Oracle® Communications

Diameter Signaling Router

DTLS Feature Activation Guide

Release 8.4

F12334-01

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ORACLE®

Oracle Communications Diameter Signaling Router DTLS Feature Activation Procedure, Release 8.4

 CAUTION: Use only the Upgrade procedure included in the Upgrade Kit.

Before upgrading any system, please access My Oracle Support (MOS) (https://support.oracle.com) and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

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

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html.

See more information on My Oracle Support (MOS).

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1. Introduction

1.1 Purpose and Scope

This document defines the procedure that is executed to activate the Datagram Transport Layer Security (DTLS) feature on a DSR network element (NE). This procedure may be run on an in-service DSR NE (which was upgraded from a DSR 7.3.0 or prior releases **without DTLS connections configured** to DSR 7.3.1 or later releases) during a planned maintenance window to minimize the impact to network traffic.

Note: The DTLS Feature Activation procedure need not be run in the following cases as it would be automatically activated in these cases.

1. On newly installed DSR 7.3 or later releases.

2. On DSR NE upgraded from a DSR 7.3 release or prior releases **with DTLS connections configured** to DSR 7.3 or later releases.

This document also provides a procedure to deactivate DTLS after it has been activated. Refer to Section 3 for a discussion of deactivation.

No additional software installation is required prior to executing this procedure. The standard DSR installation procedure has loaded all of the required software, even if the DTLS feature is activated at a later time.

Refer [1] Oracle Communications DSR Introducing SCTP Datagram Transport Layer Security (DTLS) in DSR 7.3 by Enabling SCTP AUTH Extensions By Default, Doc ID 2019141.1 for more background on the reason for having DTLS feature activation/deactivation procedure.

1.2 References

[1] Oracle Communications DSR Introducing SCTP Datagram Transport Layer Security (DTLS) in DSR 7.3 by Enabling SCTP AUTH Extensions By Default, Doc ID 2019141.1

1.3 Acronyms

Table 1. Acronyms

Acronym	Definition
DA-MP	Diameter Agent Message Processor
DB	Database
DSR	Diameter Signaling Router
DTLS	Datagram Transport Layer Security
GUI	Graphical User Interface
HA	High Availability
IP	Internet Protocol
MP	Message Processing or Message Processor
NE	Network Element
NO	Network OAM
NOAM	Network OAM

Acronym	Definition
OAM	Operations, Administration and Maintenance
SSH	Secure Shell
UI	User Interface
VIP	Virtual IP
SOAM	System OAM
SR	Service Request
TLS	Transport Layer Security

1.4 Terminology

Table 2. Terminology

Term	Definition
DTLS	Datagram Transport Layer Security allows datagram based applications to communicate in a way that is designed to prevent eavesdropping, tampering or message forgery. The DTLS protocol is based on the stream oriented Transport Layer Security (TLS) protocol.
MP Server	It refers to DA-MP server.
SOAM	System Operations and Maintenance

1.5 General Procedure Step Format

Where it is necessary to explicitly identify the server on which a particular step is to be taken, the server name is given in the title box for the step (e.g., "ServerX" in Figure 1. Example of a Procedure Step).

Each step has a checkbox for every command within the step that the technician should check to keep track of the progress of the procedure.

The title box describes the operations to be performed during that step.

Each command that the technician is to enter is in **10 point bold Courier** *font.*

1. ☐	**ServerX**: Connect to the console of the server	Establish a connection to the server using cu on the terminal server/console.
		`$ cu –l /dev/ttyS7`
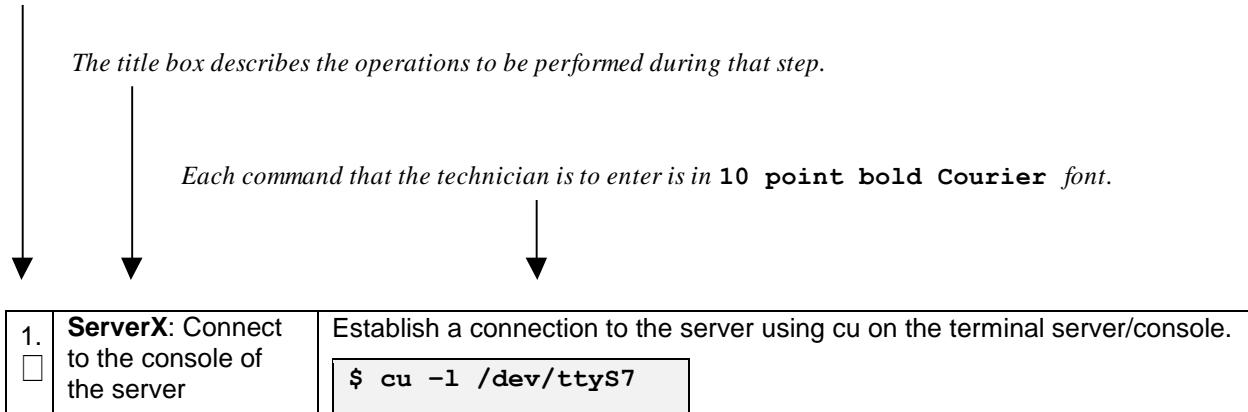
Figure 1. Example of a Procedure Step

2. Feature Activation Overview

This section lists the required materials and information needed to execute the feature activation. In addition, Table 3. Pre-Feature Activation Overview through Table 8. Post-Feature Deactivation Overview provide estimates of the time required to execute the procedure. These tables can be used to estimate the total time necessary to complete the feature activation. The timing values shown are estimates only – use these tables to plan the timing of the activation, **not** to execute the procedure. The detailed procedure steps to be executed begin in Section 5.

2.1 Definition of Activation for the DTLS Feature

The precise meaning of activation varies from feature to feature. This section briefly defines what activation means with respect to the DTLS feature.

All software required to run DTLS is available by default as part of a DSR release installation or upgrade. The process of activating the feature simply makes proper use of software elements and file system files that are already present, to change the behavior of the DSR NE.

After feature activation, DTLS connections can be configured on the SOAM GUI, allowing DTLS provisioning.

After activation:

The DA-MP(s) are prepared to act on DTLS configuration and provisioning information entered at SOAM.

Important: Once the DTLS feature is activated, it is not automatically enabled. Activation simply means the mechanism for provisioning DTLS is in place. The DA-MP(s) act on DTLS provisioning information only after DA-MP(s) have been restarted (via the **Status & Manage->Severs** screen).

2.2 Feature Activation Overview

2.2.1 Pre-Feature Activation Overview

The pre-activation procedures shown in the following table may be executed outside a maintenance window if desired. Procedure completion times shown here are estimates. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 3. Pre-Feature Activation Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Feature Activation Preparation	Impact
	This Step	**Cum.**		
System Topology Check (Procedure 1)	0:00-0:20	0:00-0:20	• Verify Network Element Configuration data • Verify Server Group Configuration data • Analyze and plan DA-MP restart sequence	None
Perform Health Check (Procedure 2)	0:01-0:05	0:21-0:25	• Verify Server status • Log all current alarms	None

2.2.2 Feature Activation Execution Overview

The procedures shown in the following table are executed inside a single maintenance window. Procedure completion times shown here are estimates. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 4. Feature Activation Execution Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Feature Activation Execution	Impact
	This Step	Cum.		
Perform Health Check (Procedure 3)	0:01-0:05	0:01-0:05	• Verify Server status • Verify server and server group configurations • Log all current alarms	None
Feature Activation (Procedure 4)	0:10-0:20	0:11-0:25	• SSH to Active NOAM • Log in as admusr • Change directory to /usr/TKLC/dsr/prod/maint/loaders/ • Execute the feature activation script • Restart each active DA-MP server	DTLS is activated

2.2.3 Post-Feature Activation Overview

The procedures shown in the following table are executed inside a maintenance window. Procedure completion times shown here are estimates. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 5. Post-Feature Activation Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Feature Activation Completion	Impact
	This Step	Cum.		
Perform Health Check (Procedure 5)	0:01-0:15	0:12-0:40	• Establish GUI Session on the SOAM VIP • Verify Server status • Log all current alarms • Verify DTLS has been activated on all DA-MP servers	DTLS has been activated on DSR

3. Feature Deactivation Overview

3.1 Pre-Feature Deactivation Overview

The procedures shown in the following table are executed inside a maintenance window. Deactivation procedure times are only estimates as the reason to execute a deactivation has a direct impact on any additional deactivation preparation that must be done. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 6. Pre-Feature Deactivation Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Deactivation Procedures	Impact
	This Step	**Cum.**		
Perform Health Check (Procedure 6)	0:01- 0:05	0:01-0:05	• Verify server status. • Log current alarms. • Delete DTLS connections if configured	None

3.2 Feature Deactivation Execution Overview

The procedures shown in the following table are executed inside a maintenance window. Deactivation procedure times are only estimates as the reason to execute a deactivation has a direct impact on any additional deactivation preparation that must be done. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 7. Feature Deactivation Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Deactivation Procedures	Impact
	This Step	**Cum.**		
Deactivation (Procedure 7)	00:10-00:20	0:11-0:25	• SSH into active NOAM. • Log in as admusr • Change directory to /usr/TKLC/dsr/prod/maint/loaders/.. • Execute the feature deactivation script. • Restart each active DA-MP server.	DTLS is deactivated

3.3 Post-Feature Deactivation Overview

The procedures shown in the following table are executed inside a maintenance window. Deactivation procedure times are only estimates as the reason to execute a deactivation has a direct impact on any additional deactivation preparation that must be done. Times may vary due to differences in database size, network configuration and loading, user experience, and user preparation.

Table 8. Post-Feature Deactivation Overview

Procedure	Elapsed Time (Hours:Minutes)		Activity Deactivation Procedures	Impact
	This Step	**Cum.**		
Perform Health Check (Procedure 8)	0:01-0:15	0:12-0:40	• Verify Server status. • Log all current alarms. • Verify DTLS has been deactivated on all DA-MP servers.	None

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4. Feature Activation Preparation
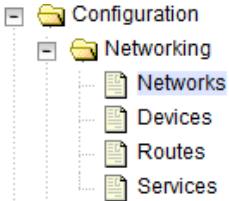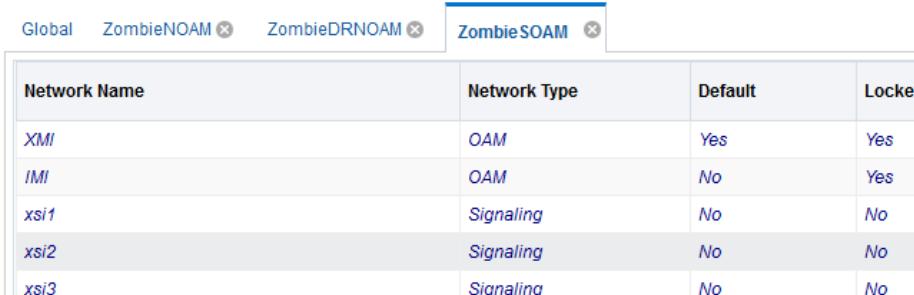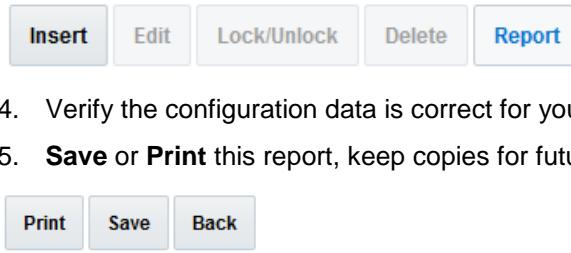
This section provides detailed procedures to prepare a system for DTLS feature activation. These procedures are executed outside a maintenance window.

4.1 System Topology Check

This procedure is part of feature activation preparation and is used to verify the system topology of the DSR network and servers.

Procedure 1. System Topology Check

STEP #	Procedure	Description
		This procedure verifies system topology. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user:

STEP #	Procedure	Description
2. ☐	**NOAM VIP GUI**: Verify network configuration data	1. Navigate to **Main Menu -> Configuration -> Networking -> Networks**. ☐ Configuration ☐ Networking 📄 Networks 📄 Devices 📄 Routes 📄 Services 2. Select the site network element tab: Global ZombieNOAM ⊗ ZombieDRNOAM ⊗ **ZombieSOAM** ⊗ | Network Name	Network Type	Default	Locked
---	---	---	---
XMI	OAM	Yes	Yes
IMI	OAM	No	Yes
xsi1	Signaling	No	No
xsi2	Signaling	No	No
xsi3	Signaling	No	No	 3. Click **Report**. [Insert] [Edit] [Lock/Unlock] [Delete] [Report] 4. Verify the configuration data is correct for your network. 5. **Save** or **Print** this report, keep copies for future reference. [Print] [Save] [Back]
3. ☐	**NOAM VIP GUI**: Verify server configuration	1. Navigate to **Main Menu -> Configuration -> Server Groups**. ⊞ Networking 📄 Servers 📄 Server Groups 📄 Resource Domains 📄 Places 📄 Place Associations 2. Click **Report**. [Insert] [Edit] [Delete] [Report] 3. Verify the configuration data is correct for your network. 4. **Save** or **Print** this report, keep copies for future reference. [Print] [Save] [Back]

STEP #	Procedure	Description
4. ☐	Analyze and plan DA-MP restart sequence	1. Analyze system topology and plan for any DA-MPs which will be out-of-service during the feature activation sequence. 2. Analyze system topology gathered in steps 2 and 3. 3. Determine exact sequence which DA-MP servers will be restarted (with the expected out-of-service periods). *Note*: It is recommended that no more than 50% of the MPs be restarted at once.
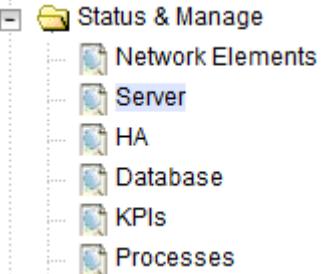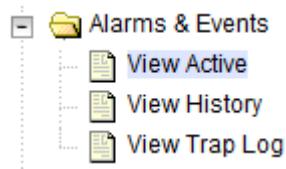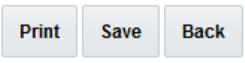
4.2 Perform Health Check

This procedure is part of feature activation preparation and is used to determine the health and status of the DSR release network and servers. This may be executed multiple times but must also be executed at least once within the time frame of 24-36 hours before the start of the maintenance window in which the feature activation will take place.

Procedure 2. Perform Health Check (Feature Activation Preparation)

STEP #	Procedure	Description
This procedure provides steps to perform needed health checks. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.		

STEP #	Procedure	Description
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user: **ORACLE®** Oracle System Login Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: | Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details. Unauthorized access is prohibited.

STEP #	Procedure	Description
2. ☐	**NOAM VIP GUI**: Verify server status	1. Navigate to **Main Menu -> Status & Manage -> Server**. ☐ Status & Manage 🗐 Network Elements 🗐 Server 🗐 HA 🗐 Database 🗐 KPIs 🗐 Processes 2. Verify all Server Status is Normal (Norm) for Alarm (Alm), Database (DB), Replication Status, and Processes (Proc). | Appl State	Alm	DB	Reporting Status	Proc
---	---	---	---	---
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm	 Do not proceed to feature activation if any of the above states are not Norm. If any of these are not Norm, corrective action should be taken to restore the non-Norm status to Norm before proceeding with the feature activation. If the Alarm (Alm) status is not Norm but only Minor alarms are present, it is acceptable to proceed with the feature activation. If there are Major or Critical alarms present, these alarms should be analyzed prior to proceeding with the feature activation. The activation may be able to proceed in the presence of certain Major or Critical alarms. Contact My Oracle Support (MOS) for assistance as necessary.
3. ☐	**NOAM VIP GUI**: Log current alarms	1. Navigate to **Main Menu -> Alarms & Events -> View Active**. ☐ Alarms & Events 📄 View Active 📄 View History 📄 View Trap Log 2. Click **Report**. [Export] [Report] [Clear Selections] 3. **Save** or **Print** this report, keep copies for future reference. [Print] [Save] [Back]

5. Feature Activation

Before feature activation, perform the system health check in Section 4.2. This check ensures that the system is ready for feature activation. Performing the system health check determines which alarms are present in the system and if feature activation can proceed with alarms.

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

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

If alarms are present on the server, contact My Oracle Support (MOS) to diagnose those alarms and determine whether they need to be addressed or if it is safe to proceed with the feature activation.

Read the following notes on feature activation procedures:

- 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 feature activation must initial each step. A check box should be 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.

5.1 Pre-Activation Procedures
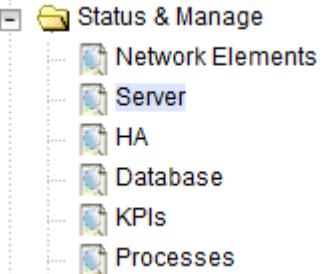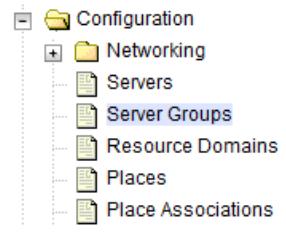
5.1.1 Perform Health Check
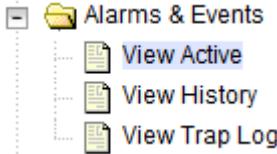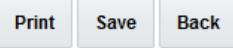
This procedure is used to determine the health and status of the network and servers. This must be executed at the start of every maintenance window.

Note: The Health Check procedure below is the same as the Health Check procedure described in Section 4.2 when preparing for feature activation, but it is repeated here to emphasize that it is being re-executed if Section 4.2 was performed outside the maintenance window.

Procedure 3. Perform Health Check (Pre Feature Activation)

STEP #	Procedure	Description
This procedure provides steps to perform needed health checks. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.		
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user:

STEP #	Procedure	Description
2. ☐	**NOAM VIP GUI**: Verify server status	1. Navigate to **Main Menu -> Status & Manage -> Server**. ☐ Status & Manage 　　☐ Network Elements 　　☐ Server 　　☐ HA 　　☐ Database 　　☐ KPIs 　　☐ Processes 2. Verify all Server Status is Normal (Norm) for Alarm (Alm), Database (DB), Replication Status, and Processes (Proc). <table><tr><td>Appl State</td><td>Alm</td><td>DB</td><td>Reporting Status</td><td>Proc</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr></table> Do not proceed to feature activation if any of the above states are not Norm. If any of these are not Norm, corrective action should be taken to restore the non-Norm status to Norm before proceeding with the feature activation. If the Alarm (Alm) status is not Norm but only Minor alarms are present, it is acceptable to proceed with the feature activation. If there are Major or Critical alarms present, these alarms should be analyzed prior to proceeding with the feature activation. The activation may be able to proceed in the presence of certain Major or Critical alarms. Contact My Oracle Support (MOS) for assistance as necessary.
3. ☐	**NOAM VIP GUI**: Verify server configuration	1. Navigate to **Main Menu -> Configuration -> Server Groups**. ☐ Configuration 　☐ Networking 　　☐ Servers 　　☐ Server Groups 　　☐ Resource Domains 　　☐ Places 　　☐ Place Associations 2. Verify the configuration data is correct for your network.

STEP #	Procedure	Description
4. ☐	**NOAM VIP GUI**: Log current alarms	1. Navigate to **Main Menu -> Alarms & Events -> View Active**. ⊟ 📁 Alarms & Events 📄 View Active 📄 View History 📄 View Trap Log 2. Click **Report**. [Export] [Report] [Clear Selections] 3. **Save** or **Print** this report, keep copies for future reference. [Print] [Save] [Back]

5.2   Activation Procedures

This section provides the detailed procedure steps of the feature activation execution. These procedures are executed inside a maintenance window.
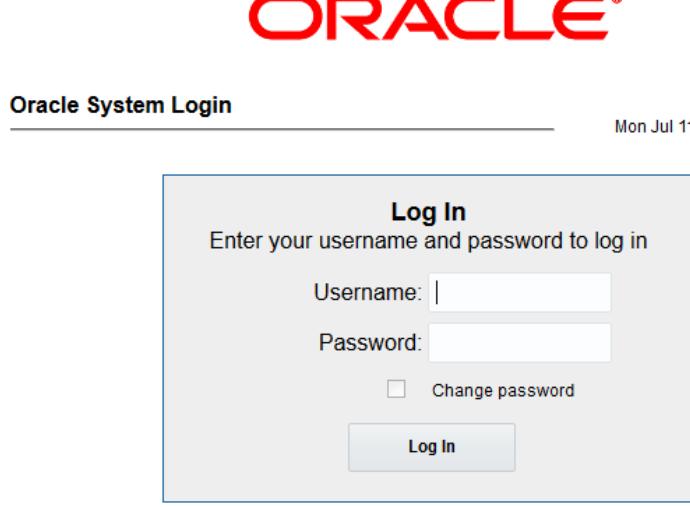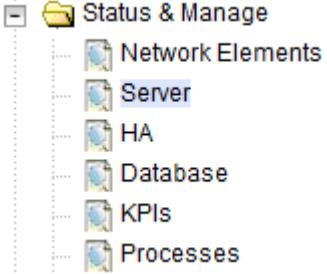
5.2.1   Feature Activation

Detailed steps for DTLS feature activation are given in the procedure below.

Procedure 4. Feature Activation

STEP #	Procedure	Description
		This procedure provides steps to activate DTLS. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP**: Establish an SSH session	Establish an SSH session to the NOAM VIP. Login as *admusr*.
2. ☐	**NOAM VIP**: Navigate to the feature activation directory	Navigate to the feature activation directory by executing the following command: ```$ cd /usr/TKLC/dsr/prod/maint/loaders/```

STEP #	Procedure	Description

3.
☐
	NOAM VIP:
	Execute the feature activation script
		Run the feature activation script by executing the following command:
		
		```$ ./featureActivateDeactivate```
		Choose **Activate**.
		
		```You want to Activate or Deactivate the Feature :```
		```1.Activate```
		```2.Deactivate```
		
		```Enter your choice :```
		
		Choose **DTLS**.
		
		```List of Feature you can Activate :```
		```1.RBAR```
		```2.FABR```
		```3.Mediation```
		```4.LoadGen```
		```5.GLA```
		```6.MAP Interworking```
		```7.DTLS```
		```8.DCA Framework```
		```9.DCA Application```
		
		Choose the SOAM site for which the application will be activated:
		Note: As an alternative, you can also activate on all SOAM sites:
		
		```The Active SO server configured in the Topology are```
		```===```
		```===```
		```1. Jetta-SO-2```
		```2. ALL SOs```
		
		```Enter your choice on which SO you want to Activate or Deactivate the Feature :```
		
		Refer to Section 7.1 for output example.

STEP #	Procedure	Description
4. ☐	**SOAM VIP GUI**: Login	1. Establish a GUI session on the SOAM server by using the VIP IP address of the SOAM server. Open the web browser and enter a URL of: `http://<Primary_SOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user: **ORACLE®** Oracle System Login Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details.
5. ☐	**SOAM VIP GUI**: Restart DA-MPs	Multiple iterations of this step may be executed during the feature activation procedure. This is dependent on the number of DA-MP servers within your system. Make a written record of the number of times the step was performed. It is recommended that no more than 50% of the DA-MPs be restarted at once. 1. Navigate to **Main Menu -> Status & Manage -> Server**. Status & Manage Network Elements Server HA Database KPIs Processes 2. Select the desired DA-MPs. Press **Ctrl** to select multiple DA-MPs at once. 3. Click **Restart**. Stop	Restart	Reboot	NTP Sync	Report 4. Verify the Server changes to the Err state and wait until it returns to the Enabled/Norm state. 5. Repeat for the additional DA-MPs.

5.3 Post-Activation Procedures

5.3.1 Perform Health Check

This procedure is used to determine the health and status of the DSR release network and servers.

Procedure 5. Perform Health Check (Post-Feature Activation)

STEP #	Procedure	Description
		This procedure performs a post activation health check. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user: **ORACLE®** Oracle System Login Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: | Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details. Unauthorized access is prohibited. Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners. Copyright © 2010, 2016, Oracle and/or its affiliates. All rights reserved.

STEP #	Procedure	Description

2. ☐	**NOAM VIP GUI**: Verify server status	1. Navigate to **Main Menu -> Status & Manage -> Server**.
		
		    ⊟ 📁 Status & Manage
		        📄 Network Elements
		        📄 Server
		        📄 HA
		        📄 Database
		        📄 KPIs
		        📄 Processes
		
		2. Verify all Server Status is Normal (Norm) for Alarm (Alm), Database (DB), Replication Status, and Processes (Proc).
		
		<table><tr><th>Appl State</th><th>Alm</th><th>DB</th><th>Reporting Status</th><th>Proc</th></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr></table>

3. ☐	**NOAM VIP GUI**: Log current alarms	1. Navigate to **Main Menu -> Alarms & Events -> View Active**.
		
		    ⊟ 📁 Alarms & Events
		        📄 View Active
		        📄 View History
		        📄 View Trap Log
		
		2. Click **Report**.
		
		    [Export] [**Report**] [Clear Selections]
		
		3. **Save** or **Print** this report, keep copies for future reference.
		
		    [Print] [Save] [Back]
		
		4. Compare this alarm report with those gathered in the pre-activation procedures. Contact My Oracle Support (MOS) if needed.

4. ☐	**DA-MP Server**: Login	Establish an SSH session to the DA-MP server. Login as *admusr*.

5. ☐	**DA-MP Server**: Verify SCTP auth flag value	Execute the following command to verify the SCTP Auth Enable Flag value:
		Note: It is recommended to copy and paste directly as listed below to avoid errors.
		
		``
		$ sudo sysctl -a
			grep net.sctp.auth_enable
			The following output is expected:
			net.sctp.auth_enable = 1
			``

6. ☐	**Additional DA-MP Servers**: Repeat	Repeat steps 4-5 for all remaining DA-MP servers.

6.   Feature Deactivation

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

6.1   Pre-Deactivation Procedures
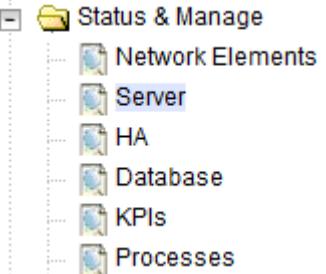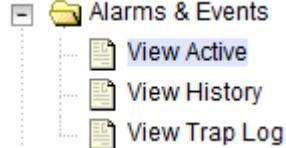
Before beginning the feature deactivation, complete the pre-deactivation procedure below.

6.1.1   Perform Health Check
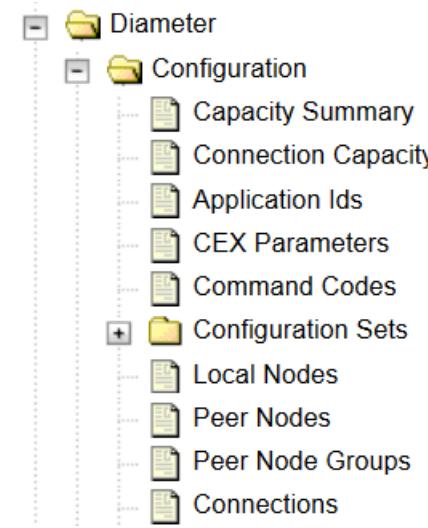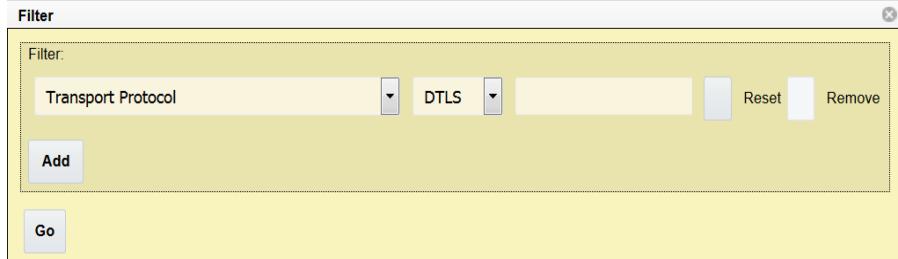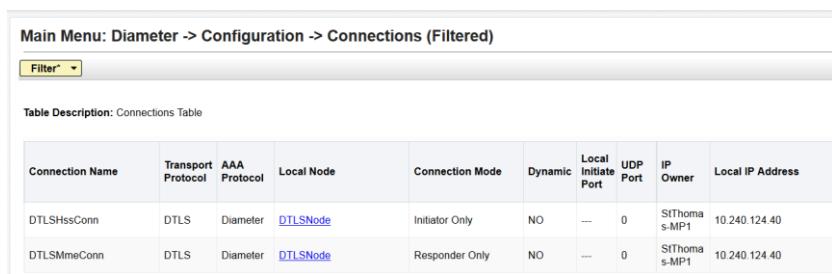
This procedure is used to determine the health and status of the DSR network and servers.

Procedure 6. Perform Health Check (Pre-Feature Deactivation)

STEP #	Procedure	Description
		This procedure performs a health check. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user: **ORACLE®** **Oracle System Login** Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details.

STEP #	Procedure	Description
2. ☐	**NOAM VIP GUI**: Verify server status	1. Navigate to **Main Menu -> Status & Manage -> Server**.

Status & Manage
- Network Elements
- Server
- HA
- Database
- KPIs
- Processes

2. Verify all Server Status is Normal (Norm) for Alarm (Alm), Database (DB), Replication Status, and Processes (Proc).

Appl State	Alm	DB	Reporting Status	Proc
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm

STEP #	Procedure	Description
3. ☐	**NOAM VIP GUI**: Log current alarms	1. Navigate to **Main Menu -> Alarms & Events -> View Active**.

Alarms & Events
- View Active
- View History
- View Trap Log

2. Click **Report**.

Export   Report   Clear Selections

3. **Save** or **Print** this report, keep copies for future reference.

Print   Save   Back

4. Compare this alarm report with those gathered in the pre-activation procedures. Contact My Oracle Support (MOS) if needed.

STEP #	Procedure	Description
4. ☐	**SOAM VIP GUI**: Login	1. Establish a GUI session on the SOAM server by using the VIP IP address of the SOAM server. Open the web browser and enter a URL of: `http://<Primary_SOAM_VIP_IP_Address>` 2. Login as the ***guiadmin*** user: **ORACLE**® Oracle System Login Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: | Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details. Unauthorized access is prohibited. Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners. Copyright © 2010, 2016, Oracle and/or its affiliates. All rights reserved.

STEP #	Procedure	Description
5. ☐	**SOAM VIP GUI**: Delete DTLS connections if configured	1. Navigate to **Main Menu -> Diameter -> Configuration -> Connections**. □ Diameter 　□ Configuration 　　Capacity Summary 　　Connection Capacity Dashboard 　　Application Ids 　　CEX Parameters 　　Command Codes 　　⊞ Configuration Sets 　　Local Nodes 　　Peer Nodes 　　Peer Node Groups 　　Connections 2. Verify by applying filter for Transport Protocol as DTLS to see if DTLS connections are configured. **Filter** Filter: Transport Protocol ▾ DTLS ▾ Reset Remove Add Go If DTLS connections are configured, a list of DTLS connections displays as shown below: Main Menu: Diameter -> Configuration -> Connections (Filtered) Filter* ▾ Table Description: Connections Table | Connection Name	Transport Protocol	AAA Protocol	Local Node	Connection Mode	Dynamic	Local Initiate Port	UDP Port	IP Owner	Local IP Address
---	---	---	---	---	---	---	---	---	---
DTLSHssConn	DTLS	Diameter	DTLSNode	Initiator Only	NO	---	0	StThomas-MP1	10.240.124.40
DTLSMmeConn	DTLS	Diameter	DTLSNode	Responder Only	NO	---	0	StThomas-MP1	10.240.124.40	 3. Disable all the configured DTLS connections by Navigating to **Main Menu -> Diameter -> Maintenance -> Connections**. 4. Delete all the configured DTLS connections by Navigating back to **Main Menu -> Diameter -> Configuration -> Connections**.

6.2 Deactivation Procedures

6.2.1 Feature Deactivation

This section provides the detailed steps of the DTLS de-activation procedures.

Procedure 7. Feature Deactivation

STEP #	Procedure	Description
		This procedure provides steps to deactivate DTLS. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP**: Establish an SSH session	Establish an SSH session to the NOAM VIP. Login as **admusr**.
2. ☐	**NOAM VIP**: Navigate to the feature activation directory	Navigate to the feature activation directory by executing the following command: `$ cd /usr/TKLC/dsr/prod/maint/loaders/`

3. ☐	**NOAM VIP**: Execute the feature activation script	Run the feature activation script by executing the following command:
		
		`$   ./featureActivateDeactivate`
		Choose **Deactivate**.
		
		``You want to Activate or Deactivate the Feature :
		1.Activate
		2.Deactivate
		
		Enter your choice : ```
		Choose **DTLS**.
		
		``Which Feature you want to DeActivate :
		1.RBAR
		2.FABR
		3.Mediation
		4.LoadGen
		5.GLA
		6.MAP Interworking
		7.DTLS
		8.DCA Framework
		9.DCA Application```
		Choose the SOAM site for which the application will be deactivated:
		Note: As an alternative, you can also deactivate on all SOAM sites:
		
		``The Active SO server configured in the Topology are
		===
		===
		1. Jetta-SO-2
		2. ALL SOs
		
		Enter your choice on which SO you want to Activate or Deactivate the Feature :```
		Refer to Section 7.2 for output example.

| STEP #	Procedure	Description
4. ☐	**SOAM VIP GUI**: Login	1. Establish a GUI session on the SOAM server by using the VIP IP address of the SOAM server. Open the web browser and enter a URL of: `http://<Primary_SOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user:
5. ☐	**SOAM VIP GUI**: Restart DA-MPs	Multiple iterations of this step may be executed during the feature activation procedure. This is dependent on the number of DA-MP servers within your system. Make a written record of the number of times the step was performed. It is recommended that no more than 50% of the DA-MPs be restarted at once. 1. Navigate to **Main Menu -> Status & Manage -> Server**. 2. Select the desired DA-MPs. Press **Ctrl** to select multiple DA-MPs at once. 3. Click **Restart**. 4. Verify the Server changes to the Err state and wait until it returns to the Enabled/Norm state. 5. Repeat for the additional DA-MPs.

6.3 Post-Deactivation Procedures
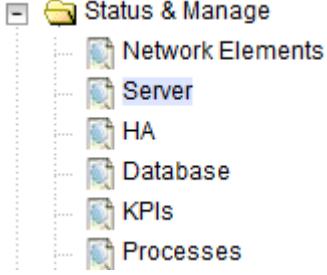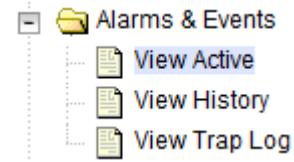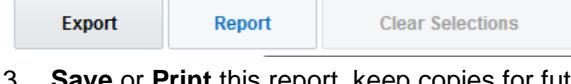
To complete a deactivation, complete the Post-Deactivation procedure below.

6.3.1 Perform Health Check

This procedure is used to determine the health and status of the network and servers.

Procedure 8. Perform Health Check (Post-Feature Deactivation)

STEP #	Procedure	Description
		This procedure performs a post activation health check. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	**NOAM VIP GUI**: Login	1. Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of: `http://<Primary_NOAM_VIP_IP_Address>` 2. Login as the *guiadmin* user: **ORACLE**® Oracle System Login Mon Jul 11 13:59:37 2016 EDT **Log In** Enter your username and password to log in Username: | Password: ☐ Change password **Log In** Welcome to the Oracle System Login. This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details. Unauthorized access is prohibited. Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners. Copyright © 2010, 2016, Oracle and/or its affiliates. All rights reserved.

STEP #	Procedure	Description

2. ☐	**NOAM VIP GUI**: Verify server status	1. Navigate to **Main Menu -> Status & Manage -> Server**.
		
		    🗀 Status & Manage
		        📄 Network Elements
		        📄 Server
		        📄 HA
		        📄 Database
		        📄 KPIs
		        📄 Processes
		
		2. Verify all Server Status is Normal (Norm) for Alarm (Alm), Database (DB), Replication Status, and Processes (Proc).
		
		(see table below)

Appl State	Alm	DB	Reporting Status	Proc
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm
Enabled	Norm	Norm	Norm	Norm

STEP #	Procedure	Description

3. ☐	**NOAM VIP GUI**: Log current alarms	1. Navigate to **Main Menu -> Alarms & Events -> View Active**.
		
		    🗀 Alarms & Events
		        📄 View Active
		        📄 View History
		        📄 View Trap Log
		
		2. Click **Report**.
		
		[Export] [Report] [Clear Selections]
		
		3. **Save** or **Print** this report, keep copies for future reference.
		
		[Print] [Save] [Back]
		
		4. Compare this alarm report with those gathered in the pre-Deactivation procedures. Contact My Oracle Support (MOS) if needed.

4. ☐	**DA-MP Server**: Login	Establish an SSH session to the DA-MP server. Login as *admusr*.

5. ☐	**DA-MP Server**: Verify SCTP auth flag value	Execute the following command to verify the SCTP Auth Enable Flag value:
		Note: It is recommended to copy and paste directly as listed below to avoid errors.
		
		``
		$ sudo sysctl -a
			grep net.sctp.auth_enable
			The following output is expected:
			net.sctp.auth_enable = 0
			``

6. ☐	**Additional DA-MP Servers**: Repeat	Repeat steps 4-5 for all remaining DA-MP servers.

7.   Engineering Notes

FIPS integrity verification test failed: In DSR 7.3+, you may see 'FIPs integrity verification test failed' message displayed during the activation/Deactivation output, this message is expected and harmless.

7.1   Sample Output of Activation (Active NOAM)

```
[admusr@Barbados-NO1 loaders]$ ls
activate                  helper            upgrade
deactivate                install           verifyFeatureActivation
featureActivateDeactivate  load.dsr.install
[admusr@Barbados-NO1 loaders]$ ./featureActivateDeactivate
Wed Sep 30 11:10:45 EDT 2015::Starting featureActivateDeactivate main...
Start the Automation script , To run the Feature Activation/DeActivation on
Active NO.


You want to Activate or Deactivate the Feature :
1.Activate
2.Deactivate


Enter your choice : 1


List of Feature you can Activate :
1.RBAR
2.FABR
3.Mediation
4.LoadGen
5.GLA
6.MAP Interworking
7.DTLS
8.DCA Framework
9.DCA Application


Enter the choice : 7


Run script to Activate dtls Feature


===============================S-T-A-R-T===============================


======================================================================
Execution of Activation/Deactivation Process Starts
======================================================================
Starting Activation/Deactivation process....
Executing /usr/TKLC/dsr/prod/maint/loaders/activate/load.dtlsActivateAsourced
script on Barbados-NO1
======================================================================
Starting to Execute the Loaders on Mate server
======================================================================
Executing /usr/TKLC/dsr/prod/maint/loaders/activate/load.dtlsActivateAsourced
script on Barbados-NO2
```

```
================================================================================
FIPS integrity verification test failed.
FIPS integrity verification test failed.
================================================================================
The Active SO server configured in the Topology are
================================================================================
1. Barbados-SO1
2. ALL SOs


Enter your choice on which SO you want to Activate or Deactivate the Feature
:1


================================================================================
This is a 3 Tier Setup , So run the B sourced loaders on SO server :
Barbados-SO1
Executing /usr/TKLC/dsr/prod/maint/loaders/activate/load.dtlsActivateBsourced
script on Barbados-SO1
FIPS integrity verification test failed.
================================================================================
Current server is HA ACTIVE
================================================================================
DtlsFeatureEnabled is Yes, DTLS feature is already activated
================================================================================
FIPS integrity verification test failed.
================================================================================
Executing the Loaders and Clearing Cache on Standby SO servers.
================================================================================
Starting to Execute the Loaders on Mate server
================================================================================
Executing /usr/TKLC/dsr/prod/maint/loaders/activate/load.dtlsActivateBsourced
script on Barbados-SO2
================================================================================
FIPS integrity verification test failed.
================================================================================
Current server is HA STANDBY
================================================================================
FIPS integrity verification test failed.
================================================================================
Do you want to activate/deactivate this feature on another System OAM
Server[Y/N] : n
[admusr@Barbados-NO1 loaders]$
```

7.2   Sample Output of Deactivation (Active NOAM)

```
[admusr@Barbados-NO1 loaders]$ ./featureActivateDeactivate
Wed Sep 30 11:41:10 EDT 2015::Starting featureActivateDeactivate main...
Start the Automation script , To run the Feature Activation/DeActivation on
Active NO.

You want to Activate or Deactivate the Feature :
1.Activate
2.Deactivate

Enter your choice : 2

Which Feature you want to DeActivate :
1.RBAR
2.FABR
3.Mediation
4.LoadGen
5.GLA
6.MAP Interworking
7.DTLS
8.DCA Framework
9.DCA Application

Enter your choice : 7

Run script to Deactivate dtls Feature

=================================S-T-A-R-T==================================
Execution of Activation/Deactivation Process Starts
===========================================================================
Starting Activation/Deactivation process....
===========================================================================
The Active SO server configured in the Topology are
===========================================================================
1. Barbados-SO1
2. ALL SOs

Enter your choice on which SO you want to Activate or Deactivate the Feature
:1
Verifying feature is activated or not on Barbados-SO1
FIPS integrity verification test failed.
================================================
DTLS is activated on Barbados-SO1
================================================
Executing
/usr/TKLC/dsr/prod/maint/loaders/deactivate/load.dtlsDeactivateAsourced
script on Barbados-NO1
===========================================================================
```

```
Starting to Execute the Loaders on Mate server
===============================================================================
Executing
/usr/TKLC/dsr/prod/maint/loaders/deactivate/load.dtlsDeactivateAsourced
script on Barbados-NO2
===============================================================================
FIPS integrity verification test failed.
FIPS integrity verification test failed.
===============================================================================
This is a 3 Tier Setup , So run the B sourced loaders on SO server :
Barbados-SO1
Executing
/usr/TKLC/dsr/prod/maint/loaders/deactivate/load.dtlsDeactivateBsourced
script on Barbados-SO1
FIPS integrity verification test failed.
===============================================================================
===
Current server is HA ACTIVE
===============================================================================
  === changed 1 records ===
===============================================================================
Verify DtlsFeatureEnabled in DpiOption Table
===============================================================================
name=DtlsFeatureEnabled
value=No
===============================================================================
All DA-MPs must be restarted to use DTLS
===============================================================================
FIPS integrity verification test failed.
===============================================================================
Executing the Loaders and Clearing Cache on Standby SO servers.
===============================================================================
Starting to Execute the Loaders on Mate server
===============================================================================
Executing
/usr/TKLC/dsr/prod/maint/loaders/deactivate/load.dtlsDeactivateBsourced
script on Barbados-SO2
===============================================================================
FIPS integrity verification test failed.
===============================================================================
Current server is HA STANDBY
===============================================================================
FIPS integrity verification test failed.
===============================================================================
Do you want to activate/deactivate this feature on another System OAM
Server[Y/N] : n
[admusr@Barbados-NO1 loaders]$
```

Appendix A. My Oracle Support (MOS)

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

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

1. Select 2 for New Service Request.

2. Select 3 for Hardware, Networking and Solaris Operating System Support.

3. Select one of the following options:

    For technical issues such as creating a new Service Request (SR), select 1.

    For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket. MOS is available 24 hours a day, 7 days a week, 365 days a year.

Appendix B. 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.

Appendix C. Locate Product Documentation on the Oracle Help Center

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

1. Access the Oracle Help Center site at http://docs.oracle.com.

2. Click Industries.

3. Under the Oracle Communications subheading, click the **Oracle Communications documentation** link. The Communications Documentation page appears. Most products covered by these documentation sets will appear under the headings "Network Session Delivery and Control Infrastructure" or "Platforms."

4. Click on your Product and then the Release Number. A list of the entire documentation set for the selected product and release appears.

5. To download a file to your location, right-click the PDF link, select Save target as (or similar command based on your browser), and save to a local folder.