server Group was upgraded using Procedure 25, do not execute this procedure; continue with the next procedure per Table 9.

Procedure 26: Manual SOAM Upgrade (Active/Standby/Spare)

S T	This procedure upgrad	This procedure upgrades the SOAM(s) in a DSR using the manual upgrade method.						
E P	Check off ($\sqrt{2}$) each step as it is completed. Boxes have been provided for this purpose under each step number.							
#	SHOULD THIS PROCEDUR	E FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.						
1.	Upgrade Standby and Spare SOAMs	Upgrade the Standby and Spare SOAM servers in parallel using Upgrade Multiple Servers procedure :						
		Execute Appendix E - Upgrade Multiple Servers Procedure						
		After successfully completing the procedure in Appendix E , return to this point and continue with the next procedure per Table 9.						
2.	Upgrade Active SOAM	Upgrade the Active SOAM server using Upgrade Single Server procedure :						
		Execute Appendix D Single Server Upgrade Procedure						
	After successfully completing the procedure in Appendix D, return to this point and continue with the next procedure per Table 9.							
		THIS PROCEDURE HAS BEEN COMPLETED.						

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 7, 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 11 shows the estimated time required to upgrade the C-level servers for iteration 3.

Table 11: Iteration	a 3 Upgrade	Execution O	verview.
---------------------	-------------	--------------------	----------

Dragodura	Elapsed Tim	e (hr:min)	Procedure Title	Impost		
rioceuure	This Step	Cumulative	Trocedure The	Impact		
Procedure 27	0:40-1:00 0:40-1:00		Upgrade Iteration 3	¹ / ₂ DA-MPs, ¹ / ₂ SS7-MPs, ¹ / ₂ IPFEs, Spare SBR(s) will be offline		



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 DA-MPS 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 G.2.

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 27 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 8 for the hostnames of the servers to be upgraded in this iteration.

5	This procedure upgrades a portion of the C-level servers for iteration 3.										
Ē	Check off (\mathbf{v}) each step as it	is co	completed. Boxes have been provided for this purpose under each step number. AIL, IT IS RECOMMENDED TO CONTACT <u>MOS AND</u> ASK FOR <u>UPGRADE ASSISTANCE</u>.								
¥	SHOULD THIS PROCEDURE	FA									
	Active NOAM VIP:	Vi	View the pre-upgrade status of the DA-MP servers.								
	View pre-upgrade status of DA-MPs	 Log into the NOAM GUI using the VIP. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed Select the DA-MP Server Group tab. For the DA-MP servers to be upgraded in iteration 3, verify the Application is the expected source software release version. 									
		N	lain Menu: Admi	nistration ->	Software Ma	nagement ->	> Upgrad	le			
			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	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.111.001			
			NO2	Backup Needed Norm	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.11.0			
			Backup Backup All	Auto Upgrade Acc	ept Report Re	port All					
		5. 6.	If the servers a button. The Up complete, the U Verify the "OAN (this will depend	re in " Backup grade State ch Jpgrade State d / Max Ha Role d on the server	Needed" state anges to "Bac changes to "Re " is the expect being upgrad	e, select the s kup in Progr eady". tted conditio led)	ervers ar ress". Wh n (either	nd click the " Backup " nen the backup is Standby or Active)			

Active NOAM VIP: Verify Upgrade Status is "Ready"	The Upgrade Admini Upgrade Status = RE upgraded, new alarm	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.						
		Stration Screen	is displayed.					
	Main Menu: Admi	inistration ->	Software Ma	nagement ->	• Upgrade			
	Filter - Tasks -							
	SO_SG IPFE_SG	MP_SG NO_SG						
	Hostnamo	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		
	l	Server Status	Appl Max HA Role	Network Element	0414	Upgrade ISO		
	S01	Norm	Active N/A	System OAM SO1_DSR_VM	UAM	7.1.0.0.0-71.11.0		
	SO2	Ready Norm	Standby N/A	System OAM SO1_DSR_VM	OAM	7.1.0.0.0-71.11.0		
	Backup Backup All	Auto Upgrade Acr	cept Report Re	port All				
Active NOAM VIP: Initiate DA-MP upgrade (part 1)	Servers may have a have all alarms: Alarm ID = 10008 Alarm ID = 10073 Alarm ID = 10075 processes h Alarm ID = 32515 Alarm ID = 31107 Alarm ID = 31228 (Lost Comm Initiate the Automate 1. To utilize the Au group are select Main Menu: Admi	 Servers may have a combination of the following expected alarms. NOTE: Not all servers wil 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) 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.						
	Filter ▼ Tasks ▼			5				
	MP SG IPFE SG	NO SG SO SG						
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		
	Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO		
	MP1	Ready	Standby	MP	DSR (multi- active cluster)	7.1.0.0.0-71.14.1		
	MP2	Ready	Active	MP	DSR (multi- active cluster)	7.1.0.0.0-71.14.1		
		Warn	Active	SO1_DSR_VM				
	Backup Backup A 2. Click the Auto L The Upgrade [In	Auto Upgrade	cept Report Re	eport All				
	1							

Active NOAM VIP: Initiate DA-MP upgrade Initiate DA-MP upgrade Initiate DA-MP upgrade Select 50% for the Availability setting: Select 50% for		Start the Auto	omated Server Grou	p Upgrade of	the DA-MPs					
Initiate DA-MP upgrade (part 2) 1. 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 50% for the Availability setting. Select Bulk Mode. Click the Opportate ISO form the Upgrade ISO pick list. Click the Ob button to start the upgrade. Main Menu: Administration -> Software Management -> Upgrade [Initiate] Image Address Main Menu: Administration -> Software Management -> Upgrade [Initiate] Image Address Main Menu: Administration -> Software Management -> Upgrade [Initiate] Image Address Main Menu: Administration -> Software Management -> Upgrade [Initiate] Image Address Main Menu: Administration -> Software Management -> Upgrade [Initiate] Image Address Main Menu: After Mark the Metwork Beme Bandow Upgrade Settings Set Set Set Set Set Mark the Metwork Beme Bandow Upgrade Settings Set Set Set Set Mark the Metwork Beme Bandow View In-Progress Status (monitor) View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade Set Set Set Set Mark Mark Mark Mark Mess Metwork Beme Bandow Main Menu: Administration -> Software Manag	Active NOAM VIP:									
Click the Ok button to start the upgrade. A. Click the Ok button to start the upgrade. Main Menu: Administration -> Software Management -> Upgrade [Initiate] Mode Mate HA Rick Appl Mas HA Rick Appl Mas HA Rick Network Eleme Survey group upgrade mode. Survey groupgrade mode. Su	Initiate DA-MP upgrade (part 2)	 The Upg automat Select 5 Select th 	 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. 							
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Intervention Notice Notice<		Main Menu	ı: Administration -	> Software	Managemen	t -> Upgr	ade [Initiate]			
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MP2 Autoupgrade OAM Max HA Role Application Soil_DSR_VM Upgrade Settings Server group upgrade mode. Soil_DSR_VM Mode Bulk Server group upgrade mode. Server group upgrade mode. Sect Tail Digrade Settings Server group upgrade mode. Sect Tail Digrade Settings Mode Bulk Sect Tail Digrade Servers in groups according to the Application HA Role Availability 50% If A groups are created acconvelope to the Application HA Role Availability 50% Sect Tail Digrade Settings View the Upgrade ISO DSR-71.0.0.0_71.14.1x86_64.lso Sect Tail Digrade Settings View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade Secterestatus Will be display under the Status Message column. Mestaame Upgrade State OAM Max HA Role Network Element Upgrade ISO Mestaame Sectere State Application Version Application Version Mestaame Sectere State Application Version Sectere State Application Versio		MP1	Auto upgrade		DAM Max HA Role Standby	Appl Max HA <mark>Active</mark>	Role Network Element SO1_DSR_VM			
Upgrade Settings Server group upgrade mode. Mode * Bulk Seried Seried Couped Bulk Seried Availability 50% • Availability 50% • Upgrade Settings Select Tails' to upgrade servers in droups according to the server foruped Bulk Availability 50% • Availability 50% • Upgrade Settings Select Tails' to upgrade server shaddy and active. Select The desided percent availability of servers in the server (NVNE)*- all servers with Upgrade allow on the unvalability of servers in the server (NVNE)*- all servers with Upgrade set to with ubgrade allow on the unvalability of servers. View In-Progress Status (monitor) View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade MerSo		MP2	Auto upgrade		DAM Max HA Role <mark>Active</mark>	Appl Max HA Active	Role Network Element SO1_DSR_VM			
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Bulk Select Serial				s	Server group upgrad	e mode.				
Availability 50% • Upgrade 180 00.71141.x86_64.150 • Select the desired percent availability of servers in the server (NURC - all servers with Upgrade 180 media file Active NOAM VIP: View the Upgrade Administration form to monitor upgrade progress. I. Observe the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Wiew In-Progress Status (monitor) View the Upgrade Administration -> Software Management -> Upgrade Upgrade 180 00.96 % % % % % % % % % % % % % % % % % % %		Mode	Bulk Serial Grouped Bulk	s s Ir	Select "Bulk" to upgra Select "Serial" to upg Select "Grouped Bulk n all modes, any des	ade servers in g rade servers or «" to upgrade se signated last se	proups according to the availab ne at a time in HA order. ervers in HA groups according t rver will be upgraded last.	ility s to the		
Availability 50% • Concel View In-Progress Status (monitor) View the Upgrade Administration form to monitor upgrade progress. Image: Concel View In-Progress Status (monitor) View the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade Upgrade ISO Main Menu: Administration -> Software Management -> Upgrade Upgrade ISO MP_SG IPFE_SG No.SG So.2.SG MP_Upgrade Soin_DSR_VM DSR-7.3.0.0.0_73.11.6-x MP_Upgrade Soin_DSR_VM DSR-7.3.0.0_73.11.6-x While the DA-MP servers are upgrading, continue with the next step to upgrade additic level components in parallel. Soin_DSR_VM Identify the SS7-MP Server Group(s) to Upgrade <t< td=""><td></td><td></td><td></td><td>H</td><td>IA groups are create The HA role order is :</td><td>ed according to spare, observe</td><td>the "Application HA Role" of the r, standby and active.</td><td>e sen</td></t<>				H	IA groups are create The HA role order is :	ed according to spare, observe	the "Application HA Role" of the r, standby and active.	e sen		
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Image: Cancel Active NOAM VIP: View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be display under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade Image: Column in the status is the server status in the status is in the in the statu		Upgrade ISO	Upgrade ISO DSR-7.1.0.0.0_71.14.1-x86_64.iso Select the desired upgrade ISO media file.							
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Main Menu: Administration -> Software Management -> Upgrade Filter I Status I Table I MP_SG IPFE_SG NO_SG SO_SG Hostname Upgrade State OAM Max HA Role Function MP1 Upgrade State MP2 Pending Active MP MP2 Pending Active So1_DSR_VM DSR (active/stand (active/stand 72.00.0-72.18.0 MP2 Pending Active So1_DSR_VM DSR-7.3.0.0_73.11.0-x While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. Identify the SS7-MP If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it	Active NOAM VIP: View In-Progress Status (monitor)	View the Upg 1. Observe under th	 View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the DA-MP servers. Upgrade status will be displayed under the Status Message column. 							
Filter Status Table Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14.		Main Menu:	Administration ->	Software Ma	nagement ->	• Upgrade				
MP_SG IPFE_SG NO_SG SO_SG Hostname Server Status Appl Max HA Role Function Application Version Upgrade State OAM Max HA Role Network Element Upgrade ISO MP1 Upgrading Standby MP DSR (active/stand by pair) 7.2.0.0.72.18.0 MP2 Pending Active MP DSR (active/stand by pair) 7.2.0.0.72.18.0 MP2 Pending Active MP DSR (active/stand by pair) DSR-7.3.0.0.0_73.11.0-x MP2 Pending Active S01_DSR_VM DSR-7.3.0.0.0_73.11.0-x While the DA-MP servers are upgrading, continue with the next step to upgrade addition between components in parallel. If no SS7MPs are configured, proceed to step 14. Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it		Filter V St	tatus 👻 Tasks 👻		,			_		
MP_3G IPFE_3G NO_3G SO_3G Hostname Upgrade State OAM Max HA Role Server Role Function Application Version MP1 Upgrading Standby MP DSR (active/stand by pair) 7.2.0.0.72.18.0 MP2 Pending Active MP DSR (active/stand by pair) 7.2.0.0.73.11.0-x MP2 Pending Active MP DSR_(active/stand by pair) 7.2.0.0.73.11.0-x MP2 Pending Active MP DSR_(active/stand by pair) DSR-7.3.0.0.0_73.11.0-x While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. If no SS7MPs are configured, proceed to step 14. Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14.								_		
Hostname Upgrade state OAM Max HA Role Server Role Function Application version Metwork Element Upgrade ISO MP1 Upgrading Standby MP DSR (active/stand by pair) 7.2.0.0.72.18.0 MP1 Err OOS S01_DSR_VM DSR-7.3.0.0.0_73.11.0-x MP2 Pending Active MP DSR (active/stand by pair) DSR-7.3.0.0.0_73.11.0-x MP2 Pending Active MP DSR_vM DSR-7.3.0.0.0_73.11.0-x While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. If no SS7MPs are configured, proceed to step 14. Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in in		MP_SG IPF	E_SG NO_SG SO_SG	OAN Mary HA Date	August Dala	E	•			
MP1 Upgrading Standby MP DSR (active/stand by pair) 7.2.0.0.72.18.0 MP1 Err OOS so1_DSR_VM DSR (active/stand by pair) DSR-7.3.0.0.0_73.11.0-x MP2 Pending Active MP DSR (active/stand by pair) 7.2.0.0.72.18.0 While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. DSR-7.3.0.0.0_73.11.0-x Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14.		Hostname	Server Status	OAM Max HA Role	Server Role Network Element	Function	Application Version Upgrade ISO			
Err OOS S01_DSR_VM DSR_7.3.0.0.0_73.11.0-x MP2 Pending Active MP DSR_(active/stand by pair) 7.2.0.0.0-72.18.0 While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. DSR_7.3.0.00_73.11.0-x Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it		MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.2.0.0.0-72.18.0			
MP2 Pending Active MP DSR (active/stand by pair) 7.2.0.0.0-72.18.0 While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. While the DA-MP servers are upgrading, continue with the next step to upgrade addition DSR-7.3.0.0.0_73.11.0-x Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in in			Err	OOS	SO1_DSR_VM		DSR-7.3.0.0.0_73.11.0-x86_64.i	iso		
Err Active SO1_DSR_VM DSR-7.3.0.0.0_73.110-x While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it		MP2	Pending	Active	MP	DSR (active/stand by pair)	7.2.0.0.0-72.18.0			
While the DA-MP servers are upgrading, continue with the next step to upgrade addition level components in parallel. Identify the SS7-MP Server Group(s) to Upgrade If no SS7MPs are configured, proceed to step 14. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it			Err	Active	SO1_DSR_VM		DSR-7.3.0.0.0_73.11.0-x86_64.i	ISO		
Identify the SS7-MP If no SS7MPs are configured, proceed to step 14. Server Group(s) to From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it		While the DA level compon	-MP servers are upo nents in parallel.	grading, contin	nue with the n	ext step to	upgrade additional C	 >-		
Server Group(s) to Upgrade From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in it	Identify the SS7-MP	If no SS7MP	s are configured, pro	ceed to step ?	14.					
3.	Server Group(s) to Upgrade	From the data	a captured in Table	8, identify the	SS7-MP serv	er group(s) to upgrade in iterati	ion		

		1						
7.	Active NOAM VIP:	View the pre-upgrade	status of the S	S7-MP servers				
	View pre-upgrade status of SS7-MPs	 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 3, verify the Application Version value is the expected source software release version. 						
		Main Menu: Admi	nistration ->	Software Ma	nagement ->	> Upgrad	e	
		Filter - Tasks -						
		SuperBee NO Su	perBee IPFE1 Su	perBee IPFE2 Su	IperBee MP Su	perBee SO	SuperBee \$\$7MP1	
		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	7.2.0.0.0-72.22.0	
		 If the servers are button. The Upg complete, the Upg Verify the "OAM (this will depend 	in " Backup Ne rade State chan ograde State cha Max Ha Role" is on the server b	eeded" state, s ges to "Backuj anges to "Reac s the expected eing upgraded)	elect the serve o in Progress ly". I condition (e	ers and clid ". When th ither Sta n	ck the " Backup " ne backup is ndby or Active)	
8.	Active NOAM VIP:	The Upgrade Administration form will be refreshed, and the servers to be upgraded Upgrade Status - READY (This may take a minute). Depending on the server being						
	Verify Upgrade Status is	Upgrade Status = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur. The Upgrade Administration screen is displayed:						
	"Ready"							
		Main Menu: Admi	nistration -> 9	Software Mar	nagement ->	Upgrade		
		Filter - Tasks -			-			
		③ SuperBee_NO Su	perBee_IPFE1 Sup	erBee_IPFE2 Su	perBee_MP Sup	erBee_SO	SuperBee_SS7MP1 Su	
		Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
		SuperBee-SS7MP-1	Ready	Active	MP	SS7-IWF	7.2.0.0.0-72.22.0	
			Norm	OOS	SO_SuperBee			
		Backup Backup All	Checkup Checkup	All Auto Upgrade	Accept Repo	rt Report A	11	
		Servers may have a c have all alarms:	combination of t	he following ex	pected alarms	. NOTE: I	Not all servers will	
		Alarm ID = 10008 Alarm ID = 10073 Alarm ID = 10075 processes ha Alarm ID = 32515 Alarm ID = 31101 Alarm ID = 31106 Alarm ID = 31107 Alarm ID = 31228 (Lost Commu	(Provisioning (Server Group (The server is ave been manu (Server HA Fa (DB Replicatio (DB Merge to (DB Merge Fro (HA Highly av unication with l	Manually Disa Max Allowed no longer pro ally stopped) ilover Inhibite on to slave DB Parent Failure om Child Failu ailable server Mate Server)	ibled) HA Role War viding servic d) has failed)) re) failed to rece	rning) es becau: tive mate	se application heartbeats) or	

Active NOAM VIP: Initiate SS7-MP	 From the Upgrade Administration screen, select the server to be upgraded. Olive the thermode Queneral between the server to be upgraded. 						
upgrade (part 1)	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_ Ingrade State OAM Max HA Bole Server Bole Exection Application	SS7MP1 Supe					
	Hostname Server Status Appl Max HA Role Network Element Upgrade I	so					
	SuperBee-SS7MP-1 Ready Active MP SS7-IWF 7.2.0.0.07 Norm OOS SO_SuperBee	2.22.0					
	Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All						
	The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]						
Active NOAM VIP:	Select target ISO.						
Initiate SS7-MP upgrade (part 2)	 On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO Click Ok to initiate the upgrade.) picklist.					
	Main Menu: Administration -> Software Management -> Upgrade [Init	iate]					
	Hostname Action Status OAM Max HA Role Appl Max HA Role Network Element						
	SuperBee-SS7MP-1 Upgrade Active 0005 S0_5	SuperBee					
	Upgrade Settings Upgrade ISO DSR-7.3.0.0.0_73.11.0-x86_64.iso Select the desired upgrade ISO media file.						
	Ok Cancel						
	View the Upgrade Administration form to monitor upgrade progress.						
View In-Progress Status (monitor)	 Observe the Upgrade State of the SS7-MP server. Upgrade status will be dis under the Status Message column. 	splayed					
	Main Menu: Administration -> Software Management -> Upgrade						
	Filter Tasks						
	SuperBee_NO SuperBee_IPFE1 SuperBee_IPFE2 SuperBee_MP SuperBee_SO SuperBee_SO	3ee_SS7MP1					
	Hostname Upgrade State OAM Max HA Role Server Role Function Applie Server Status Appl Max HA Role Network Element Upgrade	ation Version de ISO					
	SuperBee-SS7MP-1 Upgrading Active MP SS7-IWF 7.2.0.0).0-72.22.0					
		I					
Repeat for each SS7-MP	Repeat steps 6 through 11 for the next SS7-MP to be upgraded per Table 8.						
Continue upgrade iteration 3	While the SS7-MP servers are upgrading, continue with the next step to upgrade a level components in parallel.	additional C-					

Identify the IPFE Server	If no IPFEs are config	ured, proceed to	o step 21.				
Group(s) to Upgrade	From the data capture	ed in Table 8, id	entify the IPFE	server group(s) to upgrac	le in iteration 3.	
Active NOAM VIP:	View the pre-upgrade	View the pre-upgrade status of the IPFE servers.					
View pre-upgrade status of IPFEs	 Navigate to Adm The Upgrade Ad Select each IPFE For the IPFE ser the expected souther 	 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 3, verify the Application Version value is the expected source software release version. 					
	Main Menu: Admi	nistration ->	Software Ma	nagement ->	• Upgrade]
	Filter - Tasks -						
	NO SG IPFE SG	MP SG SO SG					
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO	
	IPFE	Backup Needed	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0.0-72.18.0	
]
	 If the servers are button. The Upgin complete, the Up 5. Verify the "OAM (this will depend 	a in "Backup Ne rade State chan ograde State cha Max Ha Role" is on the server be	eded" state, se ges to "Backup anges to "Read s the expected eing upgraded)	y".	s and click When the	the Backup backup is by or Active)	
Active NOAM VIP:	Upgrade Status = RE	ADY (This may	be refreshed, a take a minute).	and the servers Depending on	to be upg the server	aded will show	
Verify Upgrade Status is "Ready"	upgraded, new alarm The Upgrade Adminis	The Upgrade Administration screen is displayed:					
	Main Menu: Admi	nistration ->	Software Ma	nagement ->	> Upgrad	e	1
	Filter 🔻 Tasks 🔻						
	IPFE_SG MP_SG	NO_SG SO_SG					
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO	
	IPFE	Ready Err	Active OOS	MP SO1_DSR_VM	IP Front End	7.2.0.0.0-72.18.0	
	Backup Backup All	Checkup Checkup	All Auto Upgrad	e Accept Rep	ort Report A	JI	
	Servers may have a c have all alarms: Alarm ID = 10008 Alarm ID = 10073 Alarm ID = 10075 processes ha Alarm ID = 32515 Alarm ID = 31101 Alarm ID = 31106 Alarm ID = 31107 Alarm ID = 31228	Or or of the server of the server of the server of the server is ave been manu (Server HA Fa (DB Replication (DB Merge to 1) (DB Merge From (HA Highly ave	me following exp Manually Disa Max Allowed no longer pro ally stopped) ilover Inhibited on to slave DB Parent Failure om Child Failure	bected alarms. bled) HA Role Warr viding service d) has failed) re) failed to receiv	NOTE: No hing) is because	e application	J

17. <u>Active NOAM VIP:</u> Initiate IPFE upgrade (part 1)	 Initiate the IPFE server upgrade. From the Upgrade Administration screen, select the server to be upgraded. Click the "Upgrade Server" button.
	Main Menu: Administration -> Software Management -> Upgrade Filter Tasks IPFE_SG MP_SG NO_SG SO_SG Hostname Upgrade State Server Status Appl Max HA Role Server Status Appl Max HA Role NPFE Ready Active MP IPFE IP Front End The lnitiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]
18. Active NOAM VIP: Initiate SS7-MP	 Select target ISO. On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. Click Ok to initiate the upgrade.
	Main Menu: Administration -> Software Management -> Upgrade [Initiate] Info Hostname Action Status OAM Max HA Role Appl Max HA Role IPFE Upgrade Vulpgrade Settings Upgrade ISO DSR-7.3.0.0.0_73.11.0-x86_64.iso Select the desired upgrade ISO media file.
19. Active NOAM VIP: View In-Progress Statu (monitor)	 View the Upgrade Administration form to monitor upgrade progress. S Observe the Upgrade State of the IPFE server. Upgrade status will be displayed under the Status Message column.
	Main Menu: Administration -> Software Management -> Upgrade Filter Status IPFE_SG MP_SG NO_SG SO_SG Hostname Upgrade State Server Status Appl Max HA Role Server Status Appl Max HA Role NPFE Upgrading Standby MP IPFE OOS SO1_DSR_VM DSR-7.3.0.0.0_73.11.0-x86_64.iso
20. Repeat for each IPFE	Repeat steps 14 through 19 for the next IPFE to be upgraded per Table 8.
21. Identify the SBR Serve Group(s) to Upgrade	If no SBRs are configured, proceed to step 28.From the data captured in Table 8, identify the SBR server group(s) to upgrade in iteration 3.

22.	Active NOAM VIP: Verify status of Servers to be upgraded	For 1. 2.	, select the SBR ease version for					
		6	EVONO EVONODR	EVO_BPSBR_A	EVO_BPSBR_B	EVO_BPSBR_C	EVO_BPS	BR_D EVO_DAMP
			Usatusma	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
			Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
			EVO-BPSBR-1	Backup Needed	Standby	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
				Warn	Standby	EVOSOAMNE		
			EVO-BPSBR-8	Backup Needed	Active	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
			STI-BPSBR-5	Backup Needed	Spare Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
			LFA-BPSBR-13	Backup Needed	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0
	3	3. 4.	If the server is in button. The Upgra complete, the Up Verify the "OAM N (this will depend of	"Backup Need ade State chan grade State ch Vax Ha Role" i on the server b	Spare led" state, sele ges to "Backu anges to "Reac s the expected eing upgraded)	ct the server a p in Progress' dy". d condition (ei	nd click th '. When th ther Stan	e " Backup " e backup is dby or Active)

Active NOA Verify Upgra "Ready"	M VIP: The Upg new	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.						
riculty	The	Upgrade Administr	ration screen is	displayed:				
	M	Nain Manue Administration > Software Management > Ungrade						
						opyrau		
	•	EVONO EVONODR	EVO_BP\$BR_A	EVO_BPSBR_B	EVO_BPSBR_C	EVO_BPS	BR_D	EVO_DAMP
	,	lostname	Upgrade State	OAM Max HA Role	Server Role	Function	Applica	ation Version
	E	EVO-BPSBR-1	Ready	Standby	MP	Policy and Charging SBR	7.2.0.0.	.0-72.22.0
			Warn	Standby	EVOSOAMNE	0.011		
	E	EVO-BPSBR-8	Ready	Active	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0	
			Norm	Active	EVOSOAMNE			
	ę	STI-BPSBR-5	Ready	Spare	MP	Policy and Charging SBR	7.2.0.0.	.0-72.22.0
			Warn	Spare	STISOAMNE			
		FA-BPSBR-13	Ready	Spare	MP	Policy and Charging SBR	7.2.0.0.	.0-72.22.0
			Warn	Spare	LFA_SOAM_NE			
	Ba	ackup Backup All Cl	Checkup Checkup	All Auto Upgrade	Accept Repor	rt Report A	All	
	Ser have	vers may have a co e all alarms:	mbination of th	e following exp	ected alarms.	NOTE: N	lot all s	servers will
		 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 = 31228 (HA Highly available server failed to receive mate heartbeats) o (Lost Communication with Mate Server) 						

Active NOAM VIP: Initiate SBR upgrade	 Initiate the Automated Server Group Upgrade option To utilize the Automated Server Group upgrade option, select the SBR server group to be 							
(part 1)	upgraded. 2. Verify that no s	servers in the se	rver 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 Server Status	OAM Max HA Rol Appl Max HA Role	e Server Role Network Element	Function	Application Version		
	EVO-BPSBR-1	Ready	Standby		Policy and Charging SBR	7.2.0.0.0-72.22.0		
	EVO-BPSBR-8	Ready	Active		Policy and Charging SBR	7.2.0.0.0-72.22.0		
	STI-BPSBR-5	Ready	Spare		Policy and Charging SBR	7.2.0.0.0-72.22.0		
	LFA-BPSBR-13	Ready	Spare	MP	Policy and Charging SBR	7.2.0.0.0-72.22.0		
	3. Click the Auto The Upgrade	Upgrade buttor [Initiate] screen is	i. s displayed.					
Active NOAM VIP: Initiate SBR upgrade (part 2)	 Start the Automate The Upgrade automated up Select an Ava Select the app Click the Ok b 	d Server Group I Settings section grade. Select Gr ilability setting o propriate ISO fror outton to start the	Jpgrade. of the Initiate s ouped Bulk Mo of 50%. n the Upgrade upgrade.	creen controls ode. ISO pick list.	the behavi	ior of the		
	Main Menu: Adminis	stration -> Softwa	e Management -	> Upgrade [Ini	tiate]			
	Info 🔻							
	Hostname Action EVO-BPSBR-1 Auto upgrade	e	Status OAM Max HA Role App Standby	Max HA Role Network	Element	Application Version		
	EVO-BPSBR-8 Auto upgrade	e	OAM Max HA Role App	Max HA Role Network	Element	Application Version		
	STI-BPSBR-5 Auto upgrade	e	OAM Max HA Role App Spare Spare	I Max HA Role Network	Element	Application Version		
	LFA-BPSBR-13 Auto upgrade	8	OAM Max HA Role App Spare Sna	IMax HA Role Network	Element AM NE	Application Version 7.2.0.0 0-72 22 0		
	Upgrade Settings			1 200	-			
	Mode Bulk Serrar • Grouped Bu	ulk	Server group upgrade mod Select "Bulk" to upgrade se Select "Grouped Bulk" to u In all modes, any designat HA groups are created acc The HA role order is space	group upgrade mode. "Bulk" to upgrade servers in groups according to the availability setting in HA order. "Serial" to upgrade servers one at a time in HA order. "Grouped Bulk" to upgrade servers in HA groups according to the availability setting. odes, any designated last server will be upgraded last. ups are created according to the "Application HA Role" of the server.				
	Availability 50% •		Select the desired percent ('NONE' - all servers with 'U	availability of servers in th Ipgrade' action will be una	e server group durir wailable.)	ig bulk upgrade.		
	Upgrade ISO DSR-7.2.0.0	0.0_72.22.0-x86_64.iso V	Select the desired upgrade	ISO media file.				
			C	0k Cancel				

26.	Active NOAM VIP:	View the Upgrade Ac	view the Upgrade Administration form to monitor upgrade progress.							
	View In-Progress Status (monitor)	1. Observe the Up under the Statu	 Observe the Upgrade State of the SBR Server Group. Upgrade status will be displayed under the Status Message column. 							
		Main Menu: Admi	Main Menu: Administration -> Software Management -> Upgrade							
		Filter 🔻 Tasks 🔻	Filter V Tasks V							
		EVO_BPSBR_A	EVONO EVONODR	EVO_BPSBR_B	EVO_BPSBR_C	EVO_BPS	BR_D	EVO_DAMP		
		Hestname	Function	Applica	ation Version					
		nostianie	Server Status	Appl Max HA Role	Network Element		Upgrad	de 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					
27										
21.	Repeat for each SBR Server Group	Repeat steps 21 thro	ugh 26 for the ne	ext SBR Server	Group to be u	pgraded p	er Ta	ble 8.		

Active NOAM VIP:	View the Upgrade	View the Upgrade Administration form to monitor upgrade progress.						
View In-Progress Status	See step 29 below	for instruction	is if the upgrad	e fails, or if ex	ecution tir	ne exceeds 60 minutes.		
(monitor)	Note: If the upgrad original software re The execution time there was a proble	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.						
	 Navigate to A The Upgrade Sequence thre the Upgrade Status Messa 	 The Upgrade Administration screen is displayed. 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: Admi	nistration ->	Software Man	agement ->	Upgrade			
	Filter Status	Tasks 🔻						
	MP_SG IPFE_SG	NO_SG SO_SG						
	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		
	MP1	Upgrading	Standby	MP	DSR (active/stand by pair)	7.1.0.0.0-71.6.0		
		Err	005	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	005	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 = 31107 (DB Merge To Parent Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31238 (HA Highly available server failed to receive mate heartbeats) or (Lost Communication with Mate Server) Alarm ID = 31233 (HA Secondary Path Down) Alarm ID = 31233 (HA Secondary Path Down) 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 ac	tion. Refer to	Appendix I fo	or failed serve	er recovei	ry procedures.		

29.	Server CLI:	If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files:
	If the upgrade of a server fails:	<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> It is recommended to contact MOS by referring to Appendix F of this document and provide these files.Refer to Appendix I for failed server recovery procedures.
		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 7, 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 12 shows the estimated time required to upgrade the C-level servers for iteration 4.

Duccodura	Elapsed Time (hr:min)		Procedure Title	Impost	
riocedure	This Step	Cumulative	Trocedure The	Impaci	
Procedure 28	0:40-1:00	0:40-1:00	Upgrade Iteration 4	¹ / ₂ DA-MPs, ¹ / ₂ SS7-MPs, ¹ / ₂ 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 28 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 8 for the hostnames of the servers to be upgraded in this iteration

S T 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 MOS AND ASK FOR UPGRADE ASSISTANCE.			
1.	Identify the SS7-MP Server Group(s) to Upgrade	If no SS7MPs are configured, proceed to step 9. From the data captured in Table 8, identify the SS7-MP server group(s) to upgrade in iteration 4.		

2.	Active NOAM VIP:	View the pre-upgrad	e status of the S	S7-MP servers			
	View pre-upgrade status of SS7-MPs	 Navigate to Ad The Upgrade A Select each SS For the SS7-MF in the suprested 	ministration > dministration scr 7-MP Server Gro servers to be u	Software Mana een is displaye oup tab in turn. ograded in itera	agement > U d ation 4, verify t	p grade he Applica	ation Version value
		is the expected	source software	release version	1.		
		Main Menu: Administration -> Software Management -> Upgrade					
		Filter - Tasks -					
		SuperBee_NO	SuperBee_IPFE1 Su	perBee_IPFE2 Su	iperBee_MP Sup	erBee_SO	SuperBee_SS7MP1
		Hostname	Upgrade State Server Status	OAM Max HA Role Appl Max HA Role	Server Role Network Element	Function	Application Version Upgrade ISO
		SuperBee-SS7MP-1	Backup Needed Norm	Active OOS	MP SO_SuperBee	SS7-IWF	7.2.0.0.0-72.22.0
		 If the servers at button. The Up complete, the U Verify the "OAN (this will dependent) 	re in " Backup Ne grade State chan lpgrade State cha 1 Max Ha Role" is d on the server b	eded" state, so ges to "Backup anges to "Read s the expected eing upgraded)	elect the serve o in Progress ly". I condition (e	rs and clic '. When th i ther Stan	ck the " Backup " ne backup is ndby or Active)
3.	Active NOAM VIP:	The Upgrade Admin	istration form will	be refreshed,	and the server	s to be up	graded will show
	Verify Upgrade Status is	Upgrade Status = READY (This may take a minute). Depending on the servers being upgraded, new alarms may occur.					
	"Ready"	The Upgrade Admin	istration screen is	s displayed:			
		Main Menu: Adm	inistration -> 9	Software Man	nagement ->	Upgrade	
		Filter Tasks T		-			
		O SuperBee_NO S	uperBee_IPFE1 Sup	erBee_IPFE2 Sup	perBee_MP Supe	erBee_SO	SuperBee_SS7MP1 Su
		Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
		SuperBee-SS7MP-1	Ready	Active I	MP	SS7-IWF	7.2.0.0.0-72.22.0
			Norm	OOS	SO_SuperBee		
		Backup Backup All	Checkup Checkup	All Auto Upgrade	Accept Repor	t Report A	11
		Servers may have a have all alarms: Alarm ID = 1000 Alarm ID = 1007 Alarm ID = 1007 Alarm ID = 3251 Alarm ID = 3110 Alarm ID = 3110 Alarm ID = 3122 (Lost Comm	combination of the server Group of the server Group of the server is the server is the server tha Factor of the server server that factor of the server that factor of the server that factor of the server se	he following ex Manually Disa Max Allowed no longer pro ally stopped) ilover Inhibite on to slave DB Parent Failure om Child Failu ailable server Mate Server)	pected alarms hbled) HA Role War viding servic d) has failed)) re) failed to rece	. NOTE: № ning) es becaus	Not all servers will se application heartbeats) or

4.	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 Appl Max HA Role Network Element Upgrade ISO SuperBee-SS7MP-1 Ready Active MP SS7-IWF 7.2.0.0.0-72.22.0 Backup Backup All Checkup All Upgrade Server All The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]
5.	Active NOAM VIP: Initiate SS7-MP upgrade (part 2)	Select target ISO. 1. On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. 2. Click Ok to initiate the upgrade. Main Menu: Administration -> Software Management -> Upgrade [Initiate] Info Hostname Action Status SuperBee-SS7MP-1 Upgrade OAM Max HA Role Appl Max HA Role Network Element Upgrade Settings Upgrade Settings Upgrade ISO DSR-7.3.0.0.0_73.11.0-x86_64.iso Select the desired upgrade ISO media file. Ok Cancel
6.	Active NOAM VIP: View In-Progress Status (monitor)	View the Upgrade Administration form to monitor upgrade progress. 1. Observe the Upgrade State of the SS7-MP server. Upgrade status will be displayed under the Status Message column. Main Menu: Administration -> Software Management -> Upgrade Filter Tasks Task
7. 8.	Repeat for each SS7-MP Continue upgrade iteration 4	Repeat steps 1 through 6 for the next SS7-MP to be upgraded per Table 8. While the SS7-MP servers are upgrading, continue with the next step to upgrade additional C-level components in parallel.

9.	Identify the IPFE Server Group(s) to Upgrade	If no IPFEs are configured, proceed to step 16. From the data captured in Table 8, identify the IPFE server group(s) to upgrade in iteration 4.					
					server group(s) to upgrac	
10.	Active NOAM VIP: View pre-upgrade status of IPFEs	 View the pre-upgrade status of the IPFE servers. 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. 					
		Main Menu: Admin Filter Tasks NO_SG IPFE_SG M Hostname	Istration -> P_SG SO_SG Upgrade State Server Status Backup Needed	OAM Max HA Role Appl Max HA Role Active	nagement -> Server Role Network Element MP	Function	Application Version Upgrade ISO 7.2.0.0.0-72.18.0
			Norm	OOS	SO1_DSR_VM		
11.	<u>Active NOAM VIP:</u> Verify Upgrade Status is	 If the servers are in button. The Upgra complete, the Upg Verify the "OAM M (this will depend of The Upgrade Administr Upgrade Status = REA upgraded, new alarms 	n " Backup Ne de State chang rade State cha lax Ha Role" is n the server be ation form will DY (This may may occur.	eded" state, se ges to "Backup inges to "Read the expected ing upgraded) be refreshed, a ake a minute).	elect the server b in Progress ". condition (eit and the servers Depending on	s and click When the her Stand	the " Backup " backup is by or Active) raded will show s being
	"Ready"	The Upgrade Administr	ation screen is	displayed:			
		Main Menu: Administration -> Software Management -> Upgrade					
		Filter - Tasks -					
		IPFE_SG MP_SG N	O_SG SO_SG				
		Hostname IPFE Backup Backup All Ch	Upgrade State Server Status Ready Err neckup Checkup	OAM Max HA Role Appl Max HA Role Active OOS All Auto Upgrad	Server Role Network Element MP SO1_DSR_VM e Accept Repr	Function IP Front End	Application Version Upgrade ISO 7.2.0.0.0-72.18.0
		Servers may have a co have all alarms: Alarm ID = 10008 ((Alarm ID = 10073 (: Alarm ID = 10075 (processes hav Alarm ID = 32515 (: Alarm ID = 31101 ((Alarm ID = 31106 ((Alarm ID = 31128 ((Alarm ID = 31228 () (Lost Commun	mbination of th Provisioning I Server Group The server is e been manua Server HA Fai DB Replicatio DB Merge to F DB Merge Fro HA Highly ava vication with M	Manually Disa Max Allowed no longer pro ally stopped) lover Inhibited n to slave DB Parent Failure) m Child Failur ilable server f fate Server)	bected alarms. bled) HA Role Warr viding service d) has failed)) failed to receiv	NOTE: No ning) is because ve mate he	ot all servers will e application eartbeats) or

_							
12.	Active NOAM VIP:	Initiate the IPFE server upgrade.					
	Initiate IPFE upgrade (part 1)	 From the Upgrade Administration screen, select the server to be upgraded. Click the "Upgrade Server" button. 					
		Main Menu: Administration -> Software Management -> Upgrade					
		Filter Tasks					
		IPFE_SG MP_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 Ready Active MP IP Front End 7.2.0.0.72.18.0					
		Err OOS SO1_DSR_VM					
		Backup Backup All Checkup Checkup All Upgrade Server Accept Report Report All					
		The Initiate Upgrade form will be displayed: Administration > Software Management > Upgrade [Initiate]					
	Active NOAM VIP:	Select target ISO.					
	Initiate IPFE upgrade (part 2)	 On the Upgrade [Initiate] screen, select the target ISO from the Upgrade ISO picklist. Click Ok to initiate the upgrade. 					
		Main Menu: Administration -> Software Management -> Upgrade [Initiate]					
		Hostname Action Status					
		IPFE Upgrade OAM Max HA Role Appl Max HA Role Network Element Active OOS SO1_DSR_VM					
		Upgrade Settings					
		Ok Cancel					
	Active NOAM VIP	View the Upgrade Administration form to monitor upgrade progress.					
	View In-Progress Status (monitor)	 Observe the Upgrade State of the IPFE server. Upgrade status will be displayed under the Status Message column. 					
		Main Menu: Administration -> Software Management -> Upgrade					
		Filter Status Tasks					
		IPFE_SG MP_SG NO_SG SO_SG					
		Upgrade State OAM Max HA Role Server Role Function Application Version Hostname Server Status Appl Max HA Role Network Element Upgrade ISO					
		Upgrading Standby MP IP Front End 7.2.0.0.0-72.18.0 IPFE Eir OOS SO1_DSR_VM DSR-7.3.0.0.0_73.11.0-x86_64.iso					
	Repeat for each IPFE	Repeat steps 9 through 14 for the next IPFE to be upgraded per Table 8.					
Active NOAM VIP:	View the Upgrade A	Administration	form to monito	or upgrade pro	ogress.		
-------------------------	--	---	---	--	---	--	--
View In-Progress Status	See step 17 below	for instruction	s if the upgrad	e fails, or if ex	ecution tir	ne exceeds 60 minutes.	
(monitor)	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.						
	 Navigate to Ac The Upgrade / Sequence thro the Upgrade S Status Messa 	dministration Administration bugh the serve State of the se ge column.	Software M screen is disp or group tabs for ervers of intere	lanagement : blayed. or the server o st. Upgrade s	> Upgrade groups bei tatus will b	e. ng upgraded. Observe be displayed under the	
	Main Menu: Admin	istration -> 9	Software Man	agement ->	Upgrade		
	Filter - Status -	Tasks 💌					
	MP_SG IPFE_SG	NO_SG SO_SG					
	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	MP1	Server Status Upgrading	Appl Max HA Role Standby	MP	DSR (active/stand by pair)	Upgrade ISO 7.1.0.0.0-71.6.0	
		Err	OOS	SO_DSR_VM	oj panj	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	00\$	SO_DSR_VM		DSR-7.1.0.0.0_71.8.1-x86_64.iso	
	Backup Backup All	Auto Upgrade Ac	ccept Report Re	eport All			
	During the upgrade NOTE: Not all serv Alarm ID = 1000 Alarm ID = 1001	, the servers r vers will have 08 (Provision 73 (Server Gr	may have a co all alarms: hing Manually roup Max Allo	mbination of t Disabled) wed HA Role	he followir Warning	ng expected alarms.	
	Alarm ID = 100 processes Alarm ID = 3110 Alarm ID = 3110	75 (The serve have been m 01 (DB Replic 06 (DB Merge	er is no longer anually stopp cation To Slav e To Parent Fa	r providing s oed) ve Failure) ailure)	ervices b	ecause application	
	Alarm ID = 3110 Alarm ID = 312: (Lost Comr Alarm ID = 312: Alarm ID = 312: Alarm ID = 325:	07 (DB Merge 28 (HA Highly nunication w 33 (HA Secor 83 (Highly av 15 (Server HA	e From Child I y available se vith Mate Serv ndary Path Do ailable server A Failover Inh	Failure) rver failed to er) wn) failed to rec ibited)	receive n	nate heartbeats) or heartbeats)	
	 The SBR server Periodically 	er groups beir monitor these	ng upgraded w e servers for fa	ith ASG will a ilures, if equip	utomatica oped.	lly sequence to iteration	
	4. For the DA-MF complete. The minutes. Do no completed upg	P, SS7-MP and Status Mess of proceed to i grade.	d IPFE servers age column w iteration 5 until	s being upgrad ill show "Succ I the DA-MP, 3	ded, wait f cess" after SS7-MP a	or the upgrades to approximately 20 to 50 nd IPFE servers have	
	If the system do to Procedure 30	es not have per Table 9	e SBRs, the s).	server upgr	ades are	e complete. Proceed	

Procedure 28: Upgrade Iteration 4

Procedure 28: Upgrade Iteration 4

17.	Server CLI:	If any upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to Appendix I for failed server recovery procedures.					
	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:					
		/var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log					
		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 7, iteration 5 consists of upgrading the Active SBR(s).

Table 11 shows the estimated time required to upgrade the remaining C-level servers for iteration 5.

Duccodunc	Elapsed Tim	e (hr:min)	Procedure Title	Impost	
Procedure	This Step Cumulative		Trocedure The	Impaci	
Procedure 29	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 29 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 8 for the hostnames of the servers upgraded in this iteration.

Procedure	29:	Upgrade	Iteration 5
Iloccuult		opgrade	Iter action 5

Active NOAM VIP:	View the Upgrade	Administration	form to monite	or upgrade pro	ogress.		
View In-Progress Status (monitor)	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.						
	 Navigate to A The Upgrade Sequence thr the Upgrade Status Mess 	Administration rough the serve State of the se age column.	software Man screen is disp er group tabs fo ervers of intere Software Man	anagement >	yroups bei tatus will b Upgrade	z. ng upgraded. Observe be displayed under the	
		Taska -	Software Mai	agement 2	opgrade		
	Filter Status	Tasks 🔻					
	MP_SG IPFE_SG NO_SG SO_SG						
	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	nootiluino	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 A	ccept Report R	eport 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 = 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. Wait for the SBR upgrades to complete. The "Status Message" column will show "Success". This step will take approximately 20 to 50 minutes.
2. Server CL II	If any upgrade fails - do not proceed. It is recommended to consult with MOS on the
Server CLI:	best course of action. Refer to Appendix I for failed server recovery procedures.
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:
	/var/TKLC/log/upgrade/upgrade.log
	/var/TKLC/log/upgrade/ugwrap.log
	/var/TKLC/log/platcfg/upgrade.log
	THIS PROCEDURE HAS BEEN COMPLETED.



- Procedure 30: Allow Site Provisioning
- Procedure 32: Verify Post-Upgrade Status



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

• Procedure 42: Accept 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.



Procedure 30: Allow Site Provisioning

S T	This procedure allow	This procedure allows provisioning for SOAM and MP servers.					
E P	Check off (\checkmark) each step as it is	Check off (ψ) 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.	Active SOAM VIP: Enable Site Provisioning	1. 2. 3. 4. 5.	Log into the SOAM GUI of the site just upgraded using the VIP. Select Status & Manage > Database. The Database Status screen is displayed. Click the Enable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. Verify the button text changes to Disable Site Provisioning				
		Tŀ	IIS PROCEDURE HAS BEEN COMPLETED.				

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-UpgradeHealth Check

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

Procedure 31: Site Post-Upgrade Health Check

S T	This procedure verifies Post-Upgrade site status.						
Ē	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.						
r #	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.						
1		This procedure	e will run the autom	ated post-upg	rade Health	Checks.	
	Active NOAM VIP:	This procedure From the Acti 1. Select Ac The Upgr 2. Select the 3. Select the Main Menu: <i>J</i> Filter Tas Rambler_NO_SG Hostname Rambler-SO1 Rambler-SO2 Backup Backup 4. Click the The Upgr 5. Under He 6. Click Ok. Main Menu Hostname Rambler-SO1 Health check op Checkup Type Upgrade ISO	a will run the autom we NOAM GUI: dministration > So ade screen is disple > SOAM Server Green > Active SOAM. Administration -> ks • Rembler_DAMP_SG Upgrade State Server Status Acceptor Reject Warn Acceptor Reject Action Health Check Pre Upgrade Prost Upgrade - Select -	All Upgrade Sen seen is displayed select the Po che Upgrade sen at a software Manage Software Manage Software Ma Rambler_DRNO_SG OAM Max HA Role Active N/A Standby N/A All Upgrade Sen -> Software m -> Software The Upgrade sen The Upgrade sen T	rade Health (gement > Up a site being up nagement -> Rambler_SO_S Server Role Network Element System OAM SO_Rambler System OAM SO_Rambler rer Accept Re ed. sst Upgrade for creen. re Manage Status OAM Max H Active Upgrade heal Select the de	Checks. grade. pgraded. • Upgrad G Function OAM OAM OAM OAM OAM OAM OAM A Role N: S A Role N: S A Role N: S	de Application Version Upgrade ISO 7.2.0.0.0-72.17.0 DSR-7.2.0.0.0_72.17.0-x86_64.iso 7.2.0.0.0-72.17.0 DSR-7.2.0.0.0_72.17.0-x86_64.iso ant All VUpgrade [Checkup] etwork Element V0_Rambler rpe. ade ISO media file. ncel

2	Active NOAM VIP:	Monitor for the completion of the Health Check.					
	Monitor health check progress	 From the Active NOAM GUI: Click the Tasks dropdown to display the currently executing tasks. The Health Check task name appears as <soservergroup> PostUpgrade Health Check.</soservergroup> 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. Main Menu: Administration -> Software Management -> Upgrade Filter Status Tasks Tasks Tasks Tasks Task State PostUpgrade Health Check, R ambler, SO, SG Rambler-NO1 Rambler, SO, SG approximation, Check AdvanceUpgrade Health Check, R ambler, SO, SG 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Completed K, Rambler, SO, SG, 2016031 100% Check AdvanceUpgrade Health Check Check K, Rambler, SO, SG, 2016031 100% Check Check K, Rambler, SO, SG, 2016031 100% Check K, Rambler, SO, SG, 2016031					
3		Analyze Health Check failure. If the Health Check report status is anything other than "Pass".					
3	Active NOAM VIP: Analyze health check results	 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. From the Active NOAM GUI: 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 upgrade. If necessary, it is recommended to contact MOS for guidance as described in Appendix J. 					
4	Active SOAM VIP: Export and archive configuration data	 Export configuration data From the Active SOAM GUI: Select Main Menu > Diameter Common > Export Capture and archive the configuration data by choosing Export Application the drop down entry named "ALL". Click Ok to confirm. If SCP will be used to retrieve the export files in step 6, select the Export Directory - File Management Directory radio button. Verify the requested data is exported 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 SOAM to the client machine. Select Diameter > Maintenance > Applications Verify Operational Status is 'Available' for all applications 					
5	Active SOAM Server: Check if the setup previously has a customer supplied Apache certificate installed and protected with a passphrase, which was renamed before starting with upgrade.	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 certification was renamed to server.crt-orig. To restore the customer-supplied certification, rename 'server.crt-orig' back to 'server.crt'.					

Procedure 31: Site Post-Upgrade Health Check

Procedure 31: Site Post-Upgrade Health Check

6	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 Procedure 21. If system operation is degraded, it is recommended to contact MOS.
		THIS PROCEDURE HAS BEEN COMPLETED.

5.6.2.2 Alternate SOAM 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 31.

Procedure 32: Verify Post-Upgrade Status

S T	This procedure verifies Post-Upgrade site status.					
Ē	Check off (\checkmark) each step as it is	s 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.	ACTIVE SOAM CLI:	Run SOAM post-upgrade health check.				
	Verify SOAM post-	1. Use an SSH client to connect to the Active SOAM:				
	Upgrade Status	ssh <soam address="" ip="" xmi=""> login as: admusr password: <enter password=""></enter></soam>				
		Note: The static XMI IP address for each server should be available in Table 3.				
		2. Enter the command:				
		<pre>\$ upgradeHealthCheck postUpgradeHealthCheckOnSoam</pre>				
		This command creates files in /var/TKLC/db/filemgmt/ UpgradeHealthCheck/ with the filename format:				
		<soserver_name>_ServerStatusReport_<date-time>.xml <soserver_name>_ComAgentConnStatusReport_<date-time>.xml</date-time></soserver_name></date-time></soserver_name>				
		If any alarms are present in the system: <soserver_name>_AlarmStatusReport_<date-time>.xml</date-time></soserver_name>				
		If the system is PDRA, one additional file is generated: <soserver_name>_SBRStatusReport_<date-time>.xml</date-time></soserver_name>				
		Note: The same command used for pre-upgrade healthchecks "preUpgradeHealthCheckOnSoam" is also used to verify Post upgrade health status.				
		Note: The message "FIPS integrity verification test failed " may be output when the upgradeHealthCheck command runs. This message can be ignored.				
		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.</hostname></hostname>				
		Note: If any server status is not as expected, do not proceed with the upgrade. It is recommended to contact MOS for guidance.				
		 Keep these reports for future reference. These reports will be compared to alarm and status reports after the upgrade is complete. 				
2.		Capture Diameter Maintenance status.				
	ACTIVE SOAWICEI.	1. Enter the command:				
	Maintenance Status	<pre>\$ upgradeHealthCheck diameterMaintStatus</pre>				
		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.				
		Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.				

3.	ACTIVE SOAM CLI:		Capture DA-MP status.		
			Enter the command:		
	View DA-MP Status		<pre>\$ upgradeHealthCheck daMpStatus</pre>		
			This command outputs status to the screen for review.		
			Note: The message "FIPS integrity verification test failed" may be output when the upgradeHealthCheck command runs. This message can be ignored.		
		2. 3.	Verify all Peer MPs are available Note the number of Total Connections Established		
4.	Verify system health.	Ver san deg	ify that the health check status of the upgraded site as collected in this procedure is the ne as the pre-upgrade health checks taken in Procedure 21. If system operation is raded, it is recommended to report it to MOS.		
		TH	IIS PROCEDURE HAS BEEN COMPLETED.		

NOTE: If another site is to be upgraded, all procedures specified by Table 9 must be executed. However, the user should be aware that mated sites should not be upgraded in the same maintenance window.

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 14. 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 15. 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 14 and Table 15 are only estimates as the reason to execute a backout has a direct impact on any additional backout preparation that must be done.

This Step		Procedure Inte	11111-111	
This Step Cumulative			Impact	
0:10-0:30	0:10-0:30	Backout Setup: 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.	
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.	
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.	
See Note	See Note	IDIH Backout NOTE: Execution time of downgrading the Oracle server is approximately equivalent to execution time to upgrade the server. Post-Backout Health Check	None	
	0:10-0:30 See Note See Note See Note	0:10-0:30See NoteSee Note	0:10-0:300:10-0:30Backout Setup: 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.See NoteSee NoteEmergency Site Backout: NOTE: Execution time of downgrading entire network is approximately equivalent to execution time taken during upgrade.See NoteSee Note0:05 (5 minutes) can be subtracted from total time because ISO Administration is not executed during Backout procedures.See NoteSee NoteEmergency NOAM Backout: NOTE: Execution time of downgrading a single server is approximately equivalent to execution time to upgrade the server.See NoteSee NoteIDIH Backout NOTE: Execution time of downgrading the Oracle server is approximately equivalent to execution time to upgrade the server.	

Table 14: Emergency Backout Procedure Overview.

Dresedure	Elapsed Time (hr:min)		Breedure Title	Impact	
Procedure	This Step Cumulative		Procedure little		
Procedure 33	0:10-0:30	0:10-0:30	Backout Setup: 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 36	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 37	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	

Table 15: Normal Backout Procedure Overview.

6.1 **Recovery Procedures**

It is recommended to direct upgrade procedure recovery issues to MOS by referring to Appendix J 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.



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 33: Backout Setup

This procedure is use	ed to prepare a DS	SR system f	or backout			
Check off (\checkmark) each step as it is	s completed. Boxes have b	peen provided fo	or this purpose u	under each step	number.	
SHOULD THIS PROCEDURE	E FAIL, IT IS RECOMME	NDED TO CON	TACT MOS A	ND ASK FOR	UPGRAD	E ASSISTANCE
Active NOAM VIP:	This procedure will	run the autom	ated post-upg	rade Health (Checks fo	r backout.
	1. Select Admini	istration > So	ftware Manag	gement > Up	grade.	
	The Upgrade s	screen is displa	aved.		-	
	2. Select the SO	AM Server Gro	oup tab for the	e site being ba	acked out	
	3. Select the Acti	ve SOAM.				-
	Main Menu: Administration -> Software Management -> Upgrade					
	Filter Tasks					
	Rambler_NO_SG Rambler_DAMP_SG Rambler_DRNO_SG Rambler_SO_SG					
	Heatnama	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO
	Rambler-SO1	Accept or Reject	Active	System OAM	OAM	7.2.0.0.0-72.17.0
		Warn	N/A	SO_Rambler		DSR-7.2.0.0.0_72.17.0-x86_64.iso
	Rambler-SO2	Accept or Reject	Standby	System OAM	OAM	7.2.0.0.0-72.17.0
		Warn	N/A	SO_Rambler		DSR-7.2.0.0.0_72.17.0-x86_64.iso
	Backup Backup A	Checkup	All Upgrade Serv	ver Accept Re	port Report	t All

Procedure 33: Backout Setup

	 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. 				
	Main Menu: Administration	-> Software Mana	gement -> Upgrade [Checkup]		
	Hostname Action				
	Rambler-SO1 Health Check	OAM Ma	SO_Rambler		
	Health check options				
	Checkup Type Pre Upgrade Prot Upgrade Post Upgrade	Upgrade	health check type.		
	Upgrade ISO - Select -	 Select the 	Select the desired upgrade ISO media file.		
			Ok Cancel		
	Monitor for the completion of the H	ealth Check.			
Active NOAW VIP:					
progress	 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. 				
	Filter Status Tasks		*		
	Rambler_SO_SG Rai	Name Tas	k State Details Progress		
	Hostname 62 Rambler-NO1	Rambler_SO_SG PostUpgrade Health com Check	pleted PostUpgrade_HealthCheck_R ambler_SO_SG_20160310- 104858-EST.txt		
	Rambler-SO1 61 Rambler-NO1	Rambler_SO_SG AdvanceUpgrade Health com Check	AdvanceUpgrade_HealthChec 0-1 pleted k_Rambler_SO_SG_2016031 100% ce 0-104803-EST.bt 8-1		
	60 Rambler-NO1	Rambler_SO_SG AdvanceUpgrade Health com	AdvanceUpgrade_HealthChec pleted k_Rambler_SO_SG_2016031 100%		
Active NOAM VIP:	Analyze Health Check results. If the Health Check logs can be analyticated and the Health Check logs can be analyticated and the second	e Health Check report zed to determine if the	status is anything other than "Pass", e backout can proceed.		
Analyze health check results	 Select Status & Manage > Fi The Files screen is displayed. Select the file named "Upgrad Locate the log entries for the r Review the log for failures. An backout. If necessary, it is rec 	es. eHealthCheck.log" and nost recent health che alyze the failures and commended to contact	d click View . ck. determine if it is safe to continue the MOS for guidance as described in		

Active NOAM VIP: Identify IP addresses of servers to be backed out	 Select Administration > Software Management > Upgrade. Based on the "Application Version" column, identify all the hostnames that need to be backed out. Select Configuration > Servers. 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. 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.
Active NOAM VIP: Verify backup archive files	 Select Status & Manage > Files. 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</date_time></role></server></application> Backup. <application>.<server>.FullRunEnv.<role>.<date_time>.UPG.tar.bz2</date_time></role></server></application>
	THIS PROCEDURE HAS BEEN COMPLETED.

Procedure 33: Backout Setup

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.



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

Procedure 34: Emergency Site Backout

S T 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, and SBRs. Check off (1) 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.	Active NOAM VIP: Identify all servers that require Backout	 Identify all servers that require Backout (within a Site): Log into the NOAM GUI using the VIP. Select Administration >Software Management >Upgrade. The Upgrade Administration screen is displayed. Identify the servers in the respective Server Groups with the target release Application Version value. These servers were previously upgraded but now require Backout. Make note of these servers. They have been identified for backout. Before initiating the backout procedure, remove all new servers and/or sites configured after upgrade was started. 	

2.	Active NOAM VIP	Disable provisioning and configuration updates on the entire network (if not done previously):
	Disable Global Provisioning (if not already done)	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:
		 Select Status & Manage > Database. The Database Status screen is displayed. Click the Disable Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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.
		The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)
3.	Active SOAM VIP: Disable Site Provisioning for the site to be backed out.	 Disable Site Provisioning Log into the SOAM GUI using the VIP. Select Status & Manage > Database The Database Status screen is displayed Click the Disable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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. The Active SOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled)
	O	WARNING! STEP 4 WILL RESULT IN A TOTAL LOSS OF ALL TRAFFIC BEING PROCESSED BY THIS DSR
4.	Backout all C-level servers, as applicable	For all configurations: Backout all C-level servers (IPFEs, SBRs, SBRs, DA-MPs, and SS7-MPs) identified in step 1: Execute Section 6.6, Backout Multiple Servers.
5.	Backout the Standby and Spare SOAM servers, as applicable	Backout the Standby and Spare DSR SOAM servers: If Standby and Spare SOAM servers are present: Execute Section 6.6, Backout Multiple Servers. If only a Spare SOAM server is present: Execute Section 6.5. Backout Single Server.
6.	Backout the Active SOAM	Backout the Active DSR SOAM server: Execute Section 6.5, Backout Single Server.
7.	Repeat work-around for other SOAM	Repeat step 6 on the other (now Standby) SOAM.

8.	Active SOAM VIP:	Enable Site provisioning	
	Enable Site Provisioning	 Log into the SOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed Click the Enable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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 14 in another maintenance window.

6.3.2 Emergency NOAM Backout

The procedures in this section backout the NOAM servers.

Procedure 35: Emergency NOAM Backout

S	This procedure is used to perform an emergency backout of the DSR application software from			
T E	the NOAM servers. This procedure backs out the application software as quickly as possible,			
Е Р	without regard to operational impact.			
#	Check off (\checkmark) 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.	Backout Standby DR	Backout the Standby DR NOAM server:		
	equipped)	Execute Section 6.5 Backout Single Server.		
2.	Backout Active DR	Backout the other DR NOAM server (now the Standby):		
	NOAM server (if equipped)	Execute Section 6.5 Backout Single Server.		
3.	Backout Standby DSR	Backout the Standby DSR NOAM server:		
	NOAM server (as applicable)	Execute Section 6.5 Backout Single Server.		
4.	Backout Active DSR	Backout the other DSR NOAM server (now the standby):		
	NOAM server	Execute Section 6.5 Backout Single Server.		
5.	Active NOAM VIP:	Enable global provisioning and configuration updates on the entire network		
	Enable Global Provisioning	 Log into the NOAM GUI using the VIP. Select Status & Manage > Database The Database Status screen is displayed. 		
		 Click the Enable Provisioning button. Verify the button text changes to Disable Provisioning. 		
6.	Active NOAM VIP:	Remove 'Ready' state		
	Remove 'Ready' state for any backed out server	 Select Status & Manage > Servers. The Server Status screen is displayed. If any backed-out server Application Status is 'Disabled', then select the server row and press the Restart button. Select Administration >Software Management >Upgrade The Upgrade Administration screen is displayed. 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. Click OK. This will now remove the Forced Standby designation for the backed-out server. 		
		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.		
		hostname=[frame10311b6] ip=[172.16.1.28]		
		 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 36: Normal Site Backout

S T 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 and SBRs.		
1.	Active NOAM VIP:	Identify all servers that require Backout (within a Site):	
	Identify all servers that require Backout	 Log into the NOAM GUI using the VIP. Select Administration >Software Management >Upgrade. The Upgrade Administration screen is displayed. Identify the servers in the respective Server Groups with the target release Application Version value. These servers were previously upgraded but now require Backout. Make note of these servers. They have been identified for Backout. Before initiating the backout procedure, remove all new servers and/or sites configured after upgrade was started. 	
2.	Active NOAM VIP:	Disable provisioning and configuration updates on the entire network (if not done previously:	
	Disable Global Provisioning (if not already done)	 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: Select Status & Manage > Database. The Database Status screen is displayed. Click the Disable Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. 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. The Active NOAM server will have the following expected alarm: Alarm ID = 10008 (Provisioning Manually Disabled) 	

Disable Site Provisioning for the site to be backed out	 Select Status & The Database St Click the Disable Confirm the oper Verify the button should also be di [Warning Code 	Manage > Database tatus screen is displayed a Site Provisioning butt ration by clicking Ok in the text changes to Enable isplayed at the top of the a 004] - Site provisioning	on. le popup dialog box. Site Provisioning. A view screen which st ig has been manuall	yellow information box ates: y disabled .
	The Active SOAM service Alarm ID = 1000	ver will have the followin 8 (Provisioning Manual	g expected alarm: Iy Disabled)	
Backout the first set of C-level servers as applicable	Backout the first set of applicable) Standby DA ½ of all DA- Standby SB Spare SBR(½ of all SS7 ½ of all IPF	f servers. The following s A-MP for 1+1 (Active/Star MPs for N+0 (Multi-Activ 8R(s) (s) (s) F-MPs Es	servers can be backed ndby) configuration, o re) configuration	d out in parallel (as r
	NOTE: In a PCA Syst being backed out. Execute Section 6.6 -	tem, the Spare SBR set Backout Multiple Server	rver is located at the s for the C-level serve	mated site of the site
	5.		the stars F and sta	
	!WARNING! the	ailure to comply wi e loss of PCA traff	th step 5 and ste ic, resulting in s	ep 6 may result in ervice impact
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa th If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby.	tilure to comply wi e loss of PCA traff cked out is the Standby S n Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou	BBR, execute this step harging->Maintenanced. rce HA Role for the S	 b. Otherwise, continue with ce->SBR Status. Open Standby server has a status
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby. Main Menu: Policy and	tilure to comply wi e loss of PCA traff cked out is the Standby S of Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance	BBR, execute this step barging->Maintenanced. rce HA Role for the S	 be 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby. Main Menu: Policy and Filter •	Allure to comply wi e loss of PCA traff cked out is the Standby S on Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance	th step 5 and ste ic, resulting in s BBR, execute this step harging->Maintenance d. rce HA Role for the S -> SBR Status	 p 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby. Main Menu: Policy and Filter PCA_MATED_SITES	Allure to comply wi e loss of PCA traff cked out is the Standby S on Menu -> Policy and Cl river group being upgrade to step 6 until the Resou Charging -> Maintenance	th step 5 and ste ic, resulting in s SBR, execute this step harging->Maintenance ed. rce HA Role for the S -> SBR Status	 b 6 may result in ervice impact c. Otherwise, continue with ce->SBR Status. Open Standby server has a status
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby. Main Menu: Policy and Filter PCA_MATED_SITES Server Group Name	Allure to comply wi e loss of PCA traff cked out is the Standby S of Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance	th step 5 and ste ic, resulting in s SBR, execute this step harging->Maintenance d. rce HA Role for the S -> SBR Status	 be p 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed to of Standby. Main Menu: Policy and Filter PCA_MATED_SITES Server Group Name □ GTR_SBR_SG_A	Allure to comply wi e loss of PCA traff cked out is the Standby S of Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance Resource D PCA_SESSI	th step 5 and ste ic, resulting in s SBR, execute this step harging->Maintenance d. rce HA Role for the S -> SBR Status	ep 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status Standby server has a status Resource Domain Profile Policy and Charging Session
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed t of Standby. Main Menu: Policy and Filter PCA_MATED_SITES Server Group Name GTR_SBR_SG_A Server Name	Allure to comply wi e loss of PCA traff cked out is the Standby S o Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance Resource D PCA_SESSI Resource HA Role	th step 5 and ste ic, resulting in s SBR, execute this step harging->Maintenance ed. rce HA Role for the S -> SBR Status	ep 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status Resource Domain Profile Policy and Charging Session Sub Resources Hosted
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed t of Standby. Main Menu: Policy and Filter PCA_MATED_SITES Server Group Name GTR_SBR_SG_A Server Name GTR_SBR-1A	Allure to comply wi e loss of PCA traff cked out is the Standby S on Menu -> Policy and Cl rver group being upgrade to step 6 until the Resou Charging -> Maintenance Resource D PCA_SESSI Resource HA Role Active	th step 5 and ste ic, resulting in s SBR, execute this step harging->Maintenance d. rce HA Role for the S -> SBR Status	Ep 6 may result in ervice impact ervice impact b. Otherwise, continue with ce->SBR Status. Open Standby server has a status Barbon Standby server has a status Resource Domain Profile Policy and Charging Session Sub Resources Hosted 0.1.2.3.4.5.6.7
Active NOAM VIP: Verify Standby SBR server status	!WARNING! Fa If the server being bac step 6. If the server being bac step 6. 1. Navigate to Main the tab of the ser 2. Do not proceed t of Standby. Main Menu: Policy and Filter PCA_MATED_SITES Server Group Name GTR_SBR_SG_A Server Name GTR-SBR-1A GTR-SBR-1B	Allure to comply wi e loss of PCA traff cked out is the Standby S on Menu -> Policy and Cl rver group being upgrade to step 6 until the Resource Charging -> Maintenance Resource D PCA_SESSI Resource HA Role Active	In step 5 and step ic, resulting in s SBR, execute this step barging->Maintenanded. rce HA Role for the S -> SBR Status omain Name ON Congestion Level Normal	bep 6 may result in ervice impact b. Otherwise, continue with ce->SBR Status. Open Gtandby server has a status resource Domain Profile Policy and Charging Session Sub Resources Hosted 0.1.2.3.4.5.6.7 0.1.2.3.4.5.6.7

Procedure 36: Normal Site Backout

Procedure 36: Normal Site Backout

6 Active NOAM VIP: Execute this Step for PCA installations only: Verify bulk download is complete Verify that bulk download is complete between the Active SBR in the server Group to the Standby and Spare SBRs. 7 Navigate to Main Menu > Alarm & Event > View History Collection Interval: X hours ending in current time, where X is the time from upgrad completion of the Standby and Spare servers to the current time. 7 Backout remaining C- level servers, as applicable Backout the next set of servers. Active DA-MP for 1+1 (Active/Standby) configuration, or · % of all DA-MPs for N+0 (Multi-Active) configuration, Active SRF. 8. Backout the Standby SOAM server Backout the Standby DSR SOAM server: · 1 for the 2 rd Spare Standby) configuration, or · % of all DA-MPs for N+0 (Multi-Active) configuration · Active SRF. 9. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute 6.5, Backout Single Server. 9. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute 6.5, Backout Single Server. 9. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute 8.5 Backout Single Server. 9. Backout the Standby Server (if applicable) Backout the Active DSR SOAM server: Execute Section 6.5 Backout Single Server. 10. Backout Active SOAM Server Backout the Active DSR SOAM server: Execute Section 6.5 Backout Single Server. 11. Active SOAM Server (if applicable) Backout the			
Execute this Step for PCA installations only. From the Active NOAM GUI: Verify built download is complete From the Active NOAM GUI: 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: Nours anding in current time, where X is the time from upgrad completion of the Standby Binding SBR server 3: Wait for the following SBR server 1 for the Standby Binding SBR server 4: 1 for the Standby Session SBR server 1 for the Sare Session SBR server 6: 1 for the 2 rd Spare Binding SBR server 1 for the 2 rd Spare Binding SBR server 6: 1 for the 2 rd Spare Binding SBR server, it equipped NOTE: There is an expected loss of traffic depending on size of the bulk download. This be noted along with events captured. 7: Backout remaining C- level servers, as applicable Backout the next set of servers. The following servers can be backed out in parallel (as applicable) 6: Active DA-MP for 1+1 (Active/Standby) configuration, or ' /s of all DA-MPs for N+0 (Multi-Active) configuration, or 7: X of all DA-MPS for N+0 (Multi-Active) configuration, or ' /s of all DFFEs 8: Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute 8ction 6.5 Backout Single Server. 9: Backout Active SOAM Server (if applicable) Backout the Act	6. <u>Active NOAM VIP:</u>	Verify that bulk download is complete between the Active SBR in the server Group to the	
NOTE: The Size an expected loss of traffic depending on size of the bulk download. This be noted along with events captured. Backout remaining C-level servers, as applicable Backout the next set of servers. The following servers can be backed out in parallel (as applicable) • Active DA-MP for 1+1 (Active/Standby) configuration, or • ½ of all DA-MPs for N+0 (Multi-Active) configuration, or • ½ of all DA-MPs for N+0 (Multi-Active) configuration • Active SBR(s) • ½ of all S37-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all S57-MPs • ½ of all Component the standby DSR SOAM server: Execute Section 6.5 Backout Single Server. 8 Backout Active SOAM Backout the Active DSR SOAM server: Execute Section 6.5 Backout Single Server. Backout the spare SOAM server: Backout the spare SOAM server: Execute Section 6.5 Backout Single Server.	Execute this Step for PCA installations only: Verify bulk download is complete	 Standby and Spare SBRS. From the Active NOAM GUI: Navigate to Main Menu > Alarm & Event > View History 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. Wait for the following instances of Event 31127: 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 Binding SBR server 1 for the Spare Binding SBR server 1 for the 2nd Spare Session SBR server, if equipped 1 for the 2nd Spare Session SBR server, if equipped 	
 Reackout remaining C- level servers, as applicable Backout the next set of servers. The following servers can be backed out in parallel (as applicable) 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 Execute 6.5, Backout Single Server for each C-level server identified above. 8. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute Section 6.5 Backout Single Server. 9. Backout Active SOAM Server Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 10. Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 11. Active SOAM VIP: Enable Site Provisioning 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		NOTE: There is an expected loss of traffic depending on size of the bulk download. This must be noted along with events captured.	
 Execute 6.5, Backout Single Server for each C-level server identified above. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute Section 6.5 Backout Single Server. Backout Active SOAM Server Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. Log into the SOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed Click the Enable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. Verify the button text changes to Disable Site Provisioning 	7. Backout remaining C- level servers, as applicable	 Backout the next set of servers. The following servers can be backed out in parallel (as applicable) 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 	
 8. Backout the Standby SOAM server Backout the Standby DSR SOAM server: Execute Section 6.5 Backout Single Server. 9. Backout Active SOAM Server Backout Active SOAM Server Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 10. Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 11. Active SOAM VIP: Enable Site provisioning 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 		Execute 6.5, Backout Single Server for each C-level server identified above.	
9. Backout Active SOAM Server Backout the Active DSR SOAM server: Execute Section 6.5 Backout Single Server. 10. Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 11. Active SOAM VIP: Enable Site Provisioning Enable Site provisioning 1. Log into the SOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed 3. Click the Enable Site Provisioning button. 4. 4. Confirm the operation by clicking Ok in the popup dialog box. 5.	Backout the Standby SOAM server	Backout the Standby DSR SOAM server: Execute Section 6.5 Backout Single Server.	
10. Backout Spare SOAM Server (if applicable) NOTE: The Spare server is located at the mated site of the site being backed out. Backout Spare SOAM Server (if applicable) Backout the spare SOAM server: Execute Section 6.5 Backout Single Server. 11. Active SOAM VIP: Enable Site provisioning I. 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	9. Backout Active SOAM Server	Backout the Active DSR SOAM server: Execute Section 6.5 Backout Single Server.	
Active SOAM VIP: Enable Site provisioning Enable Site Provisioning 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	10. Backout Spare SOAM Server (if applicable)	NOTE: The Spare server is located at the mated site of the site being backed out. Backout the spare SOAM server: Execute Section 6.5 Backout Single Server.	
 Enable Site Provisioning Log into the SOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed Click the Enable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. Verify the button text changes to Disable Site Provisioning 	11. Active SOAM VIP:	Enable Site provisioning	
	Enable Site Provisioning	 Log into the SOAM GUI using the VIP. Select Status & Manage > Database. The Database Status screen is displayed Click the Enable Site Provisioning button. Confirm the operation by clicking Ok in the popup dialog box. Verify the button text changes to Disable Site Provisioning 	

NOTE: If another site is to be backed out, follow all procedures in Table 15 in another maintenance window.

6.4.2 Normal NOAM Backout

The procedures in this section backout the NOAM servers.

Procedure 37: Normal NOAM Backout

S	This procedure is used to perform a normal backout of the DSR application software from the					
Т	NOAM servers.					
Ē						
P	Check off (\mathbf{v}) 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.	Backout Standby DR	Backout the Standby DR NOAM server:				
	NOAM server (if equipped).	Execute Section 6.5 Backout Single Server.				
2.	Backout Active DR	Backout the Active DR NOAM server				
	NOAM server (if equipped).	Execute Section 6.5 Backout Single Server.				
3.	Backout Standby DSR	Backout the Standby DSR NOAM server:				
	NOAM server (as applicable).	Execute Section 6.5 Backout Single Server.				
4.	Backout Active DSR	Backout the Active NOAM server:				
	NOAM server.	Execute Section 6.5 Backout Single Server.				
5.	Active NOAM VIP:	Enable global provisioning and configuration updates on the entire network				
	Enable Global	1 Log into the NOAM GUL using the VIP				
	Provisioning	2. Select Status & Manage > Database				
	U U	The Database Status screen is displayed.				
		3. Click the Enable Provisioning button.				
		4. Verify the button text changes to Disable Provisioning .				
		THIS PROCEDURE HAS BEEN COMPLETED.				

6.5 Backout Single Server

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



S	This procedure will backout the upgrade of DSR 7.3 application software.			
T E	Check off (\checkmark) each step as it is	completed. Boxes have been provided for this purpose under each step number.		
P #	SHOULD THIS PROCEDURE	FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE		
1	Active NOAM VIP:	Perform the following steps to prepare the server for backout.		
	Prepare the server for backout.	 Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. Select the server group tab containing the server to be backed out. Verify the Upgrade State is 'Accept or Reject'. 		
		Make the server 'Backout Ready' as follows:		
		 Select Status & Manage > HA. The HA status screen displays. Click the Edit button. 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). 		
		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 <u>clear the browser cache</u> . Some GUI forms may exhibit incorrect behaviors if the browser cache is not cleared.		
		 Click the Ok button. The HA status screen displays. Verify the Max Allowed HA Role is set to the desired value for the server. Select Status & Manage > Server. The server status screen is displayed. Select the server to be backed out and click Stop. Click Ok to confirm the operation, then verify the Appl State changes to Disabled. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 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.) 		
2	Server CLI:	Use an SSH client to connect to the server (e.g. ssh, putty):		
	SSH to server	login as: admusr password: <enter password=""></enter>		
		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.		

3	Server CLI:	Execute following command to find the state of the server to be backed out. :				
	Execute the backout	<pre>\$ ha.mystate</pre>				
		In the example output below, the HA state is Standby.				
		[admusr@SO2 ~]# ha.mystate				
		resourceId role node subResources lastUpdate				
		VIP Stby B2435.024 0 0127:113603.435				
		SbrBBaseRepl 00S B2435.024 0 0127:113601.918				
		SbrBindingRes OOS B2435.024 0 0127:113601.918 SbrSBasePep1 OOS B2435.024 0 0127:113601.918				
		SbrSessionRes OOS B2435.024 0 0127.113601.918				
		CacdProcessRes 00S B2435.024 0 0127:113601.918				
		DA_MP_Leader OOS B2435.024 0 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				
		DSROAM Proc OOS B2435.024 0 0127:113805.272				
		If the server being backed out is on release 7.0.1, and the state of the server is Active, then go back to step 1 above.				
		<pre>\$ sudo /var/TKLC/backout/reject</pre>				
		NOTE: If backout prompts to continue, answer "y".				
		(The reject command will create a no-hand-up shell session, so that the command will				
		continue to execute if the user session is lost.)				
		Sample output of the reject script:				
		Applications Enabled.				
		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				
		A reboot of the server is required.				
		The server will be reposted in 10 seconds				
4	Backout proceeds	Many informational messages are output to the terminal screen as the backout proceeds.				
		Finally, after backout is complete, the server will automatically reboot.				
5	Server CLI:	Use an SSH client to connect to the server (e.g. ssh, putty):				
	SSH to server	ssh <server address=""></server>				
		login as: admusr password: <enter password=""></enter>				

	Server CLI:	1. Execute the backout_restore utility to restore the full database run environment:
	Restore the full DB run environment	<pre>\$ sudo /var/tmp/backout_restore</pre>
		NOTE : If prompted to proceed, answer "y".
Í		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:
		<pre>/var/tmp/backout_restore: No such file or directory</pre>
		If this message occurs, copy the file from /usr/TKLC/appworks/sbin to /var/tmp and repeat sub-step 1.
		(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.)
		If the restore was successful, the following will be displayed:
		Success: Full restore of COMCOL run env has completed. Return to the backout procedure document for further instruction.
		If an error is encountered and reported by the utility, it is recommended to consult with MOS by referring to Appendix J of this document for further instructions.
	Server CLI:	1. Examine the output of the following commands to determine if any errors were reported:
	Verify the backout	<pre>\$ sudo verifyBackout</pre>
		The following command will show the current rev on the server:
		\$ 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 Refease: 7.0.0.0.0_80.14.0 Base Distro ISO: TPD.install-7.0.0.0.0 86.14.0-
		OracleLinux6.5-x86_64.iso
		OS: OracleLinux 6.5
Í		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 J of this document for further instructions.
		 If the backout was successful (no errors or failures), then continue with the next step.
	Server CLI:	Enter the following command to reboot the server:
	Reboot the server	S sudo init 6
		y Sudo THEC 0
Í		This step can take several minutes.

9	Server CLI:	If the server being backed out is a NOAM or SOAM, perform this step; otherwise			
	Verify services restart	proceed to step to.			
	(NOAM/SOAM only)	Verify OAM services have restarted.			
		1. Wait several (approx. 6 minutes) minutes for a reboot to complete before attempting to			
		2. SSH to the server and log in.			
		login as admusr			
		password: <enter password=""></enter>			
		3. Execute the following command to verify the httpd service is running:			
		<pre>\$ sudo service httpd status</pre>			
		 The expected output displays httpd is running (the process IDs are variable so the list of numbers can be ignored): 			
		httpd <process be="" here="" ids="" listed="" will=""> is running</process>			
		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 J of this document for further instructions.			
10	Active NOAM VIP:	Verify server state.			
	Verify server states	1. Select Administration > Software Management > Upgrade to observe the server			
	Verify Server States	upgrade status.			
		If the Active NOAM is on release 7.1.1 or later:			
		2. If the server status is Not Ready , proceed to step 11; otherwise proceed to step 13.			
		If the Active NOAM is on release 7.0.1			
		2. If the server status is Ready , proceed to step 12;			
		otherwise proceed to step 13.			
11	Active NOAM VIP:	Modify the backed out server to transition the Upgrade State to Ready .			
	Correct Upgrade State	1. Select Status & Manage > HA			
	on backed out server	The HA status screen is displayed.			
	For Active NOAM on	 Select the backed out server and choose a Max Allowed HA Role value of Active (unless 			
	release 7.1.x or later	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			
		6. Select Status & Manage > Server.			
		The Server status screen is displayed. 7. If the Appl State of the server to be backed out is Disabled , select the server and click			
		Restart. Click Ok to confirm the operation. Verify the Appl State updates to Enabled.			
		The Upgrade Status screen is displayed.			
		 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.) 			
		Proceed to step 13 to complete this procedure.			

2	Active NOAM VIP:	Remove Upgrade Ready status						
	Remove Libarade		1 Log into the NOAM CLIL using the VIP					
	Ready status	Log into the NOAM GUI using the VIP. Select Status & Manage > Server						
			The Server Stat	tus screen is d	isplayed.			
	For Active NOAM on release 7.0.1 only	3.	If the server jus row and press t	t backed-out s he Stop buttor	hows an " App n.	I State" of "E	Enabled",	, then select the server
		M	lain Menu: Statu	s & Manage -	> Server			
			Filter -					
		1	letwork Element		Server Hos	stname		Appl State
		E	EVONOAMP1		EVO-NO-1			Enabled
		E	EVONOAMP1		EVO-NO-2			Enabled
		E			EVO-SO-S	p		Enabled
		t F			EV0-S0-1			Enabled
			27000/100142		210 00 2			000
			Stop Restart Rebo	NTP Sync	Report			
	Active NOAM VIP:	CI	nange the upgrade	e state for the t	backed out ser	ver.		
				tration - C-f	wara Manaara	mont, lle	a da	
	on backed out server	1.	The Upgrade A	dministration s	creen is displa	aved.	ade.	
			nie epgiaae /			.) • • • •		
	For Active NOAM on release 7.0.1 only	2.	If the server jus select the back	t backed-out s ed-out server a	hows an Upgra and press Con	ade State of " n plete.	Ready" o	r " Success ", then
			Otherwise, ski	p to step 13.				
			lain Manue Admin	istration > C	oftware Nan	agement b	Ingrada	
		Main Menu: Administration -> Software Management -> Upgrade						
			Filter 🔻 Tasks 👻					
			NO_SG MP_SG	SO_SG				
				Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
			Hostname	Server Status	Max Allowed HA Role	Network Element		Upgrade ISO
			NO1	Not Ready Warn	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.12.0
			NO2	Ready Warn	Standby Standby	Network OAM&P NO DSR VM	OAM&P	6.0.0-60.12.0
		3.	The Upgrade [Complete] scr	een will appea	r. Leave the A	Action set	to hte default value of
		4	Complete. Click OK. This	will update the	Max Allowed	HA Role of th	ne hacked	I-out server to Active
			which will cause	e the server's l	Jpgrade State	to move to N	ot Ready	l.
		Ma	ain Menu: Administration	-> Software Manag	ement -> Ungrade	[Complete]		
				> Software Manag	chiene > opgruue	[complete]	Fr	i Nev 15 15:06:53 20
		Ho	stname Action HA Sta	itus				
		NO	2 Complete Max H Stand	tA Role Active Mates	Standby Mates None	Spare M None	Aates	
					Ok			
		Th	e following SOAP	error may app	ear in the GUI	banner:		
			SOAP er	ror while o	learing up	arade stat	us of	
			hostname	e=[frame103	11b6] ip=[:	172.16.1.2	8]	
		lt	is safe to ignore th	is error messa	ige.			

14	Active NOAM VIP: Verify application version	 Select Administration > Software Management > Upgrade The Upgrade screen is displayed Select the Server Group tab for the server that was backed out. Verify the Application Version value for this server has been downgraded to the original release version.
15	Procedure Complete	The single server backout is now complete. Return to the overall DSR backout procedure step that directed the execution of this procedure.
		THIS PROCEDURE HAS BEEN COMPLETED.

6.6 Backout Multiple Servers

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



This procedure will backout the upgrade of DSR 7.3 application software for multiple servers. Any server requiring backout can be included: DA-MPs, SS7-MPs, IPFEs and SBRs.			
Check off (\checkmark) 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			
Active NOAM VIP:	If the Active NOAM is on release 7.1.1 and later, perform this step; otherwise, proceed to step 2.		
Prepare the server for backout.	Perform the following steps to prepare the server for backout.		
For Active NOAM on release 7.1.1 and later	 Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. Select the server group tab containing the server to be backed out. Verify the Upgrade State is 'Accept or Reject'. 		
	Make the server 'Backout Ready' as follows:		
	 Select Status & Manage > HA. The HA status screen displays. Click the Edit button. 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). 		
	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.		
	 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. 		
	 Select the server to be backed out and click Stop. Click Ok to confirm the operation, then verify the Appl State updates to Disabled. Select Administration > Software Management > Upgrade. The Upgrade Administration screen is displayed. 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.) 		
Server CLI:	Use an SSH client to connect to the server (e.g. ssh, putty):		
Login to the server(s)	ssh <server address=""> login as: admusr password: <enter password=""></enter></server>		
	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.		

Procedure 39	Backout Multi	ple Servers
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3	Server CLI:	Determine the state of the server to be backed out. The server role must be either Standby or		
	Execute the backout	Spare. Execute following command to find the state :		
		\$ ha.mvstate		
		In the example output below, the HA state is Standby.		
		[admusr@SO2 ~1# ba.mystate		
		resourceId role node subResources lastUpdate		
		DbReplication Stby B2435.024 0 0127:113603.435		
		VIP Stby B2435.024 0 0127:113603.438		
		SDFBHASEREPI 005 B2435.024 0 0127:113601.918 SbrBindingPag 005 B2435.024 0 0127:113601.918		
		SbrSBaseRepl OOS B2435.024 0 0127:113601.918		
		SbrSessionRes OOS B2435.024 0 0127:113601.918		
		CacdProcessRes 00S 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		
		FXGSTACK 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		
		If the state of the server is Active, then return to step 1 above.		
		<pre>\$ sudo /var/TKLC/backout/reject</pre>		
		NOTE : If backout prompts to continue, answer " y ".		
		(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.)		
		Sample output of the reject script:		
		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		
4	Server CLI:	Many informational messages are output to the terminal screen as the backout proceeds		
	Backout proceeds	Finally after backout is complete the convertient automatically report		
	Backoul proceeds			
5	Repeat for each server	Papezt staps 1 through 4 for each server to be backed out		
	to be backed out.			
6	Login to the server	Use an SSH client to connect to the server (e.g. ssh, putty):		
		<pre>ssh <server address=""></server></pre>		
		login as: admusr password: <enter password=""></enter>		

7	Server CLI:	1. Execute the backout_restore utility to restore the full database run environment:
	Restore the full DB run	<pre>\$ sudo /var/tmp/backout_restore</pre>
	environment	If prompted to proceed, answer "y".
		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:
		<pre>/var/tmp/backout_restore: No such file or directory</pre>
		If this message occurs, copy the file from /usr/TKLC/appworks/sbin to /var/tmp and repeat sub-step 1.
		(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.)
		If the restore was successful, the following will be displayed:
		Success: Full restore of COMCOL run env has completed. Return to the backout procedure document for further instruction.
		If an error is encountered and reported by the utility, it is recommended to consult with MOS by referring to Appendix J of this document for further instructions.
	Server CLI:	
	Verify the backout	1 . Examine the output of the following commands to determine if any errors were reported:
		<pre>\$ sudo verifyBackout</pre>
		The following command will show the current rev on the server:
		\$ appRev
		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
		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 J of this document for further instructions
		 If the backout was successful (no errors or failures), then continue with the next step.
	Server CLI:	Enter the following command to reboot the server:
	Reboot the server	<pre>\$ sudo init 6</pre>
		This step can take several minutes.

10	Server CLI:	If the server being backed out is a NOAM or SOAM, perform this step; otherwise proceed to step 11.
	Verify services restart (NOAM/SOAM only)	Verify OAM services have restarted:
		 Wait several (approx. 6 minutes) minutes for a reboot to complete before attempting to log back into the server. SSH to the server and log in.
		login as: admusr password: <enter password=""></enter>
		3. Execute the following command to verify the httpd service is running.
		<pre>\$ sudo service httpd status</pre>
		 The expected output displays httpd is running (the process IDs are variable so the list of numbers can be ignored):
		httpd <process be="" here="" ids="" listed="" will=""> is running</process>
		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 J of this document for further instructions.
11	Repeat for each server backed out	Repeat steps 6 through 10 for each server backed out.
12	Active NOAM VIP:	Verify server state is correct after the backout.
	Verify server states	 Select Administration > Software Management > Upgrade to observe the server upgrade status.
		 If the Active NOAM is on release 7.1.1 or later: 2. If the server status is Not Ready, proceed to step 13; otherwise proceed to step 16.
		 If the Active NOAM is on release 7.0.1: 3. If the server status is Ready, proceed to step 14; otherwise proceed to step 16.
13	Active NOAM VIP:	Modify the backed out server to transition the Upgrade State to Ready.
	Correct Upgrade State on backed out server	 Select Status & Manage > HA The HA status screen is displayed.
	For Active NOAM on release 7.1.1 or later	 Click the Edit button. 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). Click the Ok button. The HA status screen is displayed. Verify the Max Allowed HA Role is set to the desired value for the server. Select Status & Manage > Server. The Server status screen is displayed. Select the server being backed out and click Restart. Click Ok to confirm the operation. Verify the Appl State updates to Enabled. Select Administration > Software Management > Upgrade;
		 The Upgrade Status screen is displayed. 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.)
		Proceed to step 16 to complete the procedure.

4	Active NOAM VIP:	Rer	move Upgrade I	Ready status				
	Remove Upgrade Ready status	 Log into the NOAM GUI using the VIP. Select Status & Manage > Server. 						
	For Active NOAM on release 7.0.1 only	3. 4.	The Server St If the servers j server rows an Click OK on th	atus screen is o just backed-out nd press the St ne confirmation	displayed. show an " App op button. dialog box.	I State" of Er	nabled, th	nen multi-select the
			ain Manu Stat	us 9 Nanaga	> Convor			
			ani menu: stat	us & Mallaye	-> Server			
			Filter 🔻					
		Ne	etwork Element		Server Hos	stname		Appl State
		EV	ONOAMP1		EVO-NO-1			Enabled
		EV	ONOAMP1		EVO-NO-2			Enabled
		EV	OSOAMNE		EVO-SO-S	D		Enabled
		EV	OSOAMNE		EVO-SO-1			Enabled
		EV	OSOAMNE		EVO-SO-2			Enabled
			Stop Restart Re	boot NTP Sync	Report			
	Active NOAM VIP:	Cor	rrect the upgrad	e status on the	backed out se	rver.		
			ine apgraa					
	Correct Upgrade State on backed out server	1.	Select Admin The Upgrade	istration > Sof Administration	tware Manage screen is displa	ment > Upgr ayed.	ade.	
	For Active NOAM on release 7.0.1 only	2.	If the servers j select the bac	ust backed-out ked-out server	show an Upgra and press the (ade State of " Complete but	Ready " o ton.	or " Success ", then
	-							
			If the servers j	ust backed out	show an Upgra	ade State of "	Not Read	dy", then proceed to
			step 10.					
		Ma	ain Menu: Admi	nistration -> S	oftware Mana	ngement -> l	Jpgrade	
			Filter 🔻 Tasks 🔻			-		
			NO SG MP SG	80.86				
				Ungrade State		Server Pole	Function	Application Version
			Hostname	Opyrade State	Max Allowed	Server Kole	Function	
				Server Status	HA Role	Network Element		Upgrade ISO
		1	N01	Not Ready Warn	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.12.0
			NO2	Ready	Standby	Network OAM&P	OAM&P	6.0.0-60.12.0
			1102	Warn	Standby	NO_DSR_VM		
		3.	The Upgrade	[Complete] sc	reen will appea	r. Leave the A	Action set	t to hte default value of
		4.	Click OK. Thi	s will update th	e Max Allowed	HA Role of th	e backed	d-out server to Active.
			which will cau	se the server's	Upgrade State	to move to N	ot Ready	<i>j</i> .
		Mair	n Menu: Administratio	on -> Software Mana	gement -> Upgrade	Complete]		e
		Inf	0 -				Fi	ri Nov 15 15:06:53 20
		Hostname Action HA Status						
		NO2	Complete - Si	ax HA Role Active Mates andby NO1	Standby Mates None	Spare M None	ates	
					Ok			
		The following SOAP error may appear in the GUI banner:						
		SOAP error while clearing upgrade status of						
			hostnar	me=[frame10	311b6] ip=[:	172.16.1.2	8]	
		It is	safe to ignore	this error mess	age.			
					0			

16	Active NOAM VIP: Verify application version	 Verify the application version of the backed out server. Select Administration > Software Management > Upgrade The Upgrade screen is displayed Select the Server Group tab for the server that was backed out. Verify the Application Version value for this server has been downgraded to the original release version. 	
17	Procedure Complete	The multiple server backout procedure is now complete. Return to the overall DSR backout procedure step that directed the execution of this procedure.	
		THIS PROCEDURE HAS BEEN COMPLETED.	

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 40: Post-Backout Health Check

S T F	This procedure performs a basic Health Check of the DSR to verify the health of the system following a backout.			
P	Check off (\checkmark) each step as it is	s 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.	Active NOAM VIP:	Verify Server Status is Normal		
	Verify Server Status is Normal	 Log into the NOAM GUI using the VIP. Select Status & Manage > Server. The Server Status screen is displayed. Verify Server Status is Normal (Norm) for Alarm (Alm), Database (DB) and Processes (Proc). Do not proceed with the upgrade if any server status is not Norm. Do not proceed with the upgrade if there are any Major or Critical alarms. NOTE: It is recommended to troubleshoot if any server status is not Norm. A backout should return the servers to their pre-upgrade status. 		
2.	Active NOAM VIP: Log all current alarms	 Log all current alarms in the system: Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. Click the Report button to generate an Alarms report. Save the report and print the report. Keep these copies for future reference. 		
		THIS PROCEDURE HAS BEEN COMPLETED.		

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 41: Oracle Server Backout

S	This procedure performs a backout of the Oracle server.					
T E	Check off (\checkmark) each step as it is completed. Boxes have been provided for this purpose under each step number.					
P #	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.					
#						
1	Oracle Server CLI	Use an SSH client to connect to the Oracle server (e.g. ssh, putty):				
	Login to the server	ssh <server address=""></server>				
		password: <enter password=""></enter>				
2	Oracle Server CLI	Execute the following commands to back out the server.				
	Backout the server	<pre>sudo /opt/xIH/plat/bin/db_rollback.sh MED</pre>				
		<pre>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 [7]
7 APPENDICES

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

WARNING!!

Detailed steps for accepting the upgrade are shown 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.



UPGRADE ACCEPTANCE MAY ONLY BE EXECUTED WITH AUTHORIZATION FROM THE CUSTOMER.

THE USER SHOULD BE AWARE THAT ONCE UPGRADE HAS BEEN ACCEPTED, IT WILL NOT BE POSSIBLE TO BACKOUT TO THE PREVIOUS RELEASE.

Procedure 42: Accept Upgrade

S T	This procedure accep	This procedure accepts a successful upgrade.				
E P	Check off (\checkmark) each step as it is	completed. Boxes have been provided for this purpose under each step number.				
#	SHOULD THIS PROCEDURE	L, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.				
1.	It is recommended that	Verify that the upgraded system has been stable for two weeks or more.				
	performed two weeks after the upgrade.	TE: It will not be possible to backout after this is procedure is executed.				
2.	Active NOAM VIP:	Log all alarms before accepting the NOAM upgrade.				
	Execute this Step if accepting a NOAM server. Log all current alarms present at the NOAM.	 Log into the NOAM GUI. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. Click the Report button to generate an Alarms report. Save the report and/or print the report. Keep these copies for future reference. 				
		All other upgraded servers will have the following expected alarm: Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)				
3.	Active SOAM VIP:	Log all alarms before accepting the SOAM upgrade.				
	Execute this Step if accepting a SOAM server.	 Log into the SOAM GUI. Select Alarms & Events > View Active. The Alarms & Events > View Active screen is displayed. 				
	Log all current alarms present at the SOAM.	 Click the Report button to generate an Alarms report. Save the report and/or print the report. Keep these copies for future reference. 				
		All other upgraded servers will have the following expected alarm: Alarm ID = 32532 (Server Upgrade Pending Accept/Reject)				

Active NOAM VIP:	Accept the upgrad	de in multiple se	ervers.				
Accept upgrade for multiple servers	 Log into the l Select Admi The Upgrade Select the se upgrade is to reboot. Click the Acc 	NOAM GUI usir nistration >So e Administration erver Groups tab b be accepted, c cept button	ng the VIP. ftware Manag screen is disp os and select t considering tra	ement >Upg blayed. he servers (u ffic, as Accep	rade. sing the ot upgrad	Ctrl button) for which le may lead to a server	
	Filter - Tasks	•	Software ma	nugement 2	opgrat		
	Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version	
	NO2	Accept or Reject	Appl Max HA Role Standby N/A	Network Element	OAM&P	7.1.0.0.0-71.11.0 DSR-7.1.0.0.0 71.11.0-x86 64.iso	
	NO1	Accept or Reject Warn	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.11.0	
	Backup Upgrade Se	erver Accept Rep	ort Report All				
	 A confirmation back to the p Click Ok. 	on dialog will wa previous image s	irn that once a state.	ccepted, the	server w	ill not be able to revert	
	The Upgrade Administration screen re-displays.						
	The Alarms & Events > View Active screen displays.						
	As upgrade i Upgrade Pe	is accepted on e nding Accept/I	each server, th Reject) should	e correspond automaticall	ling Alarr y clear.	m ID - 32532 (Server	
Accept upgrade of the rest of the system	Repeat step 4 unt	til the upgrade c	of all Servers w	vithin the syst	em has l	been accepted.	
rest of the system	Repeat step 4 unt	til the upgrade o	of all Servers w	vithin the syst	em has l	been accepted.	

Procedure 42: Accept Upgrade

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 43: Undeploy ISO

S T	This procedure unde	ploys an ISO from the DSR servers.
E P	Check off (\checkmark) 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.	Active NOAM VIP:	View the files in the File Management Area on the Active NOAM.
	View files	1. Log into the NOAM GUI using the VIP.
		 Select Status & Manage > Files. The Files screen is displayed
2.	Active NOAM VIP:	Start the ISO undeploy sequence.
	Start ISO undeploy	1. Select an ISO that is stored in the isos directory of the File Management Area. The ISO filename will have the format:
		isos/DSR-7.3.0.0.0_73.12.0-x86_64.iso
		 Click the Undeploy ISO button. Click OK in the confirmation dialog hav to start the undeploy sequence.
		After clicking Ok the Status & Manage > Files screen will refresh.
3.		Monitor the ISO undeploy progress.
	Monitor progress	1. Select the ISO being deployed in step 2.
	Monitor progress	 Click the View ISO Deployment Report button. If some servers show the ISO as "Deployed" click the Back button on the Files [View]
		page
		4. Periodically repeat sub-steps 1 thru 3 until all servers indicate "Not Deployed".
		Main Menu: Status & Manage -> Files [View]
		Main Menu: Status & Manage -> Files [View] Mon Jun 13 12:27:31 2016 UTC
		Deployment report for DSR-7.3.0.0.0_73.12.0-x86_64.iso:
		Deployed on 5/7 servers.
		NO1: Not Deployed
		SO1: Not Deployed
		SO2: Deployed MP1: Deployed
		MP2: Deployed IPFE: Deployed
		Print Save Back
4		
4.	Active NOAM VIP:	 If there are additional ISOs in the File Management Area that need to be undeployed, repeat steps 2 and 3 as pecessary.
	Repeat as necessary	repeat steps 2 and 3 as necessary.

Appendix A.3. PCA Post Upgrade Procedure

CAUTION

THIS PROCEDURE IS FOR PCA SYSTEMS ONLY!

Procedure 44 must be executed on PCA systems after the upgrade to DSR 7.3 is Accepted. Do not run this procedure until *after* Procedure 42 has been completed. This procedure executes the PCA top level activation script to remedy a potential PCA activation issue from earlier releases.

Procedure 44: PCA Post Upgrade Procedure

S T	This procedure executes the PCA top level activation script.						
E P	Check off (\checkmark) each step as it is	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.	Active NOAM CLI:	Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the					
	Log into the Active						
	NOAM	ssh admusr@ <noam_vip></noam_vip>					
2.	Active NOAM CLI	Execute the top level PCA script:					
	Run PCA activation script	/usr/TKLC/dsr/prod/maint/loaders/activate/load.pcaActivationTopLev el					
		At the completion of the activation script, the following message is output:					
		Execution of PCA Activation Script complete.					
3.	Active NOAM CLI	Execute the following command to reset the initialization caches:					
	Clear cache	clearCache					
		THIS PROCEDURE HAS BEEN COMPLETED.					

Appendix B. COMMAND OUTPUTS

Not Applicable.

Appendix C. PCRF POOLING MIGRATION CHECK

If the PCA application has been activated and the PDRA feature has been enabled, a check of the PCRF Pooling Migration is **REQUIRED** prior to the start of a major upgrade to DSR 7.3.

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

Follow the steps in Procedure 45 to execute the PCRF Pooling Migration Check:

Note: If the PCRF Pooling Migration is NOT complete, this check must be repeated until PCRF Pooling Migration Tool indicates that the migration is complete.

Procedure 45: PCRF Pooling Migration Check

S T F	This procedure checks the PCRF Pooling Migration status to determine if the migration is complete.								
P	Check off (\checkmark) each ste	ep as it is	completed. Boxes have been provided	d for this purpose under each step number.					
#	SHOULD THIS PROC	PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.							
1.	Download PCRF Pooling Migration T	ΓοοΙ	Download the PCRF Pooling M status of the PCRF pooling mig	igration Tool from MOS. The tool is used to determin ration.	e the				
	 Navigate to the MOS site at <u>https://support.oracle.com/</u> and sign in. Select the Patches & Updates tab In the Patch Search window, select the Product or Family (Advanced) tab on left. Use the following search criteria to locate and download the migration tool (as shown in the figure below): Product is: Oracle Communications Diameter Signaling Router (DSR) Release is: Oracle Communications Diameter Signaling Router (DSR) 7.1.0.0.0 Note: The 7.1 Migration Tool is also valid for DSR 7.3. Description contains: Pooling Migration 								
	Patch Search				9				
	Search Saved Sear	rches R	ecent Searches						
	Number/Name or Bug Number (Simple)	and	Product (2) is						
	Product or Family (Advanced)	and [escription v Ø contains v	Pooling Migration					
	Recommended Patch Advisor			Show recommended patches only Exclude superseded patches					
	JD Edwards Patches	Clear	Save		Search				
	-								
2.	Copy the PCRF Po Migration Tool	oling	Copy the PCRF Pooling Migrati	on Tool to the Active NOAM. admusr@ <active_noam></active_noam>					
3.	SSH to the Active NOAM		Using a SSH tool, login to the A ssh admusr@ <noam_vip></noam_vip>	ctive NOAM server.					
4.	Active NOAM CLI:	:	Move the patch file to the worki	ng directory:					
	Move the patch file	•	sudo mv <patchfilename></patchfilename>	/usr/TKLC/dsr/tools					

Procedure 45: PCRF Pooling Migration Check

5.	Active NOAM CLI:	Change directories using the following command:
	Change directory to the PCA tool directory	cd /usr/TKLC/dsr/tools/
6.	Active NOAM CLI:	Unzip the PCRF Pooling Migration Tool using the "unzip" command.
	Unzip the patch	Example.
		<pre>sudo unzip <patchfilename></patchfilename></pre>
7.	Active NOAM CLI:	Check the PCRF Pooling Migration Status using the following command:
	Check the PCRF Pooling Migration Status	./verifyPCRFPoolingMigration.shcheckPCRFPoolingMigrationStatus
		Sample output: Preparing log directory
		Creating log directory
		Logging is started in /var/TKLC/log/migrationStatusToolLogs/migrationStatusTool.log Preparation of log directory done.
		======================================
		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 optionverifyUpgradeAllowed to check if upgrade is allowed or not.
		======================================
8.	Active NOAM CLI:	After executing the PCRF Pooling Migration tool, determine if the PCRF Pooling Migration has completed using the following command:
	Verify that PCRF Pooling Migration is complete	./verifyPCRFPoolingMigration.shverifyUpgradeAllowed
	ostipioto	Note: This command will inform the user if the PCRF Pooling Migration has completed.
		If PCRF Pooling Migration is complete, the command will print the following output: "Upgrade is allowed."
		If PCRF Pooling Migration is NOT complete, the command will print the following output: "Upgrade is not allowed."

Procedure 45: PCRF Pooling Migration Check

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: ./verifyPCRFPoolingMigration.shestimateMigrationCompletionTime Note: Once complete, this command will output the estimated PCRF Pooling Migration in Days, Hours, Minutes and Seconds. Example:
	Example: Estimated total time for migration completion for all binding servers is: 3 days 4 hours 45 minutes 34 seconds.
	THIS PROCEDURE HAS BEEN COMPLETED.

Appendix D. UPGRADE SINGLE SERVER – UPGRADE ADMINISTRATION

This Appendix provides the procedure for upgrading a DSR single 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 D to mark up, or keep another form of written record of the steps performed.

S T	This procedure execut	es the Upgrade Sing	le Server – Uj	pgrade Admin	nistration step	os.				
Ē	Check off (1) each step as it	t is completed. Boxes hav	e been provided	for this purpose u	under each step r	umber.				
#	SHOULD THIS PROCEDUR	E FAIL, IT IS RECOMMEN	., IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.							
1	Active NOAM VIP:	View the pre-upgrade	status							
	View the pre-upgrade status of Servers	 Log into the NO/ Select Adminis The Upgrade Ad The Active NOAM see Alarm ID = 10008 (Alarm ID = 32532 (AM GUI using th tration > Softw Iministration scr rver may have s (Provisioning N (Server Upgrad	ne VIP vare Managem een is displaye some or all of th Manually Disat le Pending Act	ent > Upgrade d (example be ne following exp bled) cept/Reject)	low): bected ala	ırms:			
]			
		Main Menu: Administration -> Software Management -> Upgrade								
		Filter ▼ Tasks ▼								
		NO_SG IPFE_SG	MP_SG SO_SG							
		Hostname	Upgrade State Server Status	OAM Max HA Role	Server Role	Function	Application Version			
		NO1	Ready	Active	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0			
		NO2	Ready	Standby	Network OAM&P	OAM&P	7.1.1.0.0-71.31.0			
		Backup Backup All	Auto Upgrade	Accept Report	Report All					
2	Verify status of Server	For the server to be u	ipgraded:							
	to be upgraded	 Identify the serve name) Verify the Applic From the Admin 	er (NOAM, SOA ation Version va aistration > Sof	M, MP, etc) alue is the expe tware Manage	cted source so ment > Upgrad	ftware rele de screen	(record ease version. a, select the Server			
		Group of the ser	ver to be upgrad	ded.						

	Main Menu: Administration -> Software Management -> Upgrade					
	Filter 🔻 Tasks 💌					
	NSX_NO_SG GT	TR_MP_SG GTR_	_SBR_SG_A GTR	_SBR_SG_B GTR_S	30_SG N	NSX_IPFE_A NSX_IPFE_B N
		Upgrade State	OAM Max HA Role	Server Role Fu	nction A	Application Version
	Hostname	Server Status	Max Allowed HA Role	Network Element	ι	Jpgrade ISO
	GTR-MP-01	Backup Needed	Spare Active	MP DS GTR_SOAM_NE	BR (multi- tive 7 ister)	7.0.0.0.0-70.7.0
	GTR-MP-02	Backup Needed	Spare Active	MP ac GTR SOAM NE	SR (multi- tive 7 ister)	7.0.0.0.0-70.7.0
	GTR-MP-03	Backup Needed	Spare	MP ac clu	SR (multi- tive 7 ister)	7.0.0.0.0-70.7.0
	GTR-MP-04	Backup Needed	Spare	MP ac clu	SR (multi- tive 7 ister)	7.0.0.0.0-70.7.0
Active NOAM VIP:	(this will depe For Active NOAM of When the backup is Perform steps 3 th For Active NOAM of When the backup is Proceed to step 11 This step is for an	on release 7. s complete, ve aru 10. on release 7. s complete, ve 1. Active NOAM	ver being upg 0.1: rify the server 1.1 or later: rify the server 1 on release	raded) state changes t state changes t 7.0.1 only.	o "Not R o "Read	Ready". y".
Prepare Upgrade (step 1)	For the server to be	e upgraded:	the server 'I Ir	ograde Ready' h	w select	ing the server to be
For Active NOAM on release 7.0.1 only	upgraded, and (In this example, an	NOAM with r	Prepare butto	ill be made read	ly for Up	grade)
	Main Menu: Adm	ninistration -	-> Software	Management	-> Upgi	rade
	Filter - Tasks -			-		
		MP 00 00	2.80			
	NO_30 IFFE_SG	Ungrado State		Role Server Polo	Function	on Application Version
	Hostname	Server Status	Max Allowed	Network Eleme	nt	Upgrade ISO
	N01	Not Ready	HA Role Standby	Network OAM&F	P OAM&	P 6.0.0-60.24.0
	NO2	Norm Not Ready	Active Active	NO_DSR_VM Network OAM&F	OAM&	P 6.0.0-60.24.0
	NO2	Norm	Active	NO_DSR_VM		
	Backup ISO Cleanu	Prepare Init	tiate Complete	Accept Report	Report All	•••

_									
4	Active NOAM VIP:	This step is for an Active NOAM on release 7.0.1 only.							
	Prepare Upgrade (step 2)	Prepare the server for upgrade.							
	For Active NOAM on	The Upgra	ade [Prepare] form	n is displayed					
	release 7.0.1 only	Main Ma		ion > Coft	wara Managama	nt > Ungrada [Dranara]			
Main Menu: Administration -> Software Management -> Opgrade [Pr									
		Hostname	Action	HA Status					
				Max HA Role	Active Mates	Standby Mates			
		NO1	Prepare •	Standby	NO2	None			
						Ok Cancel			
		Ear the M							
		1. Verify	the selected serve	er status is th	e expected condition	tion (either Standby or Active)			
		(this v	will depend on the	server being (upgraded)				
		2. If the	state of the server	e server to be upgraded is as expected, select Ok					
		NOTE: WI	hen the Active NO	AM is the se	erver being upgrad	ded, selecting OK will initiate			
		OAM agai	n, close and re-op	pen the brow	ser using the VIP	address for the NOAM, and			
		then clear the browser cache. Some GUI forms may exhibit incorrect behaviors if the							
		DIOWSEL	ache is not cleare	.					
			he colocted conve	ric the estiv	o convor in an Aot	ive/Standby pair the May HA			
		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 th	he Make Ready action WILL			
		cause an	HA SWITCHOVER.						
		<u> </u>							

1 I Occulte 40. Opgi aue Single Server – Opgi aue Auministi auon	Procedure 46:	Upgrade	Single Server	- Upgrade	Administration
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Active NOAM VIP:	This step is for a	an Active NOAM c	on release 7.0.	1 only.		
Verify upgrade status is "Ready	Verify the server u	upgrade status is r	eady.			
For Active NOAM on	Upon preparing the server to be upgra	ne selected server, aded will show Upg	the Upgrade A grade State = R	dministration f eady (This ma	ⁱ orm will r ay take a	efresh, and the minute)
release 7.0.1 only						
	Main Menu: Ac	Iministration ->	Software Ma	nagement ->	• Upgrad	e
	Filter - Tasks	•				
	NO_SG IPFE_S	SG MP_SG SO_S	G			
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version
	Hostname	Server Status	Max Allowed HA Role	Network Element		Upgrade ISO
	NO1	Ready Warn	Standby Standby	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0
	NO2	Not Ready Err	Active Active	Network OAM&P NO_DSR_VM	OAM&P	6.0.0-60.24.0
						000
	Васкир 150 Стеа	anup Prepare Initiate	Complete Acc	ерт кероп к	eport All	
	Depending on the	server being ungr	adad naw alar	ms may occur		
	Depending on the	server being upgr			•	
	Servers may have have all alarms:	e a combination of	the following ex	pected alarms	s. NOTE	: Not all servers
	Alarm ID = 10	008 (Provisioning	y Manually Dis	abled)		
	Alarm ID = 10	073 (Server Grou	p Max Allowed	HA Ŕole Wa	rning)	. ,.
	Alarm ID = 10 processe	s have been man	s no longer pro ually stopped)	oviding servi	ces beca	use application
	Alarm ID = 32	515 (Server HA F	ailover Inhibite	ed)	. ,	
	Alarm ID = 31 (Lost Cor	228 (HA Highly av nmunication with	vailable server Mate Server)	failed to reco	eive mate	• heartbeats) or
	Alarm ID = 31	101 (DB Replicat	ion to slave DE	3 has failed)		
	Alarm ID = 31 Alarm ID = 31	107 (DB Merge Fi 106 (DB Merge to	om Child Failur	ure) e)		
				-,		
4	1					

Active NOAM VIP:	This step is for an Active NOAM on release 7.0.1 only.								
Initiate Upgrade (part 1)	Initiate the upgrade on the server.								
For Active NOAM on release 7.0.1 only	 From the Upgrade Administration screen, select the server to be upgraded. Click the "Initiate" button 								
	Main Menu: Administration -> Software Management -> Upgrade								
	Filter - Tasks -	,							
	NO SG IPFE SG	MP SG SO S	G						
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version			
	Hostname	Server Status	Max Allowed	Network Element		Upgrade ISO			
	NO1	Ready	Standby	Network OAM&P	OAM&P	6.0.0-60.24.0			
		Warn Not Ready	Standby Active	NO_DSR_VM	OAM&P	6 0 0-60 24 0			
	NO2	Err	Active	NO_DSR_VM					
	Backup ISO Cleanu	p Prepare Initiate	e Complete Acco	ept Report Re	eport All	000			
Active NOAM VIP:	This step is for an	Active NOAM of	on release 7.0.1	only.					
Initiate Upgrade (part 2)	Initiate the upgrade	on the server.							
For Active NOAM on release 7.0.1 only	The Initiate Upgrad	e form will be dis > Software Man	played: agement > Up	grade [Initiat	e]				
<u> </u>	1. In the Upgrade	e Image – Upgra	ade ISO pick list	t, select the IS	SO to use	in the server			
	upgrade, 2 Click the Ok b	utton The ungra	de will begin an	d control will r	eturn to th	e l Ingrade			
	Administration	screen.	ue will begin an			le opgrade			
	Main Menu: Adminis	stration -> Softwa	re Management	-> Upgrade [In	itiate]				
	Main Menu: Administration -> Software Management -> Upgrade [Initiate]								
	Hostiana Action								
	NO1 Start	upgrade 🔻		Network E	Element Server	Group Application Version 6 6.0.0-60.24.0			
	Upgrade Image								
	Upgrade ISO DSR	-7.1.0.0.0_71.11.0-x86_64.i	so T	Select the d	esired upgrade IS	SO media file.			
				en ester					

Procedure 40: Upgrade Single Server – Upgrade Administra	tion
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Active NOAM VIP:	This step is fo	or an Active	NOAM on r	elease 7.0	1 only.				
View In-Progress Status (monitor)	View the Upgrade Administration form to monitor upgrade progress.								
For Active NOAM on release 7.0.1 only	See step 14 for an optional method of monitoring upgrade progress.								
	See step 15 be minutes.	elow for instr	uctions if the	e Upgrade f	ails, or	if execution tin	ne exce	eeds 60	
	NOTE: If the up original softwar The execution there was a pro	ograde proce re release. I time may be oblem.	essing enco n this case, shorter or le	unters a pro the Upgrad onger, depe	oblem, i e will b ending d	t may attempt e shown as "F, on the point in	to ROI AILED the up	L BACK to the ". grade where	
	1. Observe the Upgrade State of the server of interest. Upgrade status will be displayed under the Status Message column.								
	Main Menu: Adn	ninistration ->	• Software Ma	nagement ->	• Upgrad	le			
	Filter - Status -	Tasks							
	NO_SG IPFE_SG	MP_SG SO_SG	OAM Max HA Role	Server Role	Function	Application Version		Start Time	
	Hostname	Server Status	Appl Max HA Role	Network Element	0.1105	Upgrade ISO		Status Message	
	NO2	Upgrading	N/A	No_DSR_VM	OAM&P	DSR-7.1.0.0.0_71.8.1-x	86_64.iso	Upgrade is in progress	
	N01	Ready Err	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.6.0			
	Not Ready No.DSR_VM Active No.DSR_VM OLMSP 71.00.0-716.0 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 = 31106 (DB Merge To Parent Failure) Alarm ID = 31106 (DB Merge From Child Failure) Alarm ID = 31107 (DB Merge From Child Failure) Alarm ID = 31103 (HA Secondary Path Down) Alarm ID = 31104 (DB Replication To Slave Failure) Alarm ID = 31104 (DB Replication over SOAP has failed 2. Wait for the upgrade to complete. The "Status Message" column will show "Success". This step will take approximately 20 to 50 minutes.								
	best course of action. Refer to Appendix J for failed server recovery procedures.								

)	Active NOAM VIP:	This step is for an Active NOAM on release 7.0.1 only.								
	Take the upgraded server out of the upgrade SUCCESS state (part 1) For Active NOAM on	 Take the upgraded server out of the upgrade ready state. This step applies to all servers, regardless of type. 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 status: Verify the Upgrade State of the server that was upgraded is Success. Select the server that was upgraded Click the Complete button. Main Menu: Administration -> Software Management -> Upgrade 								
	<u>release 7.0.1 only</u>									
		NO_SG IPFE_SG MP_SG SO_SG	cation Version							
		Hostname Server Status Max Allowed Network Element Upgra	ade ISO							
		Success Standby Network OAM&P OAM&P 7.1.0.	0.0-71.11.0							
		NO1 Err Standby NO_DSR_VM DSR-	7.1.0.0.0_71.11.0-x86_64.iso							
		NO2 Not Ready Active Network OAM&P 0AM&P 6.0.0-	60.24.0							
		Err Acuve NO_DSR_VM								
		Backup ISO Cleanup Prepare Initiata Complete Accept Report Report All								
		This stop is for an Astiva NOAM on release 7.0.1 only								
	ACTIVE NOAW VIF.	This step is for all Active NOAM of release 7.0.1 only.								
	Take the upgraded	The Upgrade[Complete] screen is displayed								
	upgrade SUCCESS	Hostname Action HA Status								
	state (part 2)	NO2 Complete Max HA Kole Active Mates Standby Mates Spare Ma Standby NO1 None None	tes							
	For Active NOAM on	Ok Cancel								
	release 7.0.1 only	1. Click OK . This completes the upgrade action on the server.								
		The Upgrade Administration screen is displayed.	or Point It may							
		take up to 2 minutes for the Upgrade State to change to Accept or Re	ject.							
			-							
		Main Menu: Administration -> Software Management -> Upgrad	e							
		Filter - Tasks -								
		NO_SG IPFE_SG MP_SG SO_SG								
		Upgrade State OAM Max HA Role Server Role Function	Application Version							
		Hostname Server Status Max Allowed Network Element	Upgrade ISO							
		Accept or Reject Standby Network OAM&P OAM&P	7.1.0.0.0-71.11.0							
		Active NO_DSR_VM	6.0.0.60.24.0							
ĺ		NO2 Err Active No_DSR_VM	0.0.0-00.24.0							
	Backup ISO Cleanup Prepare Initiate Complete Accept Report All									
		1								
		Proceed to step 17 to complete this procedure								

Active NOAM VIP:	This step is for an Active NOAM on release 7.1.1 or later.								
Initiate Upgrade (part 1)	 Initiate the server upgrade. From the Upgrade Administration screen, select the server to be upgraded. Click the "Upgrade Server" button. Main Menu: Administration -> Software Management -> Upgrade 								
For Active NOAM on release 7.1.1 or later									
	Filter Tasks								
	NO_SG IPFE_SG MP_SG SO_SG								
	Hostname	Upgrade State Server Status	OAM Max HA Role Appl Max HA Role	Server Role Network Element	Function	Application Version Upgrade ISO			
	NO2	Ready Norm	Standby N/A	Network OAM&P NO DSR VM	OAM&P	7.1.0.0.0-71.6.0			
	NO1	Ready Norm	Active N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.6.0			
	4								
	Backup Upgrad	e Server Accept Repo	rt Report All						
	Administrate	grade form will be dis on > Software Mana	played: agement > Upg	grade [Initiate]	I				
Active NOAM VIP:	This step is fo	r an Active NOAM o	n release 7.1.1	or later.					
Initiate Upgrade (part 2) – Select ISO form	Initiate the serv	er upgrade.							
For Active NOAM on	1. In the Upg upgrade,	rade Settings – Upg	grade ISO pick I	ist, select the I	SO to use	in the server			
release 7.1.1 of later	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.								
	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.								
	2. Click the C Administra	 Click the Ok button. The upgrade will begin and control will return to the Upgrade Administration screen. 							
	Main Menu: Administration -> Software Management -> Upgrade [Initiate]								
	Info 👻								
	Hostname Action Status								
	NO2	Upgrade		OAM Max HA R Standby	NO D	rk Element SR VM			
	Upgrade Settings			cianos,					
	Upgrade ISO	DSR-7.1.0.0.0_71.8.1-x8	6_64.iso ▼	Select the desire	ed upgrade IS	SO media file.			
					Ok Can	cel			

Active NOAM VIP:	View the Upgrade Administration form to monitor upgrade progress.								
View In-Progress Status	See step 14 for	an optional	method of r	nonitorina ı	uparade	progress.			
(monitor)		See stop 15 below for instructions if the Ungrade fails, or if execution time exceeds 60							
	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 th under the S	e Upgrade Status Mes	State of the sage colum	e server of i n.	nterest.	Upgrade status will I	be displayed		
	Main Menu: Admi	nistration ->	• Software Ma	nagement ->	• Upgrad	le			
	Filter - Status -	Tasks							
	NO_SG IPFE_SG	MP_SG SO_SG		Server Pole	Function	Application Version	Start Time		
	Hostname	Server Status	Appl Max HA Role	Network Element	Function	Upgrade ISO	Status Message		
	NO2	Upgrading Unk	OOS N/A	Network OAM&P NO DSR VM	OAM&P	DSR-7.1.0.0.0 71.8.1-x86 64.iso	2015-01-29 10:49:57 EST Upgrade is in progress		
	NO1	Ready	Active	Network OAM&P	OAM&P	7.1.0.0.0-71.6.0			
	Servers may ha Note: Not all se Alarm ID = 1 Alarm ID = 1 Alarm ID = 1 Alarm ID = 3 Alarm ID = 3 (Lost Co Alarm ID = 3 Alarm ID = 4 Alarm ID = 4 Ala	ve a combinervers will h 10008 (Provide 10075 (The ses have backed 10073 (Servide 10073 (Servide 10073 (Servide 10073)) 12283 (HA 1007 (DB 1007)) 12283 (HA 1007) 12283 (HA 1007) 12313 (HA 10	nation of the have all alarr visioning M server is n een manual wer Group N ver HA Faild Highly avail tion with Ma hly available Merge To P Merge From Secondary Replication o complete. broximately 2 not proceed fer to Appe	a following e ns: anually Dis o longer pi ly stopped Max Allowe over Inhibit lable server ate Server) e server fa arent Failu o child Fai Path Dowr To Slave I over SOA The "Status 20 to 50 mir . It is recon ndix J for f	expected sabled) roviding) d HA R ted) er failed iled to iled to ire) Failed bure) P has f s Messa butes. mmend failed s	d alarms. g services because cole Warning) I to receive mate he receive mate heartb ailed age" column will show ed to consult with M	application artbeats) or weats) v "Success".		

14 Server CLI:	An optional method to view Upgrade progress from the command line:								
Optional : View In- Progress Status from	To view the detailed progress of the upgrade , access the server command line (via SSH or Console), and enter:								
command line of server	<pre>\$ tail -f /var/TKLC/log/upgrade/upgrade.log</pre>								
	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.								
	This command will show the current rev on the server:								
	<pre>\$ appRev</pre>								
15 IF Upgrade Fails:	If the upgrade of a server fails, access the server command line (via ssh or a console), and collect the following files:								
	<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> It is recommended to contact MOS by referring to Appendix J of this document and provide these files.Refer to 0 for failed server recovery procedures.								
16 Active NOAM VIP:	Verify post upgrade status								
Verify post upgrade status	 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. If the Active NOAM is on release 7.0.1: Verify the Status Message indicates Success. If the Active NOAm is on release 7.1.1 or later: Verify the Upgrade State of the upgraded server is Accept or Reject. 								
	NO_SG IPFE_SG MP_SG SO_SG								
	Hostname Operate State OAM Max HA Role Server Role Function Application Version								
	Accept or Reject Standby Network OAM&P 0AM&P 7.1.0.0.0-71.6.0								
	N/2 Warn N/A NO_DSR_VM DSR-7.1.0.0.0_71.8.1-x86_64.iso								
	Ready Active Network OAM&P OAM&P 7.1.0.0.0-71.6.0 NO1 Norm N/A NO_DSR_VM 7.1.0.0.0-71.6.0								
	Backup Upgrade Server Accept Report Report All								

17	Active NOAM VIP:	View the Post-Upgrade Status of the server:
	Verify the server was successfully upgraded	The Active NOAM or SOAM server may have some or all the following expected alarm(s): 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)
		The Active NOAM or SOAM will have the following expected alarm until both NOAMs/SOAMs are upgraded: Alarm ID = 31233 – HA Secondary Path Down NOTE: Do Not Accept upgrade at this time. This alarm is OK.
18	Procedure Complete	The single server upgrade is now complete. Return to the DSR upgrade procedure step that directed the execution of Appendix D.

Appendix E. 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 your DSR. Make multiple copies of Appendix E to mark up, or keep another form of written record of the steps performed.

5 Г	This procedure executes	dure executes the Upgrade Multiple Servers – Upgrade Administration steps.									
2	Check off (\mathbf{n}) each step as it i	s coi	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.									
	Active NOAM VIP:	Vie	View the pre-upgrade status of the servers.								
	View the pre-upgrade status of Servers	 Log into the NOAM GUI using the VIP. Navigate to Administration > Software Management > Upgrade The Upgrade Administration screen is displayed 									
		м	ain Menu: Admi	nistration ->	Software Ma	nagement ->	 Upgrad 	e			
			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	7.1.0.0.0-71.111.001			
			NO2	Backup Needed Norm	Standby N/A	Network OAM&P NO_DSR_VM	OAM&P	7.1.0.0.0-71.11.0			
		E	Backup Backup All	Auto Upgrade Acc	ept Report Re	port All					
		Ac	tive NOAM server Alarm ID = 1000 Alarm ID = 3253	r may have sor 8 (Provisionin 2 (Server Upg	ne or all of the og Manually D rade Pending	e following exp Disabled) g Accept/Reje	bected ala	arms:			

	-								
Active NOAM VIP:	For the servers to	o be upgraded:							
Verify status of Servers	I. Identify the servers to be upgraded in parallel s (record names)								
to be upgraded	(record names)2. Select the server group associated with the servers identified in step 1.								
10	 Select the server group associated with the servers identified in step 1. Verify the Application Version value is the expected source software release version for 								
	5. Verify the A	to be ungraded	value is the exp		Suitwale				
	4. From the Ar	dministration > S	oftware Manag	ement > Upaı	ade scre	en. select the Serve			
	Group of the	e server to be upa	raded.						
	Main Menu: A	dministration ->	Software Ma	nagement ->	Upgrad	le			
			Solution	agement \$	opgraa				
	Filter Tasks	•							
	NO_SG IPFE_S	G MP_SG SO_SG							
		Upgrade State	OAM Max HA Role	Server Role	Function	Application Version			
	Hostname	Server Status	Appl Max HA Role	Network Element		Upgrade ISO			
	801	Backup Needed	Active	System OAM	OAM	7.1.0.0.0-71.11.0			
	301	Norm	N/A	SO1_DSR_VM					
	SO2	Backup Needed	Standby	System OAM	OAM	7.1.0.0.0-71.11.0			
		Norm	N/A	SO1_DSR_VM					
	Backup Backup	All Auto Upgrade A	ccept Report Re	port All					
Active NOAM VIP:	6. Verify the "C (this will dep	ne Upgrade State (DAM Max Ha Role bend on the server ministration form w	changes to " Rea " is the expecte being upgraded <i>i</i> ll be refreshed,	ady . ed condition (d) and the serve	either Sta	andby or Active)			
Active NOAM VIP: Verify Upgrade Status is	Complete, tr 6. Verify the "C (this will dep The Upgrade Adr Upgrade Status = new alarms may	ne Upgrade State (DAM Max Ha Role bend on the server ministration form w = READY (This ma occur.	changes to " Rea " is the expecte being upgraded vill be refreshed, ay take a minute	and the serve). Depending of	either Sta er to be up on the ser	andby or Active) ograded will show rver being upgraded			
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r <mark>e NOAM VIP:</mark> / Upgrade Status is dy"	Complete, tr 6. Verify the "C (this will dep The Upgrade Ada Upgrade Status = new alarms may The Upgrade Ada The Upgrade Ada Main Menu: Ada SO_SG IPFE_S Hostname SO1	A provide state of DAM Max Ha Role pend on the server ministration form v = READY (This material occur. ministration screer diministration screer diministration -> G MP_SG NO_SG Upgrade State Server Status Ready Norm Readv	changes to "Rea " is the expected being upgraded vill be refreshed, ay take a minute in is displayed: • Software Ma OAM Max HA Role Appl Max HA Role Active N/A	ady . ed condition (d) and the serve). Depending of nagement -> Server Role Network Element System OAM So1_DSR_VM Svstem OAM	either Sta er to be up on the ser > Upgrac Function OAM	Application Version Upgrade ISO 7.10.00-71.110			
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ctive NOAM VIP: erify Upgrade Status is eady"	Complete, tr 6. Verify the "C (this will dep The Upgrade Ada Upgrade Status = new alarms may The Upgrade Ada The Upgrade Ada Main Menu: Ada SO_SG IPFE_S Hostname SO1 SO2	A provide state of DAM Max Ha Role predom the server state of DAM Max Ha Role predom the server state occur. The server state of the server state of the server state of the server state server state of the server server server of the server	changes to "Rea " is the expected being upgraded vill be refreshed, ay take a minute in is displayed: • Software Ma OAM Max HA Role Appl Max HA Role Active N/A Standby N/A	and the serve and the serve). Depending of nagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM	either Sta er to be up on the ser > Upgrad	Application Version Upgrade ISO 7.1.0.0.0-71.11.0			
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Active NOAM VIP: Verify Upgrade Status is 'Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adu Upgrade Status = new alarms may The Upgrade Adu Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 10	All Auto Upgrade State Norm All Auto Upgrade Ata Ready Norm All Auto Upgrade Ata Comparison of the server All Auto Upgrade Ata Comparison of the server Comparison of	changes to "Rea is the expected being upgraded vill be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Re f the following ex- g Manually Dis- up Max Allowed is no longer proventioned	and the serve and the serve). Depending of Depending of Depending of Network Element System OAM SO1_DSR_VM System OAM SO1_DSR_VM So1_DSR_VM SO	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE	andby or Active) pgraded will show rver being upgraded de Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers wil use application			
Active NOAM VIP: Verify Upgrade Status is 'Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adi Upgrade Status = new alarms may The Upgrade Adi Main Menu: Adi Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 10 Alarm ID = 10 Alarm ID = 10	All Auto Upgrade State Auto Upgrade State Auto Upgrade State All Auto Upgrade Auto All Auto Upgrade Auto Comparison of the server Comparison of the server of the server Comparison of the server of the server Comparison of the server	changes to "Rea is the expected being upgraded will be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Re f the following et is no longer pr mually stopped) Failover Inhibit	and the serve and the serve). Depending of Depending of Depending of Network Element System OAM SO1_DSR_VM SO1_DSR_VM So1_DSR_VM So1_DSR_VM sot_DSR_VM so	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE	andby or Active) pgraded will show rver being upgraded de Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers will uuse application			
Active NOAM VIP: Verify Upgrade Status is "Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adi Upgrade Status = new alarms may The Upgrade Adi Main Menu: Adi Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 32 Alarm ID = 32 Alarm ID = 32	All Auto Upgrade State Auto Upgrade State Auto Upgrade State All Auto Upgrade Auto All Auto Upgrade Auto Combination of Combination of	changes to "Rea is the expected being upgraded will be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Rea f the following et is no longer pr mually stopped) Failover Inhibit tion to slave Di	and the serve and the serve). Depending of). Depending of). Depending of nagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM System OAM SO1_DSR_VM port All port All abled) d HA Role Wa oviding servi	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE	andby or Active) pgraded will show rver being upgraded de Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers will uuse application			
Active NOAM VIP: Verify Upgrade Status is "Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adi Upgrade Status = new alarms may The Upgrade Adi Main Menu: Adi Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 3 Alarm ID = 3 Alarm ID = 3 Alarm ID = 3	All Auto Upgrade State Auto Upgrade State MP_SG NO_SG Vormation Screen MP_SG NO_SG Vorgade State Server Status Ready Norm Ready Norm Ready Norm All Auto Upgrade A 'e a combination of 0008 (Provisionin 0075 (The server Shave been mar 2515 (Server HA I 1101 (DB Replicar 1106 (DB Merge t	changes to "Rea is the expected being upgraded will be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Re f the following e: is no longer pr mually stopped) Failover Inhibit tion to slave Di o Parent Failur	and the serve and the serve). Depending of). Depending of). Depending of nagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM System OAM SO1_DSR_VM port All port All abled) d HA Role Wa oviding service ed) 3 has failed) e)	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE	andby or Active) pgraded will show rver being upgraded de Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers will use application			
Active NOAM VIP: Verify Upgrade Status is "Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adi Upgrade Status = new alarms may The Upgrade Adi Main Menu: Adi Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 3 Alarm ID = 3	All Auto Upgrade State Auto Upgrade State Auto Upgrade State Auto Upgrade State Server Status Ready Norm All Auto Upgrade Auto Server Group 0008 (Provisionin 0075 (The server Shave been mar 2515 (Server HA I 1101 (DB Replicar 1106 (DB Merge F	changes to "Rea is the expected being upgraded vill be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Re f the following e: is no longer pri nually stopped) Failover Inhibit tion to slave Di o Parent Failur From Child Fail	and the serve and the serve). Depending of). Depending of). Depending of nagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM System OAM SO1_DSR_VM port All port All abled) d HA Role Wa oviding service ed) 3 has failed) e) ure)	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE	Application Version Upgraded Will show rver being upgraded Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0			
Active NOAM VIP: Verify Upgrade Status is "Ready"	Complete, tr 6. Verify the "C (this will dep The Upgrade Adu Upgrade Status = new alarms may The Upgrade Adu Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup / Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 10 Alarm ID = 3 Alarm ID	All Auto Upgrade State Auto Upgrade State Auto Upgrade State Auto Upgrade State Server Status Ready Norm All Auto Upgrade Auto Server Group 0008 (Provisionin 0073 (Server Group 0008 (Provisionin 0073 (Server HA II 1101 (DB Replicar 1106 (DB Merge F 1228 (HA Highly auto 2000 Auto State Auto Upgrade State Aut	changes to "Rea is the expected being upgraded vill be refreshed, ay take a minute in is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A Ccept Report Re f the following ex- g Manually Dis up Max Allowed is no longer pr ually stopped) Failover Inhibit tion to slave Di o Parent Failur From Child Failur	and the serve and the serve). Depending of). Depending of). Depending of anagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM So1_DSR_VM So1_DSR_VM so1_	either Sta er to be up on the ser > Upgrad Function OAM OAM S. NOTE s. NOTE arning) ces beca	andby or Active) pgraded will show rver being upgraded de Application Version Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers wil use application e heartbeats) or			
Active NOAM VIP: Verify Upgrade Status is "Ready"	Complete, tr 6. Verify the "((this will dep The Upgrade Adi Upgrade Status : new alarms may The Upgrade Adi Main Menu: Ai Filter Tasks So_SG IPFE_S Hostname SO1 SO2 Backup Backup Servers may hav have all alarms: Alarm ID = 10 Alarm ID = 31 Alarm ID = 37 Alarm ID = 37 Al	All Auto Upgrade State Auto Upgrade State Auto Upgrade State Auto Upgrade State Server Status Ready Norm All Auto Upgrade Auto Construction of 0008 (Provisionin 0073 (Server Grou 0075 (The server shave been mar 2515 (Server HA F 1101 (DB Replicar 1106 (DB Merge F 1228 (HA Highly a mmunication with	is the expecter being upgraded vill be refreshed, ay take a minute is displayed: Software Ma OAM Max HA Role Appl Max HA Role Appl Max HA Role Active N/A Standby N/A ccept Report Re f the following e: g Manually Dis up Max Allowed is no longer pr ually stopped) Failover Inhibit tion to slave Di o Parent Failur From Child Fail available server)	and the serve and the serve). Depending of nagement -> Server Role Network Element System OAM SO1_DSR_VM SO1_DSR_VM System OAM SO1_DSR_VM port All abled) d HA Role Wa oviding service ed) B has failed) e) ure) r failed to reco	either Sta er to be up on the ser > Upgrac Function OAM OAM OAM S. NOTE s. NOTE urning) ces beca	andby or Active ograded will sho rver being upgra de Application Versio Upgrade ISO 7.1.0.0.0-71.11.0 7.1.0.0.0-71.11.0 : Not all servers use application			

Procedure	47.	Ungrade	Multinle	Servers -	Ungrade	Administration
Frocedure	4/:	Opgrade	multiple	Servers -	Opgrade	Aummistration

	Determine upgrade method – manual or automatic	To upgrade multiple servers in parallel using the manual option, execute steps 4 and 5. To upgrade a server group using the Automated Server Group Upgrade option, proceed to step 6.						5. ed			
I .	Active NOAM VIP: Initiate Upgrade (initiate) (part 1)	 From the Upgrade Administration screen, select the servers to be upgraded. Click the "Upgrade Server" button. 								aded.	
		1	Main Menu: Administration -> Software Management -> Upgrade								
			Filter - T	Tasks 🔻							
		NO_SG IPFE_SG MP_SG SO_SG									
			Hostname		Upgrade Sta	ite	OAM Max HA R	ole Server Role	Function	Application Version	
					Server Statu	IS .	Appl Max HA R	ble Network Eleme	DSR (multi-	Upgrade ISO	
			MP1		Ready		Standby	MP	active cluster)	7.1.0.0.0-71.14.1	
					Warn		Active	SU1_DSR_VM	DSR (multi-	7 4 0 0 0 74 44 4	
			MP2		кеаду		Acuve		cluster)	7.1.0.0.0-71.14.1	
					Warn	_	Active	SO1_DSR_VM			
			Backup Bac	kup All	Upgrade Serve	er Ac	cept Report	Report All			
		Th	e Initiate U	pgrade	form will be	e disp	layed:				
		4	Administra	tion >	Software I	Mana	gement >	Upgrade [Initi	ate]		
	Active NOAM VIP:	Sta	art the upor	rade.							
	Initiate Upgrade (part 2) – Select ISO form	 In the Upgrade Settings – Upgrade ISO pick list, select the ISO to use in the ser upgrade, 						e in the server			
		Note: When the Active NOAM is the server being upgraded, selecting OK wil initiate an HA switchover, causing the GUI session to log out. Before logging the Active OAM again, close and re-open the browser using the VIP address NOAM, and then clear the browser cache. Some GUI forms may exhibit incor behaviors if the browser cache is not cleared. 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 NO alarm condition. This indicator is to make the user aware that the Make Reac action WILL cause an HA switchover.					ting OK will ore logging into IP address for th whibit incorrect by pair, the OAN This is NOT an Make Ready) he VI			
		2.	Click the Administ	e Ok butt tration so	ton. The up creen.	ograde	e will begin	and control wil	I return to th	e Upgrade	
		м	ain Menu:	: Admir	istration	-> S	oftware N	lanagement	-> Upgrad	le [Initiate]	
		_						y			
			Info 🔻								
		Ho	ostname /	Action			S	tatus			
		М	IP1	Upgrade				DAM Max HA Role <mark>Active</mark>	Appl Max HA R <mark>Active</mark>	SO_DSR_VM	nt
		м	IP2	Upgrade				OAM Max HA Role	Appl Max HA R	ole Network Eleme	nt
		Ur	oarade Settina	IS				otanuby		30_D31(_1)	
		Upgrade ISO DSR-7.1.0.0.0_71.8.1-x86_64.iso V Select the desired upgrade ISO media file.							a file.		
		Pro	oceed to s	tep 8 to	complete	e this	procedure				

6.	Active NOAM VIP: Initiate (part 1) - Automated Server Group Upgrade	 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 							
		Filter 🔻	Tasks 🔻						
		MP_SG	IPFE_SG	NO_SG	SO_SG				
		Hostnamo		Upgrade	State	OAM Max HA Role	Server Role	Function	Application Version
		Hostname	Hostname			Appl Max HA Role	Network Element		Upgrade ISO
		MP1	Ready		Standby	MP	DSR (multi- active cluster)	7.1.0.0.0-71.14.1	
				W	arn	Active	SO1_DSR_VM		
		MP2		Ready		Active	MP	DSR (multi- active cluster)	7.1.0.0.0-71.14.1
				W	arn	Active	SO1_DSR_VM	·	
		Backup Backup A Auto Upgrade Accept Report Report All							
		2. Click the Auto Upgrade button. The Upgrade [Initiate] screen is displayed.							

Active NOAM VIP:	Start the Au	tomated Server Group Upgrade.						
Initiate (part 2) -	Note: The se	ettings to be used in this step are	specified in the	e calling proced	lure.			
Group Upgrade	1. The Up automa	grade Settings section of the In ted upgrade. Select the settings	itiate screen co that apply to the	ntrols the beha e server type b	vior of the eing upgraded.			
	Bulk: S F Serial: Groupp C ti Availat s tt Availat S tt Availat S C to a m server of 2. Select f 3. Click th	 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 <i>at least</i> half of the servers <i>in the server group</i> 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. Select the appropriate ISO from the Upgrade ISO pick list. Click the Ok button to start the upgrade. 						
	Hostname	Action	Status					
	MP1	Auto upgrade	OAM Max HA Role Standby	Appl Max HA Role <mark>Active</mark>	Network Element SO1_DSR_VM			
	MP2	Auto upgrade	OAM Max HA Role Active	Appl Max HA Role <mark>Active</mark>	Network Element SO1_DSR_VM			
	Upgrade Setti	ngs						
			Server group upgrad	le mode.				
	Mode	●Bulk Serial Grouped Bulk	Select "Bulk" to upgra Select "Serial" to upg Select "Grouped Bull In all modes, any des HA groups are create The HA role order is	Select "Bulk" to upgrade servers in groups according to the availability Select "Serial" to upgrade servers one at a time in HA order. Select "Grouped Bulk" to upgrade servers in HA groups according to th In all modes, any designated last server will be upgraded last. HA groups are created according to the "Application HA Role" of the set The IAA end active, actor actions and active.				
	Availability	50% •	Select the desired pe ('NONE' - all servers	ercent availability of se with 'Upgrade' action v	rvers in the server group duri will be unavailable.)			
	Upgrade ISO	DSR-7.1.0.0.0_71.14.1-x86_64.iso V	Select the desired up					
				Ok Cancel				

8.	Active NOAM VIP:	View the Upgrade Administration form to monitor upgrade progress.							
	View In-Progress Status	See step 9 for an op	otional method	d of monitoring	g upgrade pro	gress.			
		See step 10 below f minutes.	or instruction	s if the Upgrac	le fails, or if e	xecution ti	me exceeds 60		
		Note: If the upgrade processing encounters a problem, it may attempt to ROLL BACK to 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 whe there was a problem.							
		1. Observe the U	 Observe the Upgrade State of the servers of interest. 						
		Main Menu: Admin	istration -> 9	Software Man	agement ->	Upgrade			
		Filter ▼ Status ▼	Tasks 🔻						
		MP_SG IPFE_SG I	NO_SG SO_SG						
		Hostname	Upgrade State	OAM Max HA Role	Server Role	Function	Application Version		
			Server Status	Appl Max HA Role	Network Element	DOD	Upgrade ISO		
		MP1	Upgrading	Standby	MP	(active/stand by pair)	7.1.0.0.0-71.6.0		
		MP2	Upgrading	Spare	MP	DSR (active/stand	7.1.0.0.0-71.6.0		
			Err	OOS	SO_DSR_VM	by pair)	DSR-7.1.0.0.0_71.8.1-x86_64.iso		
		BackupBackup AllDuring the upgrade, NOTE: Not all servedAlarm ID = 1000 Alarm ID = 1007 Alarm ID = 1007 Alarm ID = 31100 Alarm ID = 31100 Alarm ID = 31100 	Auto Upgrade Ac the servers r vers will have (Provision 73 (Server Gr 75 (The server have been m 11 (DB Replic 06 (DB Merge 28 (HA Highly nunication w 33 (HA Secon 33 (Highly av 55 (Server HA grades to con Rebooting", ately 20 to 50 5 – do not pro-	oos Report Report R may have a co all alarms: ing Manually roup Max Allo er is no longe anually stopp ation To Slav e To Parent Fa e From Child y available server A Failover Inh mplete. The Up "Not Ready", f minutes. boceed. It is re Appendix J fo	so_DSR_VM eport All mbination of t Disabled) wed HA Role r providing s bed) ve Failure) Failure) Failure) rver failed to rec ibited) bgrade State and finally "Ac commended or failed serv	he followin Warning ervices b receive r eive mate column wi ccept or F to consu	DSR-7.1.0.0_71.8.1-x86_64.iso ng expected alarms.) ecause application nate heartbeats) or e heartbeats) Il transition through Reject". This step will It with MOS on the ery procedures.		

9.	Server CLI:	Optional method to view Upgrade progress from a command line:
	Optional : View In- Progress Status from command line of server	To view the detailed progress of the upgrade – Access the server command line (via ssh or Console), and:
		<pre>\$ tail -f /var/TKLC/log/upgrade/upgrade.log</pre>
		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.
		This command will show the current rev on the upgraded servers:
		[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-
		ISO name: DSR-7.1.0.0.0_71.10.0-x86_64.iso OS: OracleLinux 6.5
		If the upgrade fails – do not proceed. It is recommended to consult with MOS on the best course of action. Refer to 0 for failed server recovery procedures.
10.	IF Upgrade Fails:	If a server upgrade fails, access the server command line (via ssh or Console), and collect the following files:
		/var/TKLC/log/upgrade/upgrade.log
		/var/TKLC/log/upgrade/ugwrap.log
		/var/TKLC/log/platcfg/upgrade.log
		It is recommended to contact MOS by referring to Appendix J of this document and provide these files. Refer to 0 for failed server recovery procedures.
11.	Active NOAM VIP:	Verify post-upgrade status
	Verify post upgrade	1. Navigate to Administration > Software Management > Upgrade
	status	The Upgrade Administration screen is displayed.
		software release version.
		 Verify the Status Message indicates success. Verify the Upgrade State of the upgraded servers is Accept or Reject.
12.	Verify the servers were	View Post-Upgrade Status of the server:
	successfully upgraded	The Active SOAM server may have some or all the following expected alarm(s):
		 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)
		NOTE: Do Not Accept upgrade at this time. This alarm is OK.
13.	Procedure Complete.	The multiple servers upgrade is now complete.
		Return to the DSR upgrade procedure step that directed the execution of Appendix E.
		THIS PROCEDURE HAS BEEN COMPLETED

Appendix F. 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 16 shows the elapsed time estimates for IDIH upgrade.

Duccodura	Elapsed Ti	me (hr:min)	Procedure Title	Impact	
Procedure	This Step	Cumulative	Trocedure Thie		
Procedure 48	1:15-1:45	1:15-1:45	Oracle Guest Upgrade	None	
Procedure 49	0:30-0:45	1:45-2:30	Upgrade the Mediation and Application Guests	None	

Table 16: IDIH Upgrade Execution Overview

Appendix F.1. Oracle Guest Upgrade

The Oracle Guest is upgraded first.

Procedure 48: Oracle Guest Upgrade

5	This procedure performs the IDIH Oracle Guest upgrade.					
Г	Chack off (1) each stan as it is completed. Bayes have been provided for this purpose under each stan number					
Ξ	Check on (V each step as it is	comp	ieled. Doxes have been provided for this purpose under each step fulliber.			
2	SHOULD THIS PROCEDURE	E FAIL,	IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE			
ŧ						
1	IDIH CLI:	Per	form a system health check on the Oracle guest.			
	Perform system health check	1.	Login in to the Oracle guest as the admusr user.			
			ssh <idih address="" ip=""></idih>			
			login as: admusr			
			password: <enter password=""></enter>			
		2.	Execute the analyze_server.sh script.			
			<pre>\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i</pre>			
		Sar	nole outout:			
			[admusr@cat-ora ~]\$ /usr/TKLC/xIH/plat/bin/analyze_server.sh - 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. MIL COSCS PASSED: 13.25.02. ENDING HEALTHCHECK PROCEDURE WITH CODE 0			
			13.23.02. ENDING HEALTHCHECK INCODORE WITH CODE 0			
			If the output indicates a status failure, do not proceed with the upgrade. It is			
			recommended to contact MOS for guidance.			

IDIH CLI:	Shutdown the Mediation guest in preparation for the Oracle guest upgrade.
Shutdown Mediation guest	 Login in to the Mediation guest as admusr user. ssh <idih address="" ip=""></idih> login as: admusr password: <enter password=""></enter>
	2. Shutdown the Mediation guest.
	<pre>\$ sudo init 0</pre>
	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
	The Active NOAM server may have some or all of the following expected alarms: Alarm ID = 19800 Communication Agent Connection Down
IDIH CLI:	Shutdown the Application guest in preparation for the Oracle guest upgrade.
Shutdown Application	1. Login in to the Application guest as admusr user.
guodi	ssh <idih address="" ip=""></idih>
	password: <enter password=""></enter>
	2. Shutdown the Application guest.
	\$ sudo init 0
	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
	The Active NOAM server may have some or all of the following expected alarms: Alarm ID = 19800 Communication Agent Connection Down
Move Oracle ISO.	Use a file transfer tool to copy the Oracle ISO to the Oracle guest as admusr.
	Example: \$ scp oracle-7.2.0.0.0_72.21.0-x86_64.iso admusr@ <ora-guest-ip>:/var/TKLC/upgrade</ora-guest-ip>
IDIH CLI:	The Oracle guest is upgraded using the Platform Configuration utility.
Start Oracle guest	1. Launch the platform configuration utility.
upgrade	\$ sudo su - platcfg
	2. In the resulting menu, select Maintenance > Upgrade > Initiate Upgrade.
	3. At the ISO selection menu, select the target release Oracle ISO and press the Enter key.
	Choose Upgrade Media Menu oracle-7.2.0.0.0_72.19.0-x86_64.iso - 7.2.0.0.0_72.19.0 ê Exit

Procedure 48: Oracle Guest Upgrade

Procedure 48: Oracle Guest Upgrade

IDIH CLI:	The platform configuration menu will exit and the guest will reboot when the upgrade completes.
Monitor upgrade	
progress	To view the detailed progress of the upgrade, access the server command line (via SSH or Console), and enter:
	<pre>\$ tail -f /var/TKLC/log/upgrade/upgrade.log</pre>
	Once the server has upgraded, it will re-boot, then it will take a couple of minutes for the Oracle processes to start up.
IDIH CLI:	Wait a few minutes to allow the Oracle guest to stabilize after the reboot, and then repeat step 1 to perform the post-upgrade system health check.
Perform system health	
check	Note: the following warnings are expected due to the mediation and app servers being shutdown.
	Warning: mediation server is not reachable (or ping response exceeds 3 seconds)
	Warning: app server is not reachable (or ping response exceeds 3 seconds)
	THIS PROCEDURE HAS BEEN COMPLETED

Appendix F.2. Upgrade the Mediation and Application Guests

The Mediation and Application Guest upgrade is similar to the installation procedure.

S	This procedure performs the IDIH Mediation and Application server upgrade.						
T F	Check off (\checkmark) each step as it is completed. Boxes have been provided for this purpose under each step number.						
P	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE						
#							
1	CLOUD GUI:	1.	Use the hpyervisor-specific procedure to remove the current iDIH Application and iDIH				
	Remove existing Application Server						
2	CLOUD GUI:	1.	Use the hypervisor-specific procedure to deploy the latest Application and Mediation				
	Deploy the latest application and mediation guest images	2.	guests. Configure the iDIH mediation and application guests to reflect the guest profile in the installation document [1].				
3	IDIH CLI:						
	Configure the network	1.	Login in to the iDIH Mediation guest as the admusr user.				
	rules file		ssh <idih address="" ip=""> login as: admusr password: <enter password=""></enter></idih>				
		2.	Generate the net rules file \$ sudo udevadm triggersubsystem-match=net				
		3.	Update the net rules file. Replace the default interface names "eth0" with "xmi" and "eth1" with "int". For the Mediation guest, rename the third interface from "eth2" to "imi".				
			<pre>\$ sudo vi /etc/udev/rules.d/70-persistent-net.rules</pre>				
			<pre># PCI device 0x15ad:0x07b0 (vmxnet3) SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?=", ATTR(address)=="00:50:50:56:b9:2d:b b", ATTR(type)=="1", KERNEL=="eth=", NAME="</pre>				
			<pre># PCI device 0x15ad:0x07b0 (vmxnet3) SUBSYSTEM=="met", ACTION=="add", DRIVERS=="?w", ATTR(address)=="00:50:56:b9:ea:b</pre>				
			<pre># PCI device 0x15ad:0x07b0 (vmxnet3) SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*", ATTR(address)=="00:50:56:b9:2d:b b", ATTR(type)=="1", KERNEL=="eth*", NAME="int_"</pre>				
			<pre># PCI device 0x15ad:0x07b0 (vmxnet3) SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*", ATTR(address)=="00:50:56:b9:ea:b 2", ATTR(type)=="1", KERNEL=="eth*", NAME="xmi"</pre>				
		4.	Reboot the server: \$ sudo init 6				
		5.	Repeat sub-steps 1 thru 4 for the application guest.				

Procedure 49: Upgrade the Mediation and Application Guests

Procedure 49: Upgrade the Mediation and Application Guests

S T	This procedure performs the IDIH Mediation and Application server upgrade.					
I E	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.					
Р	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE					
#		1				
4	IDIH CLI:	1.	Login in to the iDIH Mediation guest as the admusr user.			
	Configure the network		ssh <idih address="" ip=""></idih>			
	mediation guest.		password: <enter password=""></enter>			
		2.	Configure the xmi network with its ip address and netmask. \$ sudo netAdm add -device=xmi -address=x.x.x.x -netmask=x.x.x.x -onboot=yes -bootproto=none			
		3.	Configure the default route. \$ sudo netAdm add -route=default -device=xmi -gateway=x.x.x.x			
		4.	<pre>Configure the int network its ip address and netmask. \$ sudo netAdm add -device=int -address=10.254.254.3 - netmask=255.255.255.224 -onboot=yes -bootproto=none</pre>			
		5.	Ping the oracle guest to verify network connectivity \$ ping oracle			
		6.	Configure the imi network with its ip address and netmask. *(mediation guest only) \$ sudo netAdm add -device=imi -address=x.x.x.x -netmask=x.x.x.x -onboot=yes -bootproto=none			
		7.	Repeat sub-steps 1 thru 5 for the application guest.			
5	IDIH CLI:	1.	On the iDIH Mediation guest, launch the platform configuration menu. \$ sudo su - platcfg			
	time protocol for the mediation and	2.	From the platform configuration menu, configure ntpserver1 with the ip address supplied for NTP. Select:			
	application guests.		Network Configuration -> NTP -> Edit -> ntpserver1			
			Select "Yes" when prompted to restart NTP.			
		3.	Exit the network configuration menu.			
		4.	To configure the Oracle VM hostname, select:			
			Server Configuration -> Hostname -> Edit			
			Note: the Mediation and Application guest hostnames should follow the format 'xxxx-med' and 'xxxx-app', where 'xxxx' can be any valid hostname characters.			
		5.	Exit the platform configuration menu.			
		6.	Repeat sub-steps 1 through 5 for the iDIH Application guest.			
6	IDIH CLI					
	Run the application	1.	On the iDIH application guest, run the post installation script and monitor the script until it completes.			
	scipt.		<pre>\$ sudo /opt/xIH/apps/install.sh</pre>			

S	This procedure performs the IDIH Mediation and Application server upgrade.			
T E	Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.			
Р	SHOULD THIS PROCEDURE	FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE		
#				
7	IDIH CLI:	1 On the iDIH mediation quest, run the past installation pariet and manitar the pariet until		
	Run the mediation post	it completes.		
		<pre>\$ sudo /opt/xIH/mediation/install.sh</pre>		
		2. Reconfigure the hostname in the comcol database.		
		<pre>\$ sudo su - tekelec \$ sudo iset -fnodeName=`hostname` -fhostName=`hostname` NodeInfo where 1=1</pre>		
8	IDIH CLI:	After the post installation script has completed on the application guests.		
	Run the healthcheck scripts on the mediation and application guests.	Run the healthcheck script on the application and mediation guests. \$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i		

Procedure 49: Upgrade the Mediation and Application Guests

Appendix G. 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 G.1. 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 50: Server Upgrade Using Platcfg

S T 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. 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. Login to the server to Use the SSH command (on UNIX systems - or putty if running on Windows) to log into the	
	be upgraded	<pre>server to be upgraded: ssh admusr@<server_ip></server_ip></pre>
2	Enter the platcfg menu	Switch to the platofg user to start the configuration menu. \$ sudo su - platofg From the Main Menu, select Maintenance Main Menu Maintenance Diagnostics Server Configuration Network Configuration Remote Consoles Security NetBackup Configuration Exit Network Configuration

Procedure 50: Server Upgrade Using Platcfg

Select Upgrade	From the Maintenance Menu, select Upgrade
	Maintenance MenuUpgradeêBackup and RestoreiHalt ServeriView Mail QueuesRestart ServerEject CDROMSave Platform Debug LogsExitñ
Select Early Upgrade Checks	From the Upgrade Menu, select Early Upgrade Checks
	Upgrade MenuValidate MediaêEarly Upgrade ChecksInitiate UpgradeNon Tekelec RPM ManagementAccept UpgradeReject UpgradeExitñ
Select the Upgrade Media	1. From the Choose Upgrade Media Menu, select the desired target media. This will initiate the early upgrade checks in the console window.
	Choose Upgrade Media Menu Metv/sr0 - 6.0.0.0.060.16.0 t Exit Informational messages will be displayed as the checks progress. At the end of a successful test, a message similar to the following will appear: 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! 2. Verify early upgrade checks pass. In case of errors, it is recommended to contact MOS. 3. Press 'q' to exit the screen session and return to the platcfg menu. 4. From the Choose Upgrade Media Menu, select Exit.
	Select Early Upgrade Checks

Procedure 50: Server Upgrade Using Platcfg

6	Initiate the upgrade	From the Upgrade Menu, select Initiate Upgrade.
		Upgrade Menu Validate Media ê Early Upgrade Checks Initiate Upgrade Non Tekelec RPM Management Accept Upgrade Reject Upgrade ñ
7	Select the Upgrade Media	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. From the Choose Upgrade Media Menu, select the desired target media. This will initiate the
		server upgrade. Choose Upgrade Media Menu
		<mark>∕dev/sr0 - 6.0.0.0.0_60.16.0</mark> ê Exit
		Many informational messages will come across the terminal screen as the upgrade proceeds.
		Finally, after upgrade is complete, the server will reboot. A reboot of the server is required. The server will be rebooted in 10 seconds
8	SSH to the upgraded server	Use the SSH command (on UNIX systems – or putty if running on Windows) to log into the server just upgraded:
		ssh admusr@ <server_ip></server_ip>
		(Answer 'yes' if you are prompted to confirm the identity of the server.)
9	Check for upgrade errors	Examine the upgrade logs in the directory /var/TKLC/log/upgrade and verify that no errors were reported.
		grep -i error /var/TKLC/log/upgrade/upgrade.log
		Examine the output of the above command to determine if any errors were reported.
		If the upgrade fails, collect the following files:
		/var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/earlyChecks.log /var/TKLC/log/platcfg/upgrade.log
		It is recommended to contact MOS by referring to Appendix J of this document and provide these files.
Procedure 50: Server Upgrade Using Platcfg

Verify the upgrade	Check the upgrade log for the upgrade complete message
	grep "UPGRADE IS COMPLETE" /var/TKLC/log/upgrade/upgrade.log
	Verify that the message " UPGRADE IS COMPLETE " is displayed. If not, it is recommended to contact MOS.
	<pre>[admusr@NO2 ~]\$ grep "UPGRADE IS COMPLETE" /var/TKLC/log/ upgrade/upgrade.log 1407786220:: UPGRADE IS COMPLETE</pre>
	THIS PROCEDURE HAS BEEN COMPLETED.

Appendix G.2. Manual DA-MP Upgrade Procedure

Procedure 51 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 51 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 51 must be executed four distinct times.

Procedure 51: Manual DA-MP Upgrade Procedure

S T	This procedure upgrade	This procedure upgrades the DA-MP servers using the manual upgrade method.								
E P	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.	Identify all the DA-MPs	From the data captured in Table 3,								
	to be upgraded together	1. Identify the "DSR (multi-active cluster)" Server Group to be upgraded.								
2.	Upgrade DA-MP servers as identified in	Upgrade up to (1/2) one half (no more than 50%) of the DA-MP servers in parallel using the Upgrade Multiple Servers procedure :								
	step 1	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.								
		Execute Appendix E : Upgrade Multiple Servers								
		After successfully completing the procedure in Appendix E, return to this point and continue with the next step.								
3.	Repeat for all servers identified in Step 1 of this procedure.	Repeat step 2 of this procedure for the remaining DA-MP servers.								
		THIS PROCEDURE HAS BEEN COMPLETED.								

Appendix G.3. Manual SBR Upgrade Procedure

Procedure 52 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.

S T	This procedure upgrades an SBR Server Group using the manual upgrade option.										
E	Check off ($$) each step as it	is con	npleted. Boxes have been j	provided for	this purpose un	der each step numbe	er.				
Р #	SHOULD THIS PROCEDURE	RE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.									
1.	Active NOAM VIP	Ide	ntify the Active, Standby	, and Spar	e SBR servers	i.					
	Identify the SBR Server Group(s) to Upgrade	1.	upgrade. One server executed								
		2.	Log into the NOAM G	UI using the	e VIP.						
		3. 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: GTR-SBR-1A - Active GTR-SBR-1B - Standby GTR-SBR-1Sp - Spare									
		F	ilter 👻	..							
			PCA_MATED_SITES								
			Server Group Name		Resource Domain Na	me	Resource Domain Profile				
		Ŀ	_ GTR_SBR_SG_A		PCA_SESSION		Policy and Charging Session				
			Server Name	Resource HA R	ble	Congestion Level	Sub Resources Hosted				
		. n	GTR-SBR-1B	Standby		Normal	0.12.3.4.5.6.7				
			NSX-SBR-1Sp	Spare		Normal	0.1.2.3.4.5.6.7				
		NO of s NO pol Sta or s the cor Bee ser Act ign ser	TE: SBR servers have session or binding dat AM and SOAM GUIs. icy for replication of s tus screen MUST be u Spare) of SBR servers. Upgrade screen must figuration replication cause the two High Av ver might be Standby tive for the configuration ore warnings on the U ver (for the configurat	e two High a, and one During this ession or l sed to det . The HA S NOT be u policy. ailability p or Spare fo on replicat pgrade sc ion replicat	Availability p for receipt of s upgrade pro binding data i ermine the Hi Status screen sed because olicies run in or the session ion policy. W reen about se tion policy).	olicies: one for co f replicated config ocedure, ONLY the s important. This gh Availability sta and the OAM Ma they only show the dependently, it is n and binding rep /hen this happens electing what it vie	ontrolling replication guration data from the e High Availability s means that the SBR atus (Active, Standby, x HA Role column on he status of the possible that a given lication policy, but s, it is necessary to ews as the Active				

Procedure 52: Manual SBR Upgrade Procedure

Procedure 52: Manual SBR Upgrade Procedure

2.	Active NOAM VIP:	NOTE: The Spare SBRs of this server group will be located at different sites.					
	Upgrade Spare SBR	1. Upgrade the Spare SBR server using the Upgrade Single Server procedure :					
	1 of this procedure.	Execute Appendix D—Upgrade Single Server Procedure					
		After successfully completing the procedure in Appendix D, return to this point to monitor server status.					
		 From the Active NOAM GUI: Navigate to Main Menu > Policy and Charging > Maintenance > SBR Status. Open the tab of the server group being upgraded. 					
		NOTE: After executing Appendix D, 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".					
		3. 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. 					
		Caution: Do not proceed to step 3 until the Resource HA Role of the Spare SBR server returns to " Spare ".					
3.	Upgrade Standby SBR	Upgrade the Standby SBR server using the Upgrade Single Server procedure :					
	1 of this procedure.	Execute Appendix D - Upgrade Single Server Procedure					
		After successfully completing the procedure in Appendix D , return to this point and continue with the next step.					
	O	WARNING! Failure to comply with step 4 and step 5 may result in the loss of PCA traffic, resulting in service impact					
4.	Active NOAM VIP: Verify Standby SBR	 Navigate to Main Menu > Policy and Charging >Maintenance > SBR Status. Open the tab of the server group being upgraded. 					
	server status	NOTE: After executing Appendix D, 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".					
		2. Monitor the Resource HA Role status of the upgraded server. Wait for the status to transition from "Out of Service" to "Standby".					
		Caution: Do not proceed to step 5 until the Resource HA Role of the upgraded server transitions to " Standby ".					

5.	Active NOAM VIP:	Verify that the bulk download from the Active SBR to the Standby and Spare SBRs completes.					
	Verify bulk download completes	 Navigate to Main Menu > Alarm & Event > View History 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. Wait for all instances of Event 31127: 1 for the Standby binding SBR 1 for the Standby session SBR 1 for the Spare binding SBR 1 for the Spare binding SBR 1 for the Spare binding SBR 1 for the 3rd site Spare binding SBR (if equipped) 1 for the 3rd site Spare session SBR (if equipped) NOTE: There is an expected loss of traffic depending on size of the bulk download. This must be noted along with events captured. 					
6.	Upgrade Active SBR	Upgrade the Active SBR server using the Upgrade Single Server procedure :					
	Step 1 of this procedure	Execute Appendix D Single Server Upgrade Procedure					
		After successfully completing the procedure in Appendix D, return to this point and continue with the next step.					
7.	Repeat for all SBR Server Groups with Active, Standby in Site 1 and Spare in Site 2	Repeat steps 1 through 6 for all remaining binding and session server groups to be upgraded.					
		THIS PROCEDURE HAS BEEN COMPLETED.					

Procedure 52: Manual SBR Upgrade Procedure

Appendix H. EXPIRED PASSWORD WORKAROUND PROCEDURE

This appendix provides the procedures to handle password expiration during upgrade. Procedure 53 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 54 after the site is upgraded. Failure to remove the workaround will inhibit password aging on the server.

Appendix H.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 53: Expired Password Workaround Procedure

S	This procedure disables password aging on a server, allowing "expired" credentials to be used for login.									
I E P	Check off ($$) each step as i	it is co	is completed. Boxes have been provided for this purpose under each step number.							
#	SHOULD THIS PROCEDUR	RE FAI	IL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.							
1	able password aging.									
	SSH to Active SOAM server		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:							
			ssh_admusr@ <soam_vip> (Answer 'yes' if prompted to confirm the identity of the server.)</soam_vip>							
		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: /var/TKLC/appworks/ini/pw.ini							
		4.	Change the file permissions: \$ chmod 644 pw.ini							
		5.	Execute the following command: \$ sudo clearCache							
		NO pas wo	TE: For each server on which this workaround is enacted, the old "expired" ssword must be used for login. The new password that is used on the NOAM will not rk on these servers.							

2	Repeat for Standby SOAM	Repeat step 1 for the Standby SOAM
3	Repeat for all non- upgraded sites	Repeat steps 1 and 2 for all non-upgraded sites.
		THIS PROCEDURE HAS BEEN COMPLETED.

Procedure 53: Expired Password Workaround Procedure

Appendix H.2. Enable Password Aging

This procedure removes the password expiration workaround that is enabled by Procedure 53.

S T E	This procedure removes the password aging workaround and re-enables password aging on a server. Check off ($$) each step as it is completed. Boxes have been provided for this purpose under each step number.									
P "										
#	SHOULD THIS PROCEDUR	SHOULD THIS PROCEDURE FAIL, IT IS RECOMMENDED TO CONTACT MOS AND ASK FOR UPGRADE ASSISTANCE.								
1	Active SOAM CLI:	1.	Use the SSH command (on UNIX systems - or putty if running on windows) to login to the							
	SSH to Active SOAM		Active SOAM of the first non-upgraded site:							
	server		ssh admusr@ <soam_vip></soam_vip>							
			(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>							
2	Repeat for Standby	Re	peat step 1 for the Standby SOAM							
	SOAM									
3	Repeat for all non- upgraded sites	Re	peat steps 1 and 2 for all non-upgraded sites.							
		T	HIS PROCEDURE HAS BEEN COMPLETED.							

Procedure 54: Expired Password Workaround Removal Procedure

Appendix I. 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 55: Recovering from a Failed Upgrade

	This procedure provide that the server will be r	s the	e basic s ned to th	teps for ret	turning a selease by	server this p	to a normal rocedure.	state after an	upgrade	failure. Note
ŧ	Check off (\mathbf{v}) each step as it	as it is completed. Boxes have been provided for this purpose under each step number.								
	SHOULD THIS PROCEDURE	FAI	L, IT IS RE	COMMENDE	D TO CONT	ACT	MOS AND ASK	FOR <u>UPGRADI</u>	ASSISTAN	NCE.
	Active NOAM VIP:	Fro	om the Up	ograde scree	en, select th	ne ser	ver group conta	aining the faile	d server.	
	Select affected server group	1. 2. 3.	Log int Naviga The Up Select	o the NOAM te to Admin ograde Admi the server gr	I GUI using istration > nistration s roup tab for	the V Soft creen the s	IP. tware Manage is displayed erver to be reconnected of tware Man	ment > Upgra	Inde	e
				nu. Aunin	istration	- / 3		ayement -2	vopyrau	C
			Filter 🔻	Tasks 🔻						
			NO_SG	DRNO_SG	IPFE_SG1	IPFE_	SG2 IPFE_SG3	IPFE_SG4	MP_SG1 S	SO_SG S67MP
			Hostname	•	Upgrade Sta	te	OAM Max HA Role	Server Role	Function	Application Ve
					Server Statu	S	Appl Max HA Role	Network Element		Upgrade ISO
			SO1		Ready Err		Active N/A	System OAM SO1_DSR_VM	OAM	7.0.1.0.0-70.28
			S02		Failed		Standby	System OAM	OAM	7.0.1.0.0-70.28
					Err		N/A	SO1_DSR_VM		DSR-7.2.0.0.0
		•	If the f	ailed server	was upgr	aded	using the "Up	grade Server'	' option, tl	hen <mark>skip to</mark>
			step /	of this proc	edure					
		•	lf the f with st	ailed server ep 2 of this	was upgr procedure	aded e.	using the "Au	to Upgrade" o	option, the	en continue

2 Active NOAM VIP	Navigate to the Active Tasks screen	o view	the tasks.							
View Active Tasks	 Navigate to Status & Manage > Tasks > Active Tasks The Active Tasks screen is displayed. Connected using INTERNALXMI to NO1 (ACTIVE NETWORK OAM&P) 									
	■ Main Menu Administration Configuration Alarms & Events Security Log									
	🖻 😋 Status & Manage	ID	Name	Status	Sta					
	Network Elements		SO2 Server Upgrade (in							
	— 📑 НА	48	SO_SG Server Group Upgrade)	exception	201					
	🔤 Database	47	SO, SC Server Group Ungrade	naucad	201					
	····· ································	47	50_56 Server Group Opgrade	pauseu	201					
	🖻 🚔 Tasks	45	Database backup from cron	completed	201					
	Active Tasks	44	NO_SG PostUpgrade Health Check	completed	201					
Active NOAM VIP:	Use the filter to locate the server gro	up upgra	ade task.							
Search for upgrade task	From the Active NOAM GUI:	tor tha t	following filter values:							
	a. Network Element: All									
	 b. Display Filter: Name Like *upgrade* 2. Click the Go button. 									
	Main Menu: Status & Manage -> Tasks -> Active Tasks									
	Filter 🔻									
	Filter				8					
	Network Element: _ All -	R	eset							
	Disalau Filtan			1						
	Usplay Filter: Name V	ike 🔽	*upgrade*	leset						
	Go									

Procedure 55: Recovering from a Failed Upgrade

Procedure 55: Recovering from a Failed Upgrade

Active NOAM VIP:	 In the search results list, locate the Server Group Upgrade task. If not already selected, select the tab displaying the hostname of the Active NOAM 										
task	 server. Locate the task for the Server Group Upgrade. It will show a status of "paused". 										
	Main Menu: Status & Manage -> Tasks -> Active Tasks (Filtered)										
	Filter										
	NO1 NO2 SO1 SO2 MP1 MP2 MP3 MP4 MP6 MP8 MP9 MP10 MP11 MP12										
	ID Name Status Start Time Update Time										
	48 S0_SG Server Group exception 2016-03-23 13:38:36 UTC 2016-03-23 13:40:11 UTC Upgrade)	1									
	4 S0_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 completed 2016-03-22 17:14:51 UTC 2016-03-22 17:15:06 UTC	1									
	42 NO_SG PreUpgrade Health completed 2016-03-21 14:56:08 UTC 2016-03-21 14:56:19 UTC	,									
Active NOAM VIP:	Cancel the Server Group Upgrade task.	-									
Cancel the upgrade task	 Click the Server Group Upgrade task to select it. It will become highlighted on the screen. Click the Cancel button to cancel the task. Click OK on the confirmation dialog box to confirm the cancellation. 										
	Main Menu: Status & Manage -> Tasks -> Active Tasks (Filtered)										
	Filter V										
	O NO1 NO2 SO1 SO2 MP1 MP2 MP3 MP4 MP6 MP8 MP9 MP ID Name Status Start Time Update T										
	48SO2 Server Upgrade (in SO_SG Server Group Upgrade)exception2016-03-23 13:38:36 UTC2016-03-										
	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-										
	Pause Restart Cancel Delete Report Delete All Completed Delete All Exce										
	Verify the Server Group Upgrade task is canceled	_									
Active NOAM VIP:											
Verify task cancellation	"completed".										
	47 SO_SG Server Group Upgrade completed 2016-03-23 13:38:26 UTC										
	2016-03-23 16:24:27 UTC SG upgrade task cancelled by user. 5%										

7	Failed server CLI:	Login to the failed server to inspect the upgrade log for the cause of the failure.
	Inspect upgrade log	1. Use an SSH client to connect to the failed server:
		ssh <xmi address="" ip=""> login as: admusr password: <enter password=""> Note: The static XMI IP address for each server should be available in Table 3.</enter></xmi>
		 View or edit the upgrade log at /var/TKLC/log/upgrade/upgrade.log for clues to the cause of the upgrade failure. If the upgrade log contains a message similar to the following, inspect the early upgrade log at /var/TKLC/log/upgrade/earlyChecks.log for additional clues.
		1440613685::Early Checks failed for the next upgrade 1440613691::Look at earlyChecks.log for more info
	•	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.
Í		If troubleshooting assistance is needed, it is recommended to contact MOS as described in Appendix J - Accessing My Oracle Support
	•	DO NOT PROCEED TO STEP 8 OF THIS PROCEDURE UNTIL THE ALARM CONDITION HAS BEEN CLEARED!
8	Failed Server CLI:	Verify all Platform alarms have been cleared from the failed server.
	Verify Platform alarms are cleared	 Use the alarmMgr utility to verify that all Platform alarms have been cleared from the system.
		<pre>\$ sudo alarmMgralarmstatus</pre>
		Example output: [admusr@SO2 ~]\$ sudo alarmMgralarmstatus 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
		***** user troubleshoots alarm and is able to resolve NTP sync issue and clear alarm *****
		[admuar6502], 16 auda alarmMar alarmatatus
		[admusr@so2 ~]\$ sudo alarmingialarmistatus [admusr@so2 ~]\$
9	Active NOAM VIP: Re-execute the server	[admusr@so2 ~]\$ Return to the upgrade procedure being executed when the failure occurred. Re-execute the upgrade for the failed server using the "Upgrade Server" option.

Appendix J. ACCESSING MY ORACLE SUPPORT (MOS)

My Oracle Support (MOS) (<u>https://support.oracle.com</u>) 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 <u>http://www.oracle.com/us/support/contact/index.html</u>. When calling, there are multiple layers of menus selections. Make the selections in the sequence shown below on the Support telephone menu:

For the first set of menu options, select 2, "New Service Request". You will hear another set of menu options.
 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, <u>http://docs.oracle.com</u>. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at <u>http://www.adobe.com</u>.

- 1. Access the Oracle Help Center site at <u>http://docs.oracle.com</u>.
- 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.