Oracle® Communications Diameter Signaling Router

Network Impact Report

Release 9.3.0.0.0
G55898-01
April 2026

Oracle Communications Diameter Signaling Router Network Impact Report, Release 9.3.0.0.0

G55898-01

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Preface

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What's New in This Release

This section introduces the documentation updates for release 9.3.0.0.0.

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- Updated Compatibility section.
- Updated DSR features in the DSR Features section.
- Updated vSTP features in the vSTP Features section.
- Updated the Software Requirements section.
- Updated the DSR Upgrade Paths section.
- Updated the IDIH Upgrade Path section.
- Updated the UDR Upgrade Paths section.
- Updated the MEAL Inserts section.

1 Introduction

The purpose of this document is to highlight the changes of the product that may have impact on the customer network operations and should be considered by the customer during planning for this release.

This document summarizes Diameter Signaling Router Release 9.1.0.0.0 new and enhancement features as compared to the previous release, and the operations impact of these features at a high level.

1.1 Acronyms

The Table 1-1 provides information about the acronyms and the terminologies used in this document.

Table 1-1 Acronyms

Acronym/Term	Description
ASGU	Automated Server Group Upgrade
AS	Application Server
ASU	Automated Site Upgrade
AVP	Attribute Value Pair
BSBR	Binding SBR
CA	Communication Agent
CAF	Customized Application Framework
CLI	Command Line Interface
CLR	Cancel Local Request
DA-MP	Diameter Agent Message Processor
DAL	Diameter Application Layer
DCA	Diameter Custom Application Framework
DCL	Diameter Connection Layer
DEA	Diameter Edge Agent
DPC	Destination Point Code
DPL	Data Processor Library
DRMP	Diameter Routing Message Priority
DPI	Diameter Plug-in
DSA	Diameter Security Application
DoS	Denial of Service
EXGSTACK	Eagle Next Generation Stack
vEIR	Virtual Equipment Identity Register
ECR	Mobile Equipment-Identity-Check-Request
ECA	Mobile Equipment-Identity-Check-Answer
FLOBR	Flexible Link set Optional Based Routing
GUI	Graphical User Interface

Table 1-1 (Cont.) Acronyms

Acronym/Term	Description
GTT	Global title translation
GTA	Global title Address
HSS	Home Subscriber Server
HLR	Home Location Register
iLO	Integrated Lights Out
IMI	Internal Management Interface
IPv4	IPv4 address of the subscriber
IPv6	IPv6 address of the subscriber
IMSI	International Mobile Subscriber Identity
IMPU	IP Multimedia Public Identity
IMPI	IP Multimedia Private Identity
IOT	Interoperability Tests
KPI	Key Performance Indicator
LAI	Location Area Identity
LTE	Long Term Evolution
MAP	Mobile Application Part
MBR	Map Based Routing
MCC	Mobile Country Code
MEAL	Measurements, Events, Alarms, and Logging
MME	Mobility Management Entity
MMI	Man Machine Interface
MP	Message Processor
MPS	Messages per Second
MS	Mobile Station/Handset
MSU	Message signal Unit
MSISDN	Mobile Station International Subscriber Directory Number
MTC	Machine type communication
MTP	Message Transfer Part
MO	Managed Object
NE	Network Element
NGN	Next Generation Networks
NGN-PS	NGN Priority Services
NIDD	Non-IP data delivery [directly through MME/SGSN]
NMS	Network Management System
NOAM	Network Operations Administration and Maintenance
NF	Network Function
NRF	NF Repository Function
OAG	Oracle Accessibility Guidelines
OAM	Operations, Administration, Maintenance
OAM&P	Operations, Administration, Maintenance and Provisioning
OCUDR	Oracle Communications User Data Repository
OPC	Origin Point Code
PDRA	Policy Diameter Relay Agent

Table 1-1 (Cont.) Acronyms

Acronym/Term	Description
PCRF	Policy Control and Charging Rules Function
PCIMC	Per Connection Ingress Message Control
PDU	Protocol Data Unit
PDN	Packet Data Network
POR	Plan of Record
PS	Priority Service (NGN-PS)
RAN	Radio Access Network
ROS	Routing Option Set
RSA	Reset Answer
RSR	Reset Request
SBR	Session Binding Repository
SSBR	Session SBR
ScsAsId	String provided by SCS to identify itself in non-3GPP world
SCS	Service Control Server
SOAM	Site Operations Administration and Maintenance
SS7	Signaling System No. 7
STP-MP	Signaling Transfer Point Message Processor
SV	Software Version
TPD	ORACLE Platform Distribution
TCAP	Transaction Capability Part
TLTRI	T8 Long Term Transaction Reference ID
TTRI	T8 Transaction Reference ID
TOBR	TCAP Opcode Based Routing
UE	User Equipment
USBR	Universal SBR
VIP	Virtual IP Address
VNF	Virtual Network Functions
VNFM	Virtual Network Functions Manager
VPLMN	Virtual Public Land Mobile Network
VSTP	Virtual SS7 Signal Transfer Point
VEDSR	Virtualized Engineered DSR
XMI	External Management Interface
XSI	External Signaling Interface

1.2 References

- DSR Release Notes
- DSR Upgrade Guide
- IDIH Release Notes
- DSR IP Flow Document: CGBU_019284 (ORACLE Internal Document)
- Platform IP Flow Document: CGBU_PM_1112 (ORACLE Internal Document)

1.3 Compatibility

Product Compatibility

- DSR 9.3.0.0.0 is compatible with IDIH 9.3.0.0.0
- DSR 9.3.0.0.0 is compatible with VNFM 6.3.0.0.0_63.5.5
- DSR 9.3.0.0.0 is compatible with ComCOL 8.1.0.32.0-14261, AppWorks 9.9.3-103.12.0, EXGSTACK 9.9.3-103.12.0, and UDR 14.3.0.0.0-114.64.0

Product Compatibility Matrix

Table 1-2 Product Compatibility Matrix

DSR	PIC	UDR	VNFM	IDIH	ATS
OCDSR Rel 8.0	10.4, 10.4.0.3	N/A	N/A	N/A	N/A
OCDSR Rel 8.1	10.4, 10.4.0.3	N/A	N/A	IDIH 8.1	N/A
OCDSR Rel 8.1.1	Compatibility not tested with MRs and Patch releases	N/A	N/A	IDIH 8.1	N/A
OCDSR Rel 8.1.2	Compatibility not tested with MRs and Patch releases	N/A	N/A	IDIH 8.1	N/A
OCDSR Rel 8.2	10.4, 10.4.0.3	N/A	N/A	IDIH 8.2	N/A
OCDSR Rel 8.2.1	Compatibility not tested with MRs and Patch releases	N/A	N/A	IDIH 8.2	N/A
OCDSR Rel 8.3	Compatibility not tested with MRs and Patch releases	OCUDR 12.5	VNFM 2.0	IDIH 8.2.1, IDIH 8.2.2	N/A
OCDSR Rel 8.4	10.4, 10.4.0.3	OCUDR 12.5.1	VNFM 3.0	IDIH 8.2.1, IDIH 8.2.2	ATS 8.4.0.0.0
OCDSR Rel 8.4.0.1	Compatibility not tested with MRs and Patch releases	OCUDR 12.5.1	VNFM 3.0	IDIH 8.2.1, IDIH 8.2.2	N/A
OCDSR Rel 8.4.0.2	Compatibility not tested with MRs and Patch releases	OCUDR 12.5.1	VNFM 3.0	IDIH 8.2.1, IDIH 8.2.2	ATS 8.4.0.2.0, 8.4.0.2.1, 8.4.0.2.2, 8.4.0.3.0
OCDSR Rel 8.4.0.3	Compatibility not tested with MRs and Patch releases	OCUDR 12.5.2	VNFM 4.1.2	IDIH 8.2.1, IDIH 8.2.2	ATS 8.4.0.3.0, 8.4.0.3.1
OCDSR Rel 8.4.0.4	Compatibility not tested with MRs and Patch releases	OCUDR 12.5.2	VNFM 4.3	IDIH 8.2.1, IDIH 8.2.2	ATS 8.4.0.4.0, 8.4.0.4.1, 8.4.0.4.2
OCDSR Rel 8.4.0.5	Compatibility not tested with MRs and Patch releases	OCUDR 12.6	VNFM 4.4	IDIH 8.2.1, IDIH 8.2.2	ATS 8.4.0.5.0

Table 1-2 (Cont.) Product Compatibility Matrix

DSR	PIC	UDR	VNFM	IDIH	ATS
OCDSR Rel 8.4.0.6	Compatibility not tested with MRs and Patch releases	OCUDR 12.6	VNFM 4.5	IDIH 8.2.1, IDIH 8.2.2	N/A
OCDSR Rel 8.5	10.4.0.3	OCUDR 12.6.1	VNFM 5.0	IDIH 8.2.3	ATS 8.5.0.0.0
OCDSR Rel 8.5.0.1	Compatibility not tested with MRs and Patch releases	OCUDR 12.6.1	VNFM 5.1	IDIH 8.2.3	ATS 8.5.0.1.0
OCDSR Rel 8.5.0.2	Compatibility not tested with MRs and Patch releases	OCUDR 12.6.2	VNFM 5.2	IDIH 8.2.3	ATS 8.5.0.2.0
OCDSR Rel 8.5.1.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.6.3	VNFM 5.3	IDIH 8.2.3	ATS 8.5.1.0.0
OCDSR Rel 8.6.0.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0	VNFM 5.4	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 8.6.0.1.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0	VNFM 5.4.1	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 8.6.0.2.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0.1.0	VNFM 5.4.1	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 8.6.0.3.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0.2.0	VNFM 5.4.3	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 8.6.0.4.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0.2.0	VNFM 5.4.3	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 8.6.0.5.0	Compatibility not tested with MRs and Patch releases	OCUDR 12.7.0.2.0	VNFM 5.4.4	IDIH 8.2.3.1	ATS 8.6.0.0.0
OCDSR Rel 9.0.0.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.0.0.0.0	VNFM 6.0.0	IDIH 8.2.3.3	ATS 9.0.0.0.0
OCDSR Rel 9.0.1.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.0.1.0.0	VNFM 6.0.1	IDIH 8.2.3.3	ATS 9.0.1.0.0
OCDSR Rel 9.0.2.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.0.2.0.0	VNFM 6.0.2.0.0	IDIH 8.2.3.3	ATS 9.0.2.0.0
OCDSR Rel 9.1.0.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.1.0.0.0	VNFM 6.1.0.0.0	IDIH 9.1.0.0.0	ATS 9.1.0.0.0
OCDSR Rel 9.2.0.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.2.0.0.0	VNFM 6.2.0.0.0	IDIH 9.2.0.0.0	ATS 9.2.0.0.0
OCDSR Rel 9.3.0.0.0	Compatibility not tested with MRs and Patch releases	OCUDR 14.3.0.0.0	VNFM 6.3.0.0.0	IDIH 9.3.0.0.0	ATS 9.3.0.0.0

Incompatible Software and Features

The following software element is not compatible with DSR 9.0.0.0.0 and later:

- SCEF

The following features are incompatible with DSR 8.3 and later:

- Active/Standby DA-MP server architecture (1+1) redundancy model
- MAP-IWF
- Radius
- GLA
- Diameter Security Application (DSA) with Universal-SBR (USBR) is an obsolete application. Alternatively, Diameter Security Application (DSA) with UDR is introduced in DSR 8.4.0.5.0. For information about this application, refer to the *Diameter Security Application User Guide with UDR*. Customers using this application must not upgrade the DSR software to DSR 8.4.0.5.0 and must migrate to the DSA with UDR based application.
- Virtualized Engineered DSR (VEDSR) deployment, which is also known as TVOE based Fully Virtualized Rack Mount Server (FVRMS) Signaling node, is not supported from DSR 8.3 and later. The non-supported network elements of VEDSR are as follows:
  - DSR NOAM
  - DSR SOAM
  - DSR Message Processors (MP)
  - SS7 MP
  - DSR IPFE
  - DSR SBR (Session/Binding/Universal)
  - SDS NOAM
  - SDS SOAM
  - SDS QS
  - SDS DP

VEDSR networks and associated elements must be migrated to virtual DSR implementation based on KVM with or without OpenStack or VMware prior to DSR 8.3.0 or 8.4.x upgrade or installation.

> **Note**
>
> Only configuration data can be migrated from old release to new release. Refer to *Upgrade* chapter in the *Diameter Security Application User's Guide with UDR* for procedure.

2

Features and Enhancements

This chapter describes the features and enhancements for the 9.3.0.0.0 release.

2.1 DSR Features

The following DSR features are implemented in release 9.3.0.0.0:

- **Export All Rules**: Allows users to export all rules from the system to the file management directory. Each rule is saved as a separate xml file containing the mediation version number, rule template definition, provisioned condition values, and provisioned action values. For more information, see *Oracle Communications Diameter Signaling Router Mediation User Guide*.
- **Exporting all Rule Templates**: Allows users to export all rule templates from the system to the file management directory. Each template is saved as an xml file containing the template definition without provisioned data, references to enumeration types and their values, the mediation version number, and related help pages. For more information, see *Oracle Communications Diameter Signaling Router Mediation User Guide*.
- **DSR generating alarms based on Measurement TxAnswerLocalNode**: This feature enhances the capability by introducing real-time monitoring of the TxAnswerLocalNode measurement to detect abnormal scenarios, where DSR generates answer messages locally instead of forwarding requests to peers and raising an alarm as per the configured thresholds. For more information, see *Oracle Communications Diameter Signaling Router Diameter User Guide* and *Oracle Communications Diameter Signaling Router Alarms and KPIs Reference Guide*.
- **TSA Address Limit Increase in DSR**: This feature increases the total number of application servers IP addresses which can be configured in IP Front End (IPFE) TSAs (Target Set Address) across DSR site from 250 to 2048. For more information, see *Oracle Communications Diameter Signaling Router IP Front End User Guide*.
- **Increase Limit in Number of Connections in Throttling Configuration Set**: This feature increase the limit of number of connections which can have message throttling configuration sets configured from 500 to 2500. For more information, see *Oracle Communications Diameter Signaling Router Diameter User Guide*.
- **TACACS+ CLI Authentication**: TACACS+ (Terminal Access Controller Access-Control System Plus) authentication is now supported for DSR Command Line Interface (CLI) users, enabling secure CLI access. For more information, see *Oracle Communications Diameter Signaling Router Operations, Administration, and Maintenance Guide*.
- **MCPTT (Mission Critical Push to Talk) Rx Gateway**: The MCPTT Rx Gateway enhancement introduces updates to existing table and field names within the Rx ShUDR application to support planned integration with the Binding Support Function (BSF), alongside the current Policy and Charging Rules Functionality (PCRF). For more information, see *Oracle Communications Diameter Signaling Router Rx ShUDR Application User's Guide*.

2.2 vSTP Features

The following vSTP features are implemented in release 9.3.0.0.0:

- **vSTP HLRR (Home Location Register Router) support with SDS DB**:The HLR (Home Location Register) router feature in vSTP (Virtual Signal Transfer Point) retrieves information from the SDS (Subscriber Data Server) and uses them to route messages to HLRs. This feature is a G-Flex enhancement enabling per-subscriber routing (MSISDN (Mobile Station International Subscriber Directory Number) or IMSI (International Mobile Subscriber Identity)) to the correct HLR network entity, improving load balancing vs fixed number ranges. For more information, see *Oracle Communications vSTP Mobile Number Portability User Guide*, and *Oracle Communications Subscriber Database Server Provisioning Interface User Guide*.
- **MTP Origin-Based Routing (MOBR)**: MTP origin based routing provides customers with greater flexibility and control over the vSTP routing mechanisms by enabling network operators to selectively route traffic to the same destination through different networks, depending on various classes and exception routes. For more information, see *Oracle Communications Diameter Signaling Router Virtual Signaling Transfer Point User Guide*.

2.3 VNFM Features

The following VNFM features are implemented in release 9.3.0.0.0:

There are no new features for the release.

2.4 IDIH Features

There are no new features for the release.

3
Software Requirements

This chapter provides information on the software platform component changes in this release.

Supported Software

Table 3-1 Software Platform Components Details for DSR 9.3.0.0.0

Component	Release
SDS Release	9.3.0.0.0_103.15.0
TPD	8.10.1.11.0-150.28.0
COMCOL	8.1.0.32.0-14261
AppWorks	9.9.3-103.12.0
EXGSTACK	9.9.3-103.12.0
DSR	9.3.0.0.0_103.15.0
ATS	9.3.0.0.0-1.0.5
UDR	14.3.0.0.0-114.64.0
VNFM	6.3.0.0.0_63.5.5

> **Note**
>
> It is recommended to upgrade SDS before DSR.

4
Upgrade Overview

This chapter provides an overview of the upgrade activities for DSR in this release.

4.1 DSR Upgrade Paths

The supported upgrade Paths for DSR 9.3.0.0.0 are listed in the following table:

Table 4-1 DSR Upgrade Paths

Source Release	Target Release
9.1.0.0.0	9.3.0.0.0
9.2.0.0.0	9.3.0.0.0

> **Note**
>
> For further information on upgrading DSR, see *DSR Cloud Software Upgrade Guide*.

4.2 IDIH Upgrade Path

IDIH 9.3.0.0.0 supports only fresh installation.

Table 4-2 IDIH Upgrade Paths

Source Release	Target Release
NA	9.3.0.0.0

> **Note**
>
> IDIH 9.3.0.0.0 needs different flavour VMs and require additional resources as compared to the older IDIH.

IDIH upgrade can be scheduled prior to or by following the DSR upgrade. If IDIH upgrade is deferred until after DSR upgrades, then any newly captured elements existing within the upgraded DSR is not decoded by IDIH until after the IDIH upgrade.

4.3 SDS Upgrade Paths

The supported upgrade paths for SDS 9.3.0.0.0 are listed in the following table:

Table 4-3 SDS Upgrade Paths

Source Release	Target Release
9.1.0.0.0	9.3.0.0.0
9.2.0.0.0	9.3.0.0.0

Note

For further information on upgrading SDS, see *SDS Software Upgrade Guide*.

Caution

During SDS upgrade:

- If the customer deployment has only FABR features enabled, it is recommended to upgrade the SDS nodes before upgrading the DSR nodes.
- If the customer deployment has both the FABR and PCA features enabled, it is recommended to upgrade the DSR nodes before upgrading the SDS nodes.

4.4 UDR Upgrade Paths

The supported upgrade paths for UDR 9.3.0.0.0 are listed in the following table:

Table 4-4 UDR Upgrade Paths

Source Release	Target Release
14.1.0.0.0	14.3.0.0.0
14.2.0.0.0	14.3.0.0.0

4.5 Upgrade Execution

In DSR, there are multiple methods available for upgrading a site. The most efficient way to upgrade a site is the Automated Site Upgrade (ASU) feature. As the name implies, this feature upgrades an entire site (SOAMs and all C-level servers) with a minimum of user interaction. Once the upgrade is initiated, the upgrade automatically prepares the server(s), performs the upgrade, and then sequences to the next server or group of servers until all servers in the site are upgraded. The server upgrades are sequenced in a manner that preserves data integrity and processing capacity.

Automated Site Upgrade can be used to upgrade the DSR/SDS servers. However, Auto Site Upgrade cannot be used to upgrade IDIH servers at a site.

Additionally, there are separate procedures described in the upgrade procedures to support either a manual or automated approach to upgrade any particular server group. When planning upgrades the *Site Upgrade Methodology Selection* section of the upgrade procedure should be carefully reviewed. The use of the automated methods (Auto Site or Auto Server Group) for DA-MP server groups should be carefully considered regarding potential negative traffic

impacts. The ASU enhancement in DSR resolves this issue. The user is now instructed to rearrange or add cycles to create a suitable upgrade plan.

4.6 Limitations

When `AppEventLog` file is full, then SOAM or NOAM becomes unstable and shows undefined behavior, such as:

- Replication and merging stops.
- GUI access stops working.

> **Note**
>
> Upgrade fails if utilization of `/var/TKLC/rundb` partition is more than 70%, which may be true in case of larger `AppEventLog` file size (~5.5 GB in size).
> To prevent the above listed issues, we need to assign or allocate `/var/TKLC/rundb` size and `AppEventLog` file size in sync. That is the `AppEventLog` file size (plus some delta for other files like MeasStat) should be always less than 70 % of `/var/TKLC/rundb` partition size.

4.7 Migration of DSR Data

As in prior releases, the existing DSR Data is preserved during the migration.

5
MEAL Inserts

This section summarizes the changes to Alarms, Measurements, KPIs, and MIBs.

The following inserts pertain to DSR Release 9.3.0.0.0 MEAL snapshot and deltas to earlier releases:

- MEAL_DSR-9.0.1.0.0-98.15.0-9.3.0.0.0-103.15.0
- MEAL_DSR-9.0.2.0.0-99.9.0-9.3.0.0.0-103.15.0
- MEAL_DSR-9.1.0.0.0-100.9.0-9.3.0.0.0-103.15.0
- MEAL_DSR-9.2.0.0.0-102.16.0-9.3.0.0.0-103.15.0
- MEAL_DSR-9.3.0.0.0-103.15.0
- MEAL_DSR-9.3.0.0.0-103.15.0-9.3.0.0.0-103.15.0
- MEAL_SDS-9.0.1.0.0-98.15.0-9.3.0.0.0-103.15.0
- MEAL_SDS-9.0.2.0.0-99.9.0-9.3.0.0.0-103.15.0
- MEAL_SDS-9.1.0.0.0-100.9.0-9.3.0.0.0-103.15.0
- MEAL_SDS-9.2.0.0.0-102.16.0-9.3.0.0.0-103.15.0
- MEAL_SDS-9.3.0.0.0-103.15.0
- MEAL_SDS-9.3.0.0.0-103.15.0-sds-9.3.0.0.0-103.15.0