

Oracle Communications Diameter Signaling Router



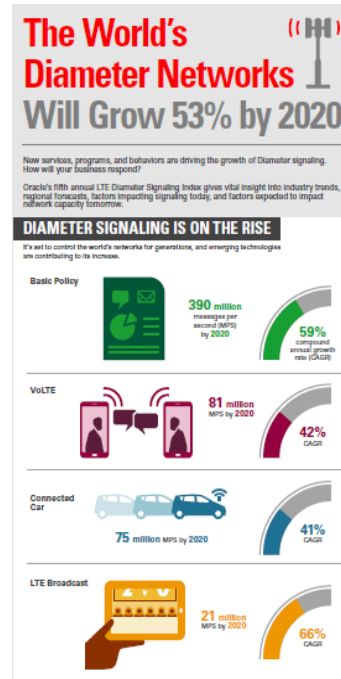
KEY FEATURES

- Unified Signaling for 3G and 4G – supporting integrated virtualized STP
- Cloud deployable, integration with common hypervisor and cloud managers
- Custom applications framework to develop custom applications to quickly respond to network and market needs
- GUI driven mediation rules for interworking, functionality extension
- Field-proven traffic congestion management, with Diameter Overload Indication Conveyance (DOIC) and Diameter Routing Message Priority (DMRP)
- Diameter firewall and flexible topology hiding configurations for network protection
- Session binding and network-wide correlation with session protection

Centralizing Diameter routing with cloud deployable Oracle Communications Diameter Signaling Router creates a secure signaling architecture that reduces the cost and complexity of the core network and enables elastic growth, interoperability and rapid introduction of new services. It also enhances network visibility by providing a centralized monitoring point in the signaling network.

Overview

Diameter is the protocol used by network elements in LTE and 3G networks to enable and monetize services, such as voice, video and data. Diameter enables revenue-generating data services; including tiered data plans, loyalty programs, application-specific QoS, content provider and Internet of Things (IoT) solutions. There is a direct correlation between Diameter traffic and data revenue. As service providers begin to monetize their networks, the volume of Diameter signaling increases.



Oracle Communications LTE Diameter Signaling Index (2015-2020) forecasts that by 2020 worldwide LTE Diameter traffic will reach nearly 565 million MPS, with a compound annual growth rate (CAGR) of 53% with Policy accounting for 59% of total signaling volume¹. Global LTE Diameter signaling will continue to show aggressive growth as LTE penetration rates increase. The extraordinary growth in signaling traffic and the increasing need to support new services like VoLTE and VoWiFi to remain competitive, are creating the need for a new signaling infrastructure. Challenges including scalability, traffic management, network resiliency, network interconnect and protocol interworking must be addressed to improve network survivability. Failures in the signaling system result in subscriber churn, lost revenue and opportunity cost. In addition, to succeed in today's communications landscape, mobile operators must focus in offering

the best customer experience by enabling a seamless transition from 3G to 4G .

¹ Oracle Communications LTE Diameter Signaling Index 5th edition: Forecast Report and Analysis 2015-2020
www.oracle.com/goto/diametersignaling_report

Product Description

Oracle has created the Oracle Communications Diameter Signaling Router to address these challenges, offer a transition path from 3G to 4G networks and provide a foundation for virtualization. Oracle Communications Diameter Signaling Router is a market-leading cloud deployable Diameter signaling controller solution that centralizes routing, traffic management and load balancing, creating an architecture that enables 3G, IMS and LTE networks to be truly elastic and adapt to increasing service and traffic demands while optimizing the network resources. Oracle Communications Diameter Signaling Router is built drawing on decades of experience as a leader in signaling technology and is aligned with Oracle Communications Network Function Virtualization strategy.

The world's largest LTE deployments rely on Oracle Communications Diameter Signaling Router for:

- Scaling and maintaining a centralized signaling architecture with GUI driven flexible routing and load balancing for mobility management as well as policy and charging
- Protecting the network from signaling storms and preventing network degradation and outages with the most flexible and robust congestion management
- Securing the network at interconnect points against Denial of Service (DoS) attacks through congestion control, message screening, firewall protection and GSMA IR-88 compliant encryption and topology hiding
- Alleviating interworking and interoperability issues in a multi-vendor and multi-protocol environment with the most flexible GUI-driven mediation rules engine and proxy support for MAP and RADIUS
- Enhancing the network visibility by providing context and targeted reporting and with integrated troubleshooting capabilities

KEY BENEFITS

- Enables you to create and personalize your own custom applications to offer new services with fast time to market
- Improves signaling network scalability, congestion, and failover management with a centralized routing architecture
- Reduces provisioning, maintenance, and interoperability testing costs
- Secures your network against signaling storms and DoS attacks
- Enhances visibility with integrated troubleshooting and ladder diagrams
- Offers all deployment options including engineered, virtualized, cloud or hybrid

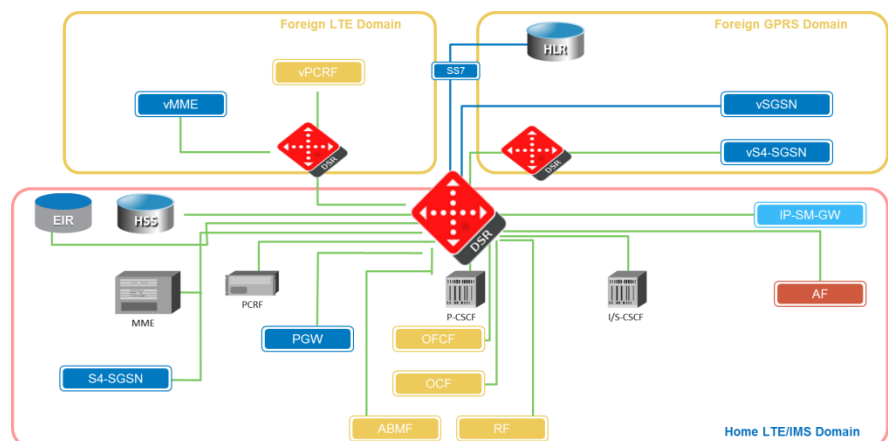


Figure 1. Oracle Communications Diameter Signaling Router in a Diameter network

Custom Application Framework

Oracle Communications Diameter Signaling Router includes a Custom Application Framework (CAF) that allows communications service providers (CSPs) to develop custom new applications to respond more quickly to network and market needs. CSPs can now offer innovative new services to their customers with fast time-to-market. This development environment guides the creation and management of the new applications

in Perl language. Examples of applications developed using this framework, which could also be customized are:

- Steering of Roaming, to manage the selection of the roaming partner for roaming subscribers,
- Zero Balance Offload, to offload traffic directed to the Online Charging Systems (OCS) during a given time interval when the subscriber reaches zero balance.

Network Security

Multi-layer security protection for Diameter signaling networks is achieved through several layers of security at the transport and the control/applications layers. Oracle Communications Diameter Signaling Router complies with GSMA IR.88 guidelines for LTE/IMS roaming and helps secure the network at interconnect borders against malicious attacks by restricting only allowed traffic at the transport level (Diameter Firewall), and by using encryption (IPSec/TLS/DTLS), access control lists, message screening and topology hiding. Oracle Communications Diameter Signaling Router's unique integrated topology hiding feature ensures that all network topology information is obscured/removed from all AVPs in the request/answer messages. Networks are protected against Denial of Service (DoS) attacks thanks to the congestion control mechanism implemented towards the clients and the servers.

Virtualization

Extreme automation and cloud support are essential to the network of the future. Oracle Communications Diameter Signaling Router delivers higher performance in the network, supports north-bound interface for orchestration and includes RESTfull MMIs that supports configuration and management operations from customer's external management systems, thus allowing for greater automation.

Our solution may be operated in a common and shared infrastructure with other telecommunications applications in private or hosted clouds. Oracle Communications Diameter Signaling Router can be deployed fully virtualized in a variety of commercially available platforms and is fully operable with common hypervisors and virtualization infrastructure managers such as KVM/OpenStack, VMware/vCenter, as well as OVM/EM and TVOE/OVM (TVOE is Oracle's internal hardened KVM implementation).

Virtualized Diameter Signaling Routers can also be deployed with any existing physical Diameter Signaling Router in the network. Such hybrid deployments can be used to augment capacity as required and could be the first step in conversion to an all virtualized network. Cloud deployable Diameter Signaling Router helps CSPs to migrate network elements to virtualized infrastructure. Such migration speeds rollout of new services, reduces OpEx, and accelerates the eventual transition to full adoption of Network Function Virtualization (NFV).

Unified Signaling

The unified signaling solution offers a simple and common infrastructure to manage SS7 and Diameter signaling. The STP VNF facilitates a smooth migration of SS7 applications from legacy systems to datacenters, enables rapid deployment and evolution of partners' interconnection point with secure and easy to turn-around signaling gateways and provides seamless transition from 2G/3G to 4G. SS7 Signal Transfer Point STP VNF is integrated in the DSR application and managed by NOAM/SOAM as "SS7 MP". A SS7 Signal Transfer Point STP VNF can also be installed as standalone.

ORACLE COMMUNICATIONS SOLUTIONS

Oracle Communications solutions enable service providers to manage and monetize the growth in broadband networks. Service providers can analyze quality of service and create policies to enable a digital lifestyle through Oracle Communications products and solutions, including:

- Oracle Communications Diameter Signaling Router
- Oracle Communications Policy Management
- Oracle Communications EAGLE
- Oracle Communications Performance Intelligence Center

Multi Use Case

The Oracle Communications Diameter Signaling Router provides routing proxies for many applications eliminating vulnerabilities introduced through provisioning in multiple network elements. Additionally, all Diameter interfaces are available “out-of-box” and don’t require additional services to be activated.

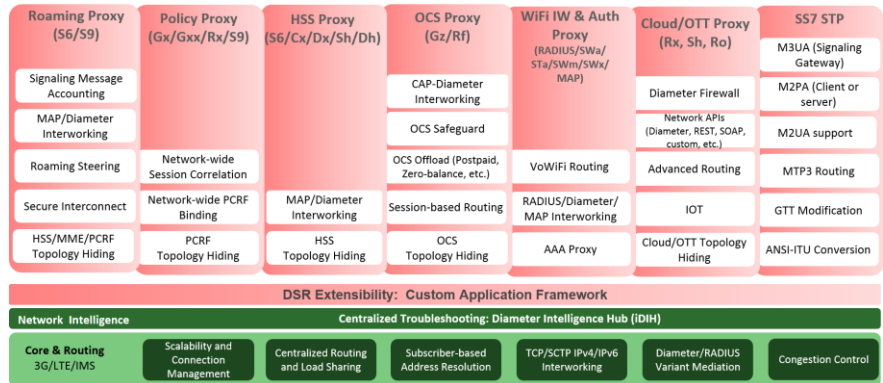


Figure 2. Oracle’s Multi-Solution Diameter Signaling Router

Common Use Cases

- Use Case 1: Core Centralized Routing**
 In a mesh type logical network, the addition of new nodes is costly and doesn’t scale over time. Ineffectively managed traffic can result in network degradation or outage. Oracle Communications Diameter Signaling Router optimizes the utilization of network resources with centralized intelligent routing and robust congestion control and traffic prioritization.
- Use Case 2: 2G/3G-to-LTE, LTE-to-LTE and WIFI Roaming**
 In a mesh-type network, operators do not have a way to effectively secure the network against malicious attacks. Oracle Communications Diameter Signaling Router provides a centralized vantage point to defend against potential attacks using topology hiding and encryption mechanisms. Additionally, it allows seamless LTE to 2G/3G roaming with Mobile Application Part (MAP) to Diameter interworking function as well as WIFI roaming with RADIUS proxy and RADIUS to Diameter interworking function.
- Use Case 3: HSS/PCRF/OCS Address Resolution**
 Unlike IMS networks, there is no subscriber location function in the LTE architecture. Oracle Communications Diameter Signaling Router provides mapping between subscriber identities and destination servers and improves the utilization of the network resources by optimizing traffic distribution.
- Use Case 4: Policy and Charging Binding (VoLTE support)**
 In networks with multiple PCRF/OCS elements, operators need to bind subscribers’ sessions to the correct policy/charging server. Oracle Communications Diameter Signaling Router provides dynamic session binding and network-wide session correlation across sites to ensure correct billing and proper application of policy.
- Use Case 5: Interoperability in a multi-vendor environment**

Managing systems in a multi-vendor environment can be extremely difficult; frequently resulting in delaying the implementation of new offerings. Oracle Communications Diameter Signaling Router's powerful field-proven mediation capabilities have solved complex and multiple multi-vendor interoperability issues quickly without impacting performance. The mediation GUI and 'formatting value wizard' simplify the creation of the new mediation rules guiding the user through the steps. The result is a faster time to market ensuring revenue and customer satisfaction

Summary





Oracle Communications Diameter Signaling Router helps service providers to compete by more efficiently monetizing networks and offering a transition path from 3G to 4G networks. It creates a centralized and secure signaling architecture that enables core networks to grow incrementally in support of increasing service and traffic demands. The distinct advantages provided by the Oracle Communications Diameter Signaling Router are network scalability, resiliency, interoperability and security, as well as network visibility. By leveraging the cloud-deployable Oracle Communications Diameter Signaling Router, service providers can better manage Diameter signaling while optimizing their network resources, thus maximizing the return on network and technology investments.

ORACLE

CONTACT US

For more information about [insert product name], visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

CONNECT WITH US

-  blogs.oracle.com/oracle
-  facebook.com/oracle
-  twitter.com/oracle
-  oracle.com

Integrated Cloud Applications & Platform Services

Copyright © 2017, Oracle and/or its affiliates. All rights reserved. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group. 0717

