# Oracle® Communications Diameter Signaling Router Licensing Information User Manual





Oracle Communications Diameter Signaling Router Licensing Information User Manual, Release 8.5

F27848-03

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#### Introduction

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### **Licensing Information**

Description of Product Editions and Permitted Features

Prerequisite Products

Entitled Products and Restricted Use Licenses

The following table provides licensing information about Diameter Signaling Router (DSR) and Integrated Diameter Intelligence Hub (IDIH) subproducts.

**Table 2-1 Diameter Signaling Router** 

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router (base fee) – per Serve	<ul> <li>Description: This product provides the following base Diameter Signaling Router functionality:</li> <li>OAM – Operations, administration, measurements functionality including: SNMP, event logs, security logs, configuration, topology, user/group management, and reports.</li> <li>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</li> <li>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</li> <li>Connection Management – TCP, SCTP uni- and multihoming, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.</li> <li>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.</li> <li>Range Based Address Resolution – Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.</li> </ul>
	<ul> <li>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</li> <li>IP Front End – TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual addresses.</li> <li>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</li> <li>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</li> </ul>
	Included products: MySQL Enterprise Edition  Restriction: MySQL Enterprise Edition is included for use with Oracle Communications Diameter Signaling Router (Base Fee). Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Oracle Communications Diameter Signaling Router (Base Fee).

Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
•	
Oracle Communications Diameter Signaling Router (capacity) – per 100 Network- wide Messages per Second	Description: Determines the maximum number of networkwide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as: Processing of an ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message. Transmission of any Diameter message that is associated with incremental actions/events associated with #1 above. For example, the re-routing of a Request upon connection failure or the copying of a Request.  Messages excluded from this measure are: Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA Ingress Diameter messages discarded by the DSR due to Overload controls Answers received in response to message copy Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node. Orderable in 100 MPS increments.  Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router (capacity) or a license to one of the following legacy products:  DSR Initial Content per server  DSR RMS Initial Content per server
	DSR 5 Content Bundle per server
	DSR 5 Initial Content per server
	DSR Diameter MPS per network
	DSR Core Routing per server
	DSR Core Routing per blade is a prerequisite to license and use Oracle     Communications Diameter Signaling Router (capacity).
Oracle Communications Diameter Signaling Router Roaming Proxy – per Server	Description: This sub-product adds the roaming proxy features listed below to the Oracle Communications Diameter Signaling Router.  • MME Topology Hiding  • HSS Topology Hiding  • Path Topology Hiding  Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router Roaming Proxy or a license to one of the following legacy products:  • DSR Initial Content per server  • DSR RMS Initial Content per server  • DSR Core Routing per server  • DSR Core Routing per blade  • DSR Policy Proxy per blade  is a prerequisite to license and use Oracle Communications Diameter Signaling Router Roaming Proxy.

Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router Full Address Resolution – per Server	<ul> <li>Description: This sub-product adds full address resolution features to the Oracle Communications Diameter Signaling Router. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on app-ID, Command Code, Routing Entity type, and Individual Routing Entity. This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:         <ul> <li>Subscriber Database Server – Provides provisioning and storage of database information for full address resolution. Supports querying, reports and audits.</li> <li>Database Processor – Provides real-time access to the subscriber database at the signaling node.</li> </ul> </li> <li>Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router Full Address Resolution or a license to one of the following legacy products:         <ul> <li>DSR Initial Content per server</li> <li>DSR Core Routing per server</li> <li>DSR Policy Proxy per blade</li> <li>DSR Policy Proxy per blade</li> <li>a prerequisite to license and use Oracle Communications Diameter Signaling Router Full Address</li> </ul> </li></ul>
Oracle Communications Diameter Signaling Router Full Address Resolution – per 25k Subscribers	Description: Determines the number of subscribers or entities allowed by Oracle Communications Diameter Signaling Router for full address resolution. Licensing for Subscribers is provided on a network-wide basis. Each entry (entity) in the provisioned subscriber (SDS) database server (SDS) counts as one subscriber.  Orderable in 25k subscriber increments  Prerequisites: A license to Oracle Communications Diameter Signaling Router Full Address Resolution per server is a prerequisite to license and use Oracle Communications Diameter Signaling Router Full Address Resolution per 25k subscribers or a license to one of the following legacy products:  DSR Address Resolution Proxy per server  DSR Full Address Resolution I per server  DSR 5 Content Bundle per server  DSR 5 Initial Content per server  DSR Subscribers per network is a prerequisite to license and use Oracle Communications Diameter Signaling Router Full Address Resolution per 25k subscribers.



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router Policy Proxy – per Server	Description: This sub-product adds policy proxy to the Oracle Communications Diameter Signaling Router to enable the Policy DRA function. Policy DRA enables dynamic routing of subscriber sessions to PCRFs. This sub- product:  Distributes Gx/Gxx/S9/Rx sessions across PCRFs Provides network-wide subscriber session binding Provides session correlation across mated pairs Performs topology hiding to hide the identities of the PCRFs from other elements in the network.
	Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy or a license to one of the following legacy products:  DSR Initial Content per server  DSR Core Routing per server  DSR Core Routing per blade is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy
Oracle Communications Diameter Signaling Router Policy Proxy – per 5K Network-wide Concurrent Sessions	Description: Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router Policy Proxy. Licensing for concurrent sessions is provided on a network-wide basis.  Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.  Orderable in 5k session increments.
	<ul> <li>Prerequisites: A license to Oracle Communications Diameter Signaling Router Policy Proxy per server is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy per 5k Network-wide Concurrent Sessions or a license to one of the following legacy products:</li> <li>DSR Policy Proxy 1 per server</li> <li>DSR 5 Content Bundle per server</li> <li>DSR 5 Initial Content per server</li> <li>DSR Policy Concurrent Sessions per network</li> <li>s a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy per 5k Network-wide Concurrent Sessions.</li> </ul>
Oracle Communications Diameter Signaling Router Online Charging Proxy – per 5K Network-wide Concurrent Sessions	Description: Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router Online Charging Proxy. Licensing for concurrent sessions is provided on a network-wide basis. Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.  Orderable in 5k session increments
	Prerequisites: A license to Oracle Communications Diameter Signaling Router Online Charging Proxy per server is a prerequisite to license and use Oracle Communications Diameter Signaling Router, Online Charging per 5k Networkwide Concurrent Sessions or a license to one of the following legacy products:  DSR Charging Proxy OCS Per Server  DSR Charging Concurrent Sessions per network is a prerequisite to license and use Oracle Communications Diameter Signaling Router, Online Network-wide Concurrent Sessions.

Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Policy Proxy II – per Server	<ul> <li>Description: This sub-product adds policy proxy features to the Oracle Communications Diameter Signaling Router Policy Proxy.         This sub-product adds:         <ul> <li>Support for multiple PCRF pools including the ability to select the pool based on the APN+IMSI</li> <li>Support for Gx' and Gx-Lite messages</li> <li>Gateway Location Application (GLA) interface support to access the binding database</li> <li>Policy Proxy Selection &amp; routing to a PCRF pool based on APN</li> </ul> </li> <li>Prerequisites: A license to Oracle Communications Diameter Signaling Router Policy Proxy is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy II or a license to one of the following legacy products:</li></ul>
Oracle Communications Diameter Signaling Router Translation Agent Base – per Server	Description: This sub-product adds MAP Diameter Interworking features to the Oracle Communications Diameter Signaling Router. For LTE-3G roaming, the DSR plays the role of the Interworking Function (IWF) to provide protocol mediation between Gr/Gr+ (3GPP MAP) and S6d (Diameter). The IWF also supports 3G-3G roaming over the S6d interface (SGSN Rel8). This capability also supports access by the MME or Rel8 SGSN over the S13 Diameter interface to an SS7 EIR DB, or vice-versa.  Prerequisite: A license to Oracle Communications Diameter Signaling Router is a prerequisite to license and use Oracle Communications Diameter Signaling Router Translation Agent Base or a license to one of the following legacy products:  DSR Initial Content per server  DSR Core Routing per server  DSR Core Routing per blade  DSR Policy Proxy per blade  DSR 5 Content Bundle per server  DSR 5 Initial Content per server  SSR 5 Initial Content per server  DSR 5 Initial Content per server



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Core Routing I – per Server	<b>Description</b> : This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router The following features are added with this sub-product:
	Active/Standby Peer Node Support
	<ul> <li>Mediation Enhancements:</li> <li>Support for logical OR'ing and a mechanism to group conditions</li> <li>Support for "optional" actions</li> <li>Support for a combined 'set/add AVP' action</li> <li>Support for grouped AVPs to a depth of 5</li> <li>Support for checking of ranges on numbers</li> <li>Import/export of templates</li> <li>Support for setting Message Priority and Route List in mediation.</li> <li>Support for Discard message action</li> <li>Support for Bit Set/Reset in conditions and actions</li> <li>Ability to check for peers/connections in conditions</li> <li>Special function to set Destination Realm from IMSI.</li> <li>Support for setting "OctetString" type from the GUI.</li> <li>DSR maximum message size of 60,000 bytes</li> <li>PDU Pool Flexible Message Sizing</li> </ul>
	DSR NOAM/SDS 32 Node Support
	Prerequisites: A license to Oracle Communications Diameter Signaling Router is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing I or a license to one of the following legacy products:  DSR Initial Content per server  DSR Core Routing per server  DSR Core Routing per blade  DSR Policy Proxy per blade  DSR 5 Content Bundle per server  SSR 5 Initial Content per server  SSR 5 Initial Content per server  COR 5 Initial Content per server  Router Core Routing



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Core Routing II – Per Server	Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.
	The following features are added with this sub-product:  IPFE Enhancements:  Peer Node Group aware least load distribution algorithm  IPFE initiator support: DSR 'initiator only' connections
	<ul> <li>Mediation Enhancements:</li> <li>Mediation support for Re-routed requests</li> <li>Support for "optional" actions</li> <li>Mediation support for accessing components of the Diameter ingress request at the Answer Trigger Points</li> <li>Ability to import/export mediation rules</li> <li>Additional DCL trigger points</li> <li>Additional DRL/DAL triggers</li> <li>Support for Scripting in Mediation</li> </ul>
	<ul> <li>Mediation: per rule pegging</li> <li>Making AVP dictionary editable</li> <li>Comcol logging for CAPM</li> <li>Debug shell support for CAPM</li> <li>Support for grouped AVPs that are 6 levels deep</li> <li>Support for setting "OctetString" type from the GUI</li> <li>Pending Answer timer increase to 16 (from 8)</li> <li>Extended Command Codes</li> <li>RBAR -&gt; PDRA Application</li> </ul>
	Chaining Ingress Message Screening Prerequisites: A license to Oracle Communications Diameter Signaling Router Core Routing I is a prerequisite to license and use Oracle Communications Diameter Signaling Router
Oracle Communications Diameter Signaling Core Routing III – Per Server	The following features are added with this sub-product: IPFE Enhancements: IPFE Initiator + Responder Support Mediation Enhancements: Support for grouped AVPs that are 8 levels deep Support for "Set Alarm/Event" as an action Support for "Re-direct" as an action Support for "Parse Decorated NAI" as an action Support for new Mediation conditions to identify Requests Redirected by DSR Routing Attributes by (Extended) Command Code Coordinated Egress Throttling across multiple DSRs Support for Redirect Client Realm-Based Redirect Notification Support Session SBR Database Consolidation and Remating Prerequisites: A license to Oracle Communications Diameter Signaling Router Core Routing II is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing III.



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Core Routing IV – Per Server	Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.  The following features are added with this sub-product:
	Mediation Enhancements: Routing Loop Alarm Tekelec specific AVP removal DCL peg and event normalization Dynamic Peer Discovery
	Increased Diameter Connection Limits (in a route group) DOIC Overload Control: DSR as a Reacting Node Implicit Realm Routing
	DSR Application ID aware routing
	Shared Traffic Throttle Groups (TTGs) for DOIC
	Support for FABR & OC-DRA interworking
	FABR – PDRA Application Chaining
	FABR – RBAR Application Chaining
	<b>Prerequisites</b> : A license to Oracle Communications Diameter Signaling Router Core Routing III is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing IV.



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Core Routing V – Per Server	Description: This sub-product adds Active/Standby Peer Node Support enhancement features to the Oracle Communications Diameter Signaling Router.  The following features are added with this sub-product:
	New Generation Network Priority Service ("NGN-PS") allows DSR to assign all NGN-PS messages higher priority over non NGN-PS messages (request and answers).
	Control for NGN-PS feature on a per diameter interface basis and for any combination of the following Long Term Evolution (LTE) and IP-Multimedia Subsystem (IMS) diameter interfaces:  • Gx interface: The Gx is used between the Policy Control and Charging Rules Function (PCRF) and the Policy and Charging Enforcement Function (PCEF) in the 3GPP interface specifications TS29.212. The Gx is used for
	provisioning and removal of Policy and Charging Control (PCC) rules from the PCRF to the PCEF and the transmission of traffic plane events from the PCEF to the PCRF.
	<ul> <li>Rx interface: The Rx interface is used to exchange application level session information between the Policy and Charging Rules Function (PCRF) and the Application Function (AF).</li> </ul>
	<ul> <li>Cx/Dx: The Cx interface between the Call Session Control Function (CSCF) and the Home Subscriber Server (HSS). The Dx interface between the CSCF and the Server Locator Function (SLF).</li> </ul>
	<ul> <li>Dh/Sh: Dh and Sh Interfaces are used between the Application Server         (AS) and the HSS. The procedure is invoked by the AS and is used to read         transparent and/or non-transparent data for a specified user from the HSS.</li> </ul>
	Support NGN-PS where priority service messages are assigned the highest priority of Priority four (P4).
	If required DSR throttles normal traffic to an engineered capacity such that internal resources, including resources related to message queuing, resource pools, and message control functions are always available for a small amount of additional NGN-PS traffic. DSR per-connection ingress Multimedia Priority Service ("MPS") control algorithms shall discard the messages based on message priority in Priority zero (P0), Priority one (P1), Priority two (P2) and Priority three (P3) order respectively when the ingress message rate exceeds the configured maximum capacity of the given Diameter Peer Connection.
	Prerequisites: A license to Oracle Communications Diameter Signaling Router Core Routing IV is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing V.



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router, Core Routing VI – Per Server	Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.  The following features are added with this sub-product:
	Diameter Custom Application Framework
	Enables Operators to use in-house R&D resources or 3rd party application development organizations to rapidly develop and deploy new Diameter applications on DSR without requiring a new DSR software release.
	Diameter Custom "starter" Applications  Roaming Steering
	The Roaming Steering platforms allow the home network to control successful registration rate of their outbound roamers. Therefore, the home network defines roaming steering policies for each group of roaming partners that are part of the same country.
	Online Charging Zero Balance Offload     The primary purpose of the Online Charging Server (OCS) Zero Balance     Offload feature defined here includes the following capabilities:     Detecting when a given subscriber, identified by MSISDN, has zero balance in their account.
	<ul> <li>Detecting when the OCS rejects the subscriber's session setup attempt N times during a given interval due to zero balance.</li> </ul>
	<ul> <li>Responding to the PCEF to deny service to the subscriber on behalf of the OCS during a second given interval.</li> </ul>
	Prerequisites: A license to Oracle Communications Diameter Signaling Router Core Routing V is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing VI.
	Additionally for CAF applications following are prerequisites.     Oracle Communications Diameter Signaling Router, Policy Proxy – 5K Network-wide Concurrent Sessions     Or
	Oracle Communications Diameter Signaling Router, On-line Charging Proxy – 5K Network-wide Concurrent Sessions



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information		
Oracle Communications Diameter Signaling Router, Core	The following features are added with this sub-product: IETF RFC 7944 Diameter Routing Message Priority		
Routing VII – Per Server	Overview of Diameter Routing Message Priority (DRMP)		
	Mechanism to allow Diameter endpoints to indicate the relative priority of		
	Diameter transactions. Message priority is be used in routing, resource allocation and overload abatement decision.		
	Use cases:		
	First Responder Related Signaling     Emergency Call Related Signaling		
	Emergency Call Related Signaling     Differentiated Services		
	Application Specific Priorities		
	Ability to assign message priorities based on DRMP AVP received in diameter messages as well as static message priorities configured using Message Priority Configuration Set (MPCS). Message priorities are used for message throttling decisions during congestion conditions.		
	Enable and disable DRMP AVP based message priority assignment for configurable diameter app-ID. Ability to assign priorities to answer messages equal to that of request messages.		
	Support Answer message back from different connections (21072456)		
	Allows DSR to process the Ingress Answer Diameter message received from connection of the upstream Diameter Peer, which is different from the connection, which was used to send the egress Diameter request for a given Diameter Transaction.		
	Route Group Measurements (19091550)		
	New measurements to monitor the amount of traffic being routed through specific route group.		
	Provides visibility of traffic distribution across different route groups Configuration to enable and disable route group measurements for individual route groups through SOAM GUI		
	Support up to maximum of 250 Route Groups per DSR network element		
	Two new measurement groups are added to support route group		
	measurements: Route Group Performance		
	Route Group Exception		
	<b>Prerequisites</b> : A license to Oracle Communications Diameter and use Oracle Communications Diameter Signaling Router Core Routing VII.		
Oracle Communications Diameter Signaling, Roaming	<b>Description</b> : This sub-product adds the roaming proxy features listed below to the Oracle Communications Diameter Signaling Router.		
Proxy II – Per Server	S9 PCRF Topology Hiding		
	S9 AF/pCSCF Topology Hiding		
	S6a/S6d HSS Topology Hiding with multiple pseudo hosts names		
	<b>Prerequisites</b> : A license to Oracle Communications Diameter Signaling Router Roaming Proxy is a prerequisite to license and use Oracle Communications Diameter Signaling Router Roaming Proxy II or a license to the following legacy product:		
	DSR_Roaming Proxy Per Server is a prerequisite to license and use Oracle Communications Diameter Signaling Router Roaming Proxy II.		



Table 2-1 (Cont.) Diameter Signaling Router

Subproduct	Licensing Information	
Oracle Communications Diameter Signaling Router, Online Charging Proxy – Per Server	<b>Description</b> : This sub-product adds online charging server proxy features to the Oracle Communications Diameter Signaling Router. The online charging proxy supports a stateful Diameter proxy agent over the Gy interface between multiple charging clients such as LTE PGWs, 3G GGSNs, IMS AFs, and multiple online charging servers (OCS).	
	Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router Online Charging Server Proxy or a license to one of the following legacy products:  DSR Initial Content per server  DSR Core Routing per server  DSR Core Routing per blade  DSR Policy Proxy per blade  DSR 5 Content Bundle per server  SR 5 Initial Content per server  is a prerequisite to license and use Oracle Communications Diameter Signaling Router Online Charging Server Proxy.	
Oracle Communications Diameter Signaling Router Translation Agent RADIUS- per Server	Router Online Charging Server Proxy.  Description: This sub-product adds RADIUS-Diameter Interworking features to the Oracle Communications Diameter Signaling Router. The DSR plays the role of the Interworking Function (IWF) to provide protocol mediation between RADIUS and Diameter for trusted/untrusted Wi-Fi access to 3GPP core. This will also provide the ability for WLAN Access Gateway (WAG) to continue using the legacy RADIUS AAA server, HLR authentication for legacy RADIUS-MAP, and HSS authentication for RADIUS-Diameter S6d.  Prerequisites: A license to Oracle Communications Diameter Signaling Router Translation Agent Base is a prerequisite to license and use Oracle Communications Diameter Signaling Router Translation Agent RADIUS.	



Table 2-2 Integrated Diameter Intelligence Hub

Subproduct	Licensing Information		
Oracle Communications Integrated Diameter	<b>Description</b> : This product provides a troubleshooting tool for the Oracle Communications Diameter Signaling Router. This product:		
Intelligence Hub – per Server	Integrates the configuration of trace filters directly into DSR.		
	Allows trace filters to be applied against all messages processed by DSR		
	Allows Transaction Data Records containing both Diameter Requests and Answers to be captured for additional analysis and filtering.		
	Provides Ladder Diagrams to facilitate troubleshooting concerning message sequence and peer connection issues.		
	Supports detailed decoding of AVPs associated with the base Diameter protocol, as well as the following interfaces: Sh, Cx, Gy, Cc, S6a/d, Gx, Rx, SLg, SLh, SWm, SWx, STa, S6b, S9, Gxa		
	Prerequisites: A license to Oracle Communications Technology Foundation for Monitoring Applications is a prerequisite to license and use Oracle Communications Integrated Diameter Intelligence Hub or a license to the following products:  Oracle Database Enterprise Edition  Oracle Database Enterprise Edition Option: Partitioning  WebLogic Server Enterprise Edition		
	are prerequisites to license and use Oracle Communications Integrate Diameter Intelligence Hub.  Included Products: MySQL Enterprise Edition		
	Restriction: MySQL Enterprise Edition is included for use as the Oracle Communications Integrated Diameter Intelligence Hub Management Repository. Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Oracle Communications Integrated Diameter Intelligence Hub. Oracle Communications Network Integrated Diameter Intelligence Hub – per Server Description: This sub-prod		
Oracle Communications Network Integrated Diameter Intelligence Hub – per Server	<b>Description</b> : This sub-product provides network-wide Integrated Diameter Intelligence Hub (iDIH), which enables correlation of trace data across a network of Integrated DIH (iDIH) instances.		
	This sub-product: Provides the ability to correlate trace data across a network of Integrated DIH (iDiH) instances. Retrieves and correlates trace data that has been captured across multiple DSR (iDIH) sites, and render an integrated trace to the user allowing centralized troubleshooting of all DSR's in the network.		
	Is required at each integrated DIH (iDIH) node/server in the network to enable a network view.		
	Prerequisites: A license to Oracle Communications Integrated Diameter Intelligence Hub is a prerequisite to license and use Oracle Communications Network Integrated Diameter Intelligence Hub.		



Table 2-2 (Cont.) Integrated Diameter Intelligence Hub

Subproduct	Licensing Information		
Oracle Communications Diameter Signaling Router, SS7 Signaling Transfer Point I – per server	Description: This sub-product adds the following features to the Oracle Communications Diameter Signaling Router: Signaling Transfer Point (STP) functionality Possibility to combine SS7 and Diameter signaling on the same node The SS7 Signaling Transfer Point on DSR includes SIGTRAN protocols (M3UA and M2PA), Global Title Translation (GTT) and GTT Advanced load-sharing features		
	<ul> <li>Signaling and MTP3</li> <li>Signaling Gateway mode for M3UA</li> <li>M2PA can be either server or client at the SCTP connection level</li> <li>Flow control at SCTP to manage incoming and outgoing traffic rates on each link</li> <li>Link Transaction Per Second values defined at linkset level (all links within a linkset shall have the same capacity)</li> <li>MTP3</li> <li>Routing based on Destination Point Code of MTP3 layer</li> <li>Supports equal load-sharing or dominant/backup up to 2 destinations</li> <li>SCCP</li> <li>Supports UDT/XUDT and UDTS/XUDTS routing based on Called Party SCCP information</li> <li>Enhanced Global Title Translation (GTT) designed for the Signaling Connection Control Part (SCCP)</li> <li>Enables selection of various translation tables based on Global Title Information:         <ul> <li>Numbering Plan (NP)</li> <li>Nature of Address Indicator (NAI)</li> <li>Translation Type (TT)</li> </ul> </li> <li>Variable GTT Length in the same GTT Set</li> <li>Advanced Load-Sharing features         <ul> <li>Intermediate GTT Load-Sharing</li> <li>Flexible GTT Load-Sharing</li> <li>Allows creation and customization of load-sharing groups in Mated Relay Node (MRN) or Mated APplications (MAP) tables.</li> <li>Weighted GTT Load-Sharing: Allows creation and customization based on weighting for each destination, inservice threshold for group of load-sharing groups in MRN or MAP tables.</li> <li>Transaction Based GTT Load-Sharing: Allows creation and customization based on transaction types and keys of load-sharing groups in MRN or MAP tables.</li> </ul> </li> </ul>		
	<b>Prerequisites</b> : A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router, SS7 Signaling Transfer Point I.		

Table 2-2 (Cont.) Integrated Diameter Intelligence Hub

Subproduct	Licensing Information		
Oracle Communications Diameter Signaling Router, SS7 Signaling Transfer Point II – per server	Description: This sub-product adds the following features to the Oracle Communications Diameter Signaling Router: Signaling Transfer Point (STP) functionality Possibility to combine SS7 and Diameter signaling on the same node The SS7 Signaling Transfer Point on DSR includes SIGTRAN protocols (M3UA and M2PA), Global Title Translation (GTT) and GTT Advanced load-sharing features Routing/Screening Features  • Flexible Origin Linkset Based Routing (FLOBR)  • TCAP Operation Based Routing (TOBR)  • GTT Actions for screening  Prerequisites: A license to Oracle Communications Diameter Signaling Router, SS7 Signaling Transfer Point I is a prerequisite to license and use Oracle Communications Diameter Signaling Transfer Point II.		
Oracle Communications Diameter Signaling Router, Diameter Security Application - Per	Description: This sub-product adds the following features to the Oracle Communications Diameter Signaling Router: Deploying Diameter Signaling Router (DSR) at interconnects as DEA (Diameter Edge Agent) allows security policies per GSMA FS.19 and IR.88 based integrated Diameter Firewall to be applied to all Diameter incoming traffic.		
	Prerequisites: The following license are prerequisite to license and use Oracle Communications Diameter Signaling Router, Diameter Security Application  Oracle Communications Diameter Signaling Router, (base fee) – Per Server		
	Oracle Communications Diameter Signaling Router, (capacity) –     Per 100 Network-wide Messages per Second		
	Oracle Communications Diameter Signaling Router, Core Routing VII- Per Server		
	<ul> <li>Oracle Communications Diameter Signaling Router, Policy Proxy –</li> <li>5K Network-wide Concurrent Sessions</li> <li>Or</li> </ul>		
	Oracle Communications Diameter Signaling Router, On-line Charging Proxy – 5K Network-wide Concurrent Sessions		



## Network Function Edition Licensing Information

Description of Product Editions and Permitted Features for the Diameter Signaling Router Network Function Edition. The Network Function Edition products cannot be mixed in the same network as any other Diameter Signaling Router products managed by a single Network OAM (NOAM).

Prerequisite Products

Entitled Products and Restricted Use Licenses



Table 3-1 Entitled Products and Restricted Use Licenses

Product	Subproduct	Licensing Information
Product  Oracle Communications Diameter Signaling Router	Oracle Communications Diameter Signaling Router Network Function Edition – per Network-wide Messages per Second Perpetual	Description: This product provides the following base Diameter Signaling Router functionality on a network-wide basis.  Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:  Processing of an ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.  Transmission of any Diameter message that is associated with incremental actions/events associated with #1 above. For example, the rerouting of a Request upon connection failure or the copying of a Request.  Messages excluded from this measure are:  Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA  Ingress Diameter messages discarded by the DSR due to Overload controls  Answers received in response to Message Copy  Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.  Orderable in 5000 MPS increments  OAM – Operations, administration, measurements functionality including: SNMP, event logs, security logs, configuration, topology, user/group management, and
		<b>OAM</b> – Operations, administration, measurements functionality including: SNMP, event logs, security logs, configuration, topology, user/group management, and
		reports.  Congestion Management – Ingress and egress, local and remote Diameter congestion control.
		Connection Management – TCP, SCTP uniand multihoming, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.



Table 3-1 (Cont.) Entitled Products and Restricted Use Licenses

Dundant	Code and desire	I i a constitue los some stiller
Product	Subproduct	Licensing Information
	Oracle Communications Diameter Signaling	<b>Diameter Mediation</b> – GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
	Router Network Function Edition – per Network-wide Messages per Second Perpetual – continued	Range Based Address Resolution – Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IP Front End –TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> – The Diameter Signaling Router can be deployed with or without georedundancy.
		High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		<b>Core Routing</b> – All core routing and process functionality which includes specific handling of real-time Diameter messages.
		Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router
		Roaming Proxy – All roaming proxy functionality for the Oracle Communication Diameter Signaling Router.
		Translation Agent – All Diameter Interworking functionality for the Oracle Communication Diameter Signaling Router
		Included Products:
		MySQL Enterprise Edition
		Restriction: MySQL Enterprise Edition is included for use with Oracle Communications Diameter Signaling Router Network Function Edition. Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Oracle Communications Diameter Signaling Router Network Function Edition.
		The Network Function Edition products cannot be mixed in the same network as any other Diameter Signaling Router products.



Table 3-1 (Cont.) Entitled Products and Restricted Use Licenses

Product	Subproduct	Licensing Information
	Oracle Communications Diameter Signaling Router Network Function Edition for Database Applications – per 25k Subscribers Perpetual	Description: This product provides subscriber application Diameter Signaling Router functionality, such as Full Address Based Resolution, on a network-wide basis. Determines the number of subscribers or entities allowed by Oracle Communications Diameter Signaling Router for full address resolution. Licensing for Subscribers is provided on a network-wide basis. Each entry (entity) in the provisioned subscriber database server (SDS) counts as one subscriber. Orderable in 25k subscriber increments.
		Prerequisites: A license to Oracle Communications Diameter Signaling Router Network Function Edition is a prerequisite to license and use Oracle Communications Diameter Signaling Router Network Function Edition for Database Applications.
	Oracle Communications Diameter Signaling Router Network Function Edition for Stateful Applications – per 5k Network-wide Concurrent Sessions Perpetual	Description: This product provides stateful session application Diameter Signaling Router functionality, such as Policy Proxy and On-line Charging Proxy, on a network-wide basis. Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router. Licensing for concurrent sessions is provided on a network-wide basis.
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in 5k session increments.
		Prerequisites: A license to Oracle Communications Diameter Signaling Router Network Function Edition is a prerequisite to license and use Oracle Communications Diameter Signaling Router Network Function Edition for Stateful Applications.



Table 3-1 (Cont.) Entitled Products and Restricted Use Licenses

Product	Subproduct	Licensing Information
	Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition – per Server	Description: This product provides a troubleshooting tool for the Oracle Communications Diameter Signaling Router Network Function Edition. Functionality included: Integrated DIH and Network Integrated DIH
	Perpetual	Prerequisites: A license to Oracle Communications Technology Foundation for Monitoring Applications is a prerequisite to license and use Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition or a license to the following products:  Oracle Database Enterprise Edition Oracle Database Enterprise Edition Option: Partitioning  WebLogic Server Enterprise Edition are prerequisites to license and use Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition.
		Included Products: MySQL Enterprise Edition
		Restriction: MySQL Enterprise Edition is included for use as the Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition Management Repository. Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition.
		The Network Function Edition products cannot be mixed in the same network as any other Diameter Signaling Router products.



#### **Common Signaling Licensing Information**

Description of Product Editions and Permitted Features for the Diameter Signaling Router Common Signaling Licensing Model. The Common Signaling Licensing Model products cannot be mixed in the same network as any other Diameter Signaling Router products managed by a single Network OAM (NOAM).

**Prerequisite Products** 

Entitled Products and Restricted Use Licenses



Table 4-1 Common Signaling Licensing Information

Product	Subproduct	Licensing Information
Oracle	Oracle	Description: Signaling Unit is defined as
Communications	Communications	follows.
Common Signaling	mmon Signaling Common Signaling – per Signaling Unit	In the case of EAGLE, defined as a 4 nodal TPS which includes failover and engineered throughput.
		In the case of DSR,definedas 1 network-wideMPS.
		This product provides the following base Diameter Signaling Router functionality on anetwork-wide basis. Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:
		<ul> <li>Processing of an ingress Diameter message, RADIUS, SS7 message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.</li> <li>Transmission of any Diameter message, RADIUS, SS7 message that are associated with incremental actions/ events associated with #1 above. For example, the re-routing of a Request upon connection failure or the copying of a Request.</li> </ul>
		Messages excluded from this measure are:
		Diameter peer-to-peer messages: CER/ CEA, DWR/DWA, and DPR/DPA
		<ul> <li>Ingress Diameter messages discarded by the DSR due to Overload controls</li> <li>Answers received in response to</li> </ul>
		Message Copy
		Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in 5000 MPS increments.
		OAM –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		Congestion Management-Ingress and egress, local and remote Diameter congestion control.
		Connection Management–TCP, SCTP uniand multi- homing, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddress Resolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		Message Copy  Ability to copy certain  Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IPFront End – TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> –The Diameter Signaling Router can be deployed with or without georedundancy.
		High Availability—All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		Core Routing – All core routing and process functionality which includes specific handling of real-time Diameter messages
		Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router
		RoamingProxy – All roaming proxy functionality for the Oracle Communication Diameter Signaling Router.
		Translation Agent–All Diameter Interworking functionality for the Oracle Communication Diameter Signaling Router.
		This product also provides base and signaling unit throughput for the Oracle Communications EAGLE application. Refer to the EAGLE License Information Manual for licensing details when used to deliver SS7 routing.
		IncludedProducts: MySQL Enterprise Edition Restriction:
		MySQL Enterprise Edition is included for use with Oracle Communications Common Signaling. Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Common Signaling.



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling for Database Applications – per 25k Subscribers Perpetual	Description: This product provides subscriber application Diameter Signaling Router functionality, such as Full Address Based Resolution, on a network-wide basis.  Determines the number of subscribers or entities allowed by Oracle Communications Diameter Signaling Router for full address resolution. Licensing for Subscribers is provided on a network-wide basis. Each entry (entity) in the provisioned subscriber database server (SDS) counts as one subscriber.  Orderable in 25k subscriber increments.
		This product also provides database applications and capacity for the Oracle Communications EAGLE application. Refer to the EAGLE License Information Manual for licensing details when used to deliver SS7 database applications.  Prerequisites: A license to Oracle
		Communications Common Signaling is a prerequisite to license and use Oracle Communications Common Signaling for Database Applications.
	Oracle Communications Common Signaling for Stateful Applications – per 5k Network-wide Concurrent Sessions Perpetual	Description: This product provides stateful session application Diameter Signaling Router functionality, such as Policy Proxy and On-line Charging Proxy, on a network-wide basis. Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router. Licensing for concurrent sessions is provided on a network-wide basis.
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in 5k session increments.  Prerequisites: A license to Oracle Communications Common Signaling is a prerequisite to license and use Oracle Communications Common Signaling for Stateful Applications.



Table 4-1 (Cont.) Common Signaling Licensing Information

Co Co SS Tra	racle ommunications ommon Signaling, S7 Signaling ansfer Point – per ode	Description: This sub-product adds the following features to the Oracle Communications Diameter Signaling Router: Signaling Transfer Point (STP) functionality Possibility to combine SS7 and Diameter signaling on the same node The SS7 Signaling Transfer Point on DSR includes SIGTRAN protocols (M3UA and
		M2PA), Global Title Translation (GTT), and GTT Advanced load-sharing features.  Signaling and MTP3  M3UA and M2PA Signaling Gateway mode for M3UA M2PA can be either server or client at the SCTP connection level Flow control at SCTP to manage incoming and outgoing traffic rates on each link  Link Transaction Per Second values defined at linkset level (all links within a linkset is have the same capacity)  MTP3  Routing based on Destination Point Code of MTP3 layer  Supports equal load-sharing or dominant/backup upto 2 destinations  SCCP  Supports UDT/XUDT and UDTS/XUDTS routing based on Called Party SCCP information  Enhanced Global Title Translation (GTT) designed for the Signaling Connection Control Part (SCCP)  Enables selection of various translation tables based on Global Title Information: Numbering Plan (NP) Nature of Address Indicator (NAI) Translation Type (TT)  Variable GTT Length in the same GTT Set  Advanced Load-Sharing features Intermediate GTTLoad-Sharing Flexible GTT Load-Sharing Allows creation and customization of load-sharing groups in Mated Relay Node
		(MRN) or Mated APplications (MAP) tables. — Weighted GTT Load-Sharing

Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
		* Allows creation and customization based on a weighting for each destination, In-service threshold for a group of load-sharing groups in MRN or MAP tables.
		Transaction-Based GTT Load-Sharing  Allows creation and customization based on transaction types and keys of load-sharing groups in MRN or MAP tables.
		Prerequisites: A license to Oracle Communications Diameter Signaling Router Network Function Edition (base) or Oracle Communications Common Signaling (base) is a prerequisite to license and use Oracle Communications Diameter Signaling Router, SS7 Signaling Transfer Point.
	Oracle Communications Common Signaling, Security Application - per NODE	Description: This sub-product adds the following features to the Oracle Communications Diameter Signaling Router: Deploying Diameter Signaling Router (DSR) at interconnects as DEA (Diameter Edge Agent) allows security policies per GSMA FS.19 and IR.88 based integrated Diameter Firewall to be applied to all Diameter incoming traffic.
		In addition to this, all Common Security use- cases which cover GSMA's FS11 security policies around Stateless Firewall and SMS Home Router are also covered under this sub- product.
		Prerequisites: The following license is prerequisite tolicense and use Oracle Communications Common Signaling, Security Application
		Oracle Communications Common Signaling – per Signaling Unit Or
		Oracle Communications Diameter Signaling Router Network Function Edition – per Network-wide Messages
		Oracle Communications Common Signaling for Stateful Applications – per 5k Sessions Or
		Oracle Communications Diameter Signaling Router Network Function Edition for Stateful Applications – per 5k Network- wide Concurrent Sessions.



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Equipment Identity Register – per NODE	Description: The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router: Equipment Identity Register (EIR) reduces the number of GSM mobile handset thefts by providing a mechanism that will allow the network operators to prevent stolen or disallowed handsets from accessing the network. This control is done by using the International Mobile Equipment Identity (IMEI) provided during handset registration and comparing it against a set of lists provided by the network operator. This application may also provide an option to validate IMEI based on the IMSI (International Mobile Subscriber Identity).  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Equipment Identity Register – per Node Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling for Database Applications - per 25k Subscribers



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Service Capability Exposure Function - per NODE	Description: The sub-product adds the following features to Oracle Communications Diameter Signaling Router  Service Capability Exposure Function (SCEF) is a new network element in EPC which provides a means to securely expose the services and capabilities provided by 3GPP network interfaces. It provides access to network capabilities through homogenous network application programming interfaces (e.g. Network APIs) defined over T8 interface towards SCS/AS. The important functionalities of SCEF include Non IP data delivery for low power devices, Monitoring a device's state, SCS/AS AAA (Application Server authorization, accounting and SLAs), Device Trigger Delivery through SMS acting as an MTC-IWF, QoS of a data flow, sponsoring a data flow (i.e. changing the chargeable party), Scheduling data transfers, and Receiving reports about the network congestion condition of the RAN.  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Service Capability Exposure Function - per NODE
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling for Stateful Applications - per 5k Network-Wide Concurrent Sessions



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
Product	Oracle Communications Common Signaling, Nodal Configuration – Node Perpetual	Description: The sub-product adds the following features to Oracle Communications Diameter Signaling Router.  Nodal Configuration provides enhanced configuration capacity on a nodal bases for following items.  500K MPS forDiameter and 500K MPS for vSTP  Note:  For vSTP, Part Number L106078 - Oracle Communications Common Signaling, SS7 Signaling Transfer Point – Node Perpetual is a pre-requisite to avail this license.  For capacity beyond 500K MPS on vSTP, an additional nodal license is required.  Virtual Network Function Manager (VNF-M)  32K connections per node (SOAM)  Application Routing Tables & Peer Routing Tables to 50K  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Nodal Configuration – Node Perpetual  Oracle Communications Common Signaling –
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Table 4-1 (Cont.) Common Signaling Licensing Information

icensing Information
Description: The sub-product adds the collowing features to Oracle Communications Diameter Signaling Router:  vAGG: Mobile Private Network Virtual Aggregate DRA (vAggDRA) aggregates Diameter/RADIUS traffic from Enterprises towards the appropriate servers. This feature provides parity with F5 enabling additional replacement opportunities globally, including Verizon. This use-case also addresses DSR as Radius Proxy with additional routing features.  Rx Gateway: The MCPTT (Mission Critical Push to Talk) Rx gateway use case is intended to be enabled on Roaming DRA – which is a Virtual DSR (Diameter Signaling Router). The Rx gateway is a customization on the Roaming DRA (Diameter Routing Agent) Rx interface to support MCPTT (Mission Critical Push to Talk), used by Verizon. Oracle Roaming DRA (R-DRA) establishes a secure Diameter Rx connection with Oracle PCRF (Policy and Charging Rules Function) for roaming calls.  Prerequisites: The following license is rerequisite to license and use Oracle communications Common Signaling, inhanced Routing - Node Perpetual Oracle Communications Common Signaling —
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Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Service Proxy Function -per NODE	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router TheService Proxy Function (SPF)addresses introduction of 5G Service BasedArchitectureandthe usageof HTTP/2for signaling.Provides congestion control incases of floodingand at the same time protectservers from being overloaded.
		Facilitates traffic prioritization to ensure that the higher priority traffic is addressed in overload situations Uniform Authorization/ Authentication mechanism in the network Simplifies the network and provider better visibility into the health of the network. Reduces the connection mesh to a manageable number of connections, thereby decreasing the chances of failure.  Prerequisites:The following license is prerequisite to license and use Oracle Communications Common Signaling, Service Proxy Function - per NODE
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second
	Oracle Communications Common Signaling, Network Repository Function - per NODE	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router TheNetwork Repository Function(NRF) supports management and discovery services and the management services allow for Network Function(NF)instances to be Introduced/Updated/Removed inthe5Gcorewithoutmanual configuration. The more NRF developments will come as part of future releases.  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Network Repository Function - per NODE  Oracle Communications Common Signaling —
		per Signaling Unit – per Message per Second



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Routing and Selection domain –per NODE	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router Routing and Selection domain combines both Service Proxy Function (SPF) and Network Repository Function (NRF) provides a realtime information about any Network Function (NF) and leads to better NF selection decision making by the NRF and SPF able to perform overload protection without configuration and dynamic re-routing where applicable. Refer to following Subproduct information for additional details.  Oracle Communications Common Signaling,
		Service Proxy Function - per NODE Oracle Communications Common Signaling, Network Repository Function - per NODE Prerequisites: Thefollowing license is prerequisite to license and use Oracle Communications Common Signaling, Routing and Selection domain – per NODE Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling, Service Proxy Function - per NODE Oracle Communications Common Signaling, Network Repository Function - per NODE
	Oracle Communications Common Signaling, Binding Support Function-per Node	Description: The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router The Binding Support Function (BRF)providessession binding functionality, whichensures requestfor session reaches the relevant PCF holding the session information. This service:  Allows Network Function (NF) consumers to register, update and remove the binding information; and  Allows Network Function (NF) consumers to retrieve the binding information.  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Binding Support Function -per NODE  Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling for Stateful Applications – per 5k Network-wide Concurrent Sessions Perpetual.



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Network Exposure Function - Per Node	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router The Network Exposure Function (NEF) provides RESTful APIs that allow access to theservices and capabilities provided by networkentities and securely exposed by NEF. The NEF Northbound interface supports the following procedures:  • Procedures for Monitoring  - Procedures for Device Triggering  - Procedures for resource management of Background Data Transfer  - Procedures for Communication Pattern Parameters Provisioning  - Procedures for Packet Flow Description Management  - Procedures for Traffic Influence  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Network Exposure Function - Per Node  Oracle Communications Common Signaling - per Signaling Unit - per Message per Second Oracle Communications Common Signaling for Stateful Applications - per 5k Network-wide Concurrent Sessions Perpetual



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling, Interworking and	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router The InterworkingandMediation (IWF) provides
	Mediation Function - Per Node	Interworking and mediationfunctionbetween HTTP6HTTP and HTTP
		Diameter that allow access to the services and capabilities provided bynetwork entities. Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Interworking and Mediation Function - Per NodeCustomer must purchase a license of Interworking and Mediation Function (IWF) for each separately purchased Network Function (NF) where the customer requires IWF whether deploying all functions on one node or on separate nodes. When licensed in the Routing and Selection offering, pricing includes the use of IWF for the following five functions deployed in the same node: Service Proxy Function (SPF), Network Slice Selection Function (NSSF), Binding Support Function (BSF), Security Edge Protection Proxy (SEPP), and Network Expose Function (NEF). IWF is not applicable to Network Repository Function (NRF) provided by network entities. Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling,
		Interworking and Mediation Function - Per Node
		Customer must purchase a license of Interworking and Mediation Function (IWF) for each separately purchased Network Function (NF) where the customer requires IWF whether deploying all functions on one node or on separate nodes. When licensed in the Routing and Selection offering, pricing includes the use of IWF for the following five functions deployed in the same node: Service Proxy Function (SPF), Network Slice Selection Function (NSSF), Binding Support Function (BSF), Security Edge Protection Proxy (SEPP), and Network Expose Function (NEF). IWF is not applicable to Network Repository Function (NRF).



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications	Oracle Communications Common Signaling, Network Slice Selection Function - Per Node
	Common Signaling, Network Slice Selection Function	Description:The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router
	- Per Node	The Network Slice SelectionFunction (NSSF)provides an important capability to bringnetworkresource utilization efficiency, deploymentflexibility and support fast growing over the top (OTT) application and services.
		Prerequisites:Thefollowing license is prerequisite to license and use Oracle Communications Common Signaling, Network Slice Selection Function - Per Node
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second
	Oracle Communications Common Signaling, Security Edge Protection Proxy -Per Node	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router The Signaling Security Edge Protection Proxy (SEPP) Security Edge ProtectionProxy (SEPP) is a nontransparent proxy that supportsmessage filteringand policing oninter-PLMN control-plane interfaces andtopologyhiding for the PLMN network. A SEPPfunction should performthe firewall role for transactions betweendomains. Giventhat the SEPP is the pointwhere integrity protection and encryption are applied, the SEPPhas visibility into each aspect of a transaction.  Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Security Edge Protection Proxy - Per Node
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications	Oracle Communications Common Signaling, Mobile Number Portability - Per Node
	Common Signaling, Mobile Number Portability - Per Node	<b>Description</b> : The sub-product adds the following features to the Oracle Communications Diameter Signaling Router.
		The Mobile Number Portability (MNP) Process is the facility that helps you switch from one mobile phone network service provider to another in any Licensed Service Area (LSA) while retaining your existing number.
		Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Mobile Number Portability – per Node Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling for Database Applications - per 25k Subscribers
	Oracle Communications Common Signaling,	Oracle Communications Common Signaling, ENUM Interface for Number Portability – Node Perpetual
	ENUM Interface for Number Portability – Node Perpetual	<b>Description</b> : The sub-product adds the following features to the Oracle Communications Diameter Signaling Router:
		The ENUM Number Portability functionality is a standard adopted by the Internet Engineering Task Force (IETF) that uses the Domain Name System (DNS) to map telephone numbers to web addresses or uniform resource locators (URL). The goal of the ENUM standard is to provide a single number to replace the multiple numbers and addresses for an individual' home phone, business phone, fax, cell phone, and email through a telephone number.
		Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, ENUM Interface for Number Portability – Node Perpetual Oracle Communications Common Signaling – per Signaling Unit – per Message per Second, Oracle Communications Common Signaling, Mobile Number Portability – per Node and Oracle Communications Common Signaling for Database Applications - per 25k Subscribers



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling	Oracle Communications Common Signaling HLR (Home Location Register) Router for vSTP - Per Node
	HLR Router for vSTP - Per Node	<b>Description</b> : The sub-product adds the following features to the Oracle Communications Diameter Signaling Router:
		In order to move easily from one HLR to another, operators need an HLR router that optimizes the use of subscriber numbers and number ranges by providing a logical link between any MSISDN, IMSI and an HLR. HLR Router software support in vSTP allows an operator to flexibly assign individual subscribers to HLRs and route signaling messages accordingly, based on subscriber numbering.
		Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Home Location Register Router (HLRR) – per Node Oracle Communications Common Signaling – per Signaling Unit – per Message per Second Oracle Communications Common Signaling for Database Applications - per 25k Subscribers
	Oracle Communications Common Signaling,	<b>Description:</b> The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router
	Automated Test Tools and Scripts - Per Node	The AutomatedTest Tools,Scripts license provides tools and scripts for functional, andperformance testing needsin the field.
		Prerequisites:The following license is prerequisite to license and use Oracle Communications Common Signaling, Automated Test Tools and Scripts – per Node
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second



Table 4-1 (Cont.) Common Signaling Licensing Information

Product	Subproduct	Licensing Information
	Oracle Communications Common Signaling,	Description: The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router
	Network Function Cloud Native Environment - Per Node	TheNetwork FunctionCloudNativeEnvironment provides tools and capabilitiesto runcloud nativenetworkfunctionsin the network.
	Noue	Prerequisites: Anyone of the following license is prerequisite to license and use Oracle Communications Common Signaling, Network Function Cloud Native Environment – per Node
		Oracle Communications Common Signaling, Security Edge Protection Proxy - Per Node
		Oracle Communications Common Signaling, Network Slice Selection Function - Per Node
		Oracle Communications Common Signaling, Interworking and Mediation Function - Per Node
		Oracle Communications Common Signaling, Network Exposure Function - Per Node
		Oracle Communications Common Signaling, Binding Support Function - per NODE
		Oracle Communications Common Signaling, Network

	Product	Subproduct	LicensingInformation
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Oracle Communications Common Signaling, Network Function Cloud Native Environment - Per Node **Description:** The sub-product adds the following features tothe Oracle Communications Diameter Signaling Router TheNetwork FunctionCloudNativeEnvironm

FunctionCloudNativeEnvironnent provides tools and capabilitiesto runcloud nativenetworkfunctionsin the network.

Prerequisites: Anyone of the following license is prerequisite to license and use Oracle Communications Common Signaling, Network Function Cloud Native Environment – per Node Oracle Communications Common Signaling, Security Edge Protection Proxy - Per Node

Oracle Communications Common Signaling, Network Slice Selection Function - Per Node

Oracle Communications Common Signaling, Interworking and Mediation Function - Per Node

Oracle Communications Common Signaling, Network Exposure Function - Per Node

Oracle Communications Common Signaling, Binding Support Function - per NODE Oracle Communications Common Signaling, Network

Product LicensingInformation



	Repository Function - per Node
	Oracle Communications Common Signaling, Service Proxy Function - per Node
	Oracle Communications Common Signaling, Routing and Selection domain – per Node
	Oracle Communications Common Signaling, Unified Data Repository – per Node
	Oracle Communications Common Signaling, Unstructured Data Storage Function – per Node
	Oracle Communications Common Signaling, Diameter Routing Agent – per Node
Oracle Communications Common Signaling, Unified Data Repository–per Node	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router
	The User DataRepository(UDR) is a functionalentitythat acts as a singlelogicalrepository of userdata and is unique fromApplicationFront End's perspective.Entitieswhich do not storeuserdataand thatneedto access userdatastored intheUDR arecollectively knownasapplicationfront ends
	Prerequisites:The following license is prerequisite to license and use Oracle Communications Common Signaling, Unified Data Repository – per Node
	Oracle Communications Common Signaling – per Signaling Unit – per Message per Second
	Oracle Communications Common Signaling for Database Applications - per 25k Subscribers



Oracle Communications Common Signaling, Unstructured Data Storage Function–per Node	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router
	TheUnstructuredData Storage Function (UDSF)function is a partof theUDMentity.Network Functions (NFs)can store/ retrieve "unstructured" datafrom an Unstructured Data Storage Function (UDSF).This datais basedon the state informationof different NFs,intermediaterepresentation of data crossingdifferent technologies,etc.
	Prerequisites: The following license is prerequisite to license and use Oracle Communications Common Signaling, Unstructured Data Storage Function – per Node
	Oracle Communications Common Signaling – per Signaling Unit – per Message per Second
	Oracle Communications Common Signaling for Database Applications - per 25k Subscribers
Oracle Communications Common Signaling,	Description: The sub-product adds the following features to the Oracle Communications Diameter Signaling Router
	The Diameter RoutingAgent(DRA) providesabilitytoroute

Product	Subproduct	LicensingInformation
	Diameter Routing Agent – per Node	diameter messages between Network Functions (NF) in the 4G network
		Prerequisites:The following license is prerequisite to license and use Oracle Communications Common Signaling, Diameter Routing Agent – per Node
		Oracle Communications Common Signaling – per Signaling Unit – per Message per Second



5

# Oracle Communications Diameter Signaling Router – Licensing Notes – Legacy

Product	Subproduct	Licensing Information
Oracle Communications Diameter Signaling Router	EXG DSR MPS Per Node	<b>Description</b> : Determines the maximum number of nodal Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:
		Processing ofan ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.
		Transmission of anyDiameter message that is associated with incremental actions/events associated with #1 above. For example, the rerouting of a Request upon connection failure or the copying of a Request.
		Messages excluded from this measure are:
		Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA
		Ingress Diameter messages discarded by the DSR due to Overload controls
		Answers received in response to Message Copy
		Nodal MPS is calculated as the peak 5-minute interval of the signaling node. A node is defined as a network element that is managed by a single system operation, alarms, and measurements server pair.
		Orderable in MPS increments that match MPS capacity product description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR IPSEC MPS Per Node	<b>Description</b> : Determines the maximum number of nodal Messages per Second (MPS) using IPsec encryption allowed by Oracle Communications Diameter Signaling Router.
		Orderable in MPS increments that match IPsec MPS capacity product description.
		Signaling Router EXG DSR MPS Per Node is a prerequisite to license and use Oracle Communications Diameter Signaling Router EXG DSR IPSEC Per Node.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR Connections per Node	<b>Description</b> : Determines the number of connections allowed by Oracle Communications Diameter Signaling Router.
		A connectionis definedas an SCTP association or a TCP/IP connection.
		Orderable in increments that match product description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR ADDL Routing Pkg 1	<b>Description</b> : Enables the capability per node of the Oracle Communications Diameter Signaling Router to route based on Command Code and Origin-Realm.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR ADDL Routing Entries per Node	<b>Description</b> : Determines the number ofrouting entries allowed by Oracle Communications Diameter Signaling Router.
		A routingentry is defined as an entry in the DSR routing table. Orderable in increments that matchproduct description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR NPA Splits Per Node	<b>Description</b> : This sub-product enables the Oracle Communications Diameter Signaling Router Subscriber Database Server to create temporary duplicate MSISDN records automatically during Numbering Plan Area (NPA) split process.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR LTE Address Resolution	Description: This sub-product adds full address resolution features per node to the Oracle Communications Diameter Signaling Router for the LTE HSS. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on applD, Command Code, Routing Entity type, and Individual Routing Entity. This sub- product adds the following functionality to the Oracle Communications Diameter Signaling Router:
		SubscriberDatabase Server –Provides provisioning and storage of database information for full address resolution. Supports querying, reports and audits.
		<b>Database Processor</b> – Provides real-time access to the subscriber database at the signaling node.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR IMS Address Resolution	Description: This sub-product adds full address resolution features per node to the Oracle Communications Diameter Signaling Router for the IMS HSS. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on app-ID, Command Code, Routing Entity type, and Individual Routing Entity. This sub- product adds the following functionality to the Oracle Communications Diameter Signaling Router:
		Subscriber Database Server –Provides provisioning and storage of large amounts of database information for full address resolution. Supports querying, reports and audits.
		<b>Database Processor</b> – Provides real-time access to the subscriber database at the signaling node.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR IMS Range Address Resolution	<b>Description</b> : This sub-product adds range based address resolution features per node to the Oracle Communications Diameter Signaling Router for IMS.
		This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:
		Routing based on app-ID, Command Code, Routing Entity Type, and Routing Entity address ranges
		Routing Entity types can be a user identity (IMSI, MSISDN, IMPI or IMPU) or an IP address
		Allows definition of a prioritized (primary and secondary) Routing Entity type and associated range for each app- ID/Command Code combination.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR LTE Range Address Resolution	<b>Description</b> : This sub-product adds range based address resolution features per node to the Oracle Communications Diameter Signaling Router for LTE.
		This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:
		Routing based on app-ID, Command Code, Routing Entity Type, and Routing Entity address ranges
		Routing Entity types can be a user identity (IMSI, MSISDN, IMPI or IMPU) or an IP address
		Allows definition of a prioritized (primary and secondary) Routing Entity type and associated range for each app- ID/Command Code combination.
		Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR SLF	Description: This sub-product adds full address resolution features per node to the Oracle Communications Diameter Signaling Router. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on app-ID, Command Code, Routing Entity type, and Individual Routing Entity. This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:
		SubscriberDatabase Server –Provides provisioning and storage of database information for full address resolution. Supports querying, reports and audits.
		<b>Database Processor</b> – Provides real-time access to the subscriber database at the signaling node.
		Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR Subscribers	Description: Determines the number of subscribers or entities allowed per node by Oracle Diameter Signaling Router for full address resolution. Each entry (entity) in the provisioned subscriber database server (SDS) counts as one subscriber.
		Orderable in subscriber increments that match product description.
		Restrictions: This product SKU is for legacy customer applications only.
	SDS Software Kernel	<b>Description</b> : This sub-product enables per node the Oracle Communications Diameter Signaling Router Subscriber Database Server (SDS), which is used for IMS or LTE Full Address Resolution or SLF.
		Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	SDS Query Server	Description: This sub-product enables per node the Oracle Communications Diameter Signaling Router Subscriber Database Server (SDS) for an offline version of the address resolution database on a query server. This function is used for IMS or LTE Full Address Resolution or SLF.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR Message Throttling	Description: This sub-product enables per node message throttling in the Oracle Communications Diameter Signaling Router. This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router: Per-connection Ingress MPS control Per-connection Egress Message throttling Remote BUSY congestion control Remote Transport congestion control
		Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR Mediation Rules Per Node	Description: This sub-product adds Diameter Mediation to the Oracle Communications Diameter Signaling Router.  Diameter Mediation is a GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues. A mediation
		rule is defined as a rules template, which contains multiple conditions and actions associated with the mediation function. Orderable in increments that match product description.  Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR OFCS Topology Hiding Per Node	Description: This sub-product adds Off-Line Charging topology hiding to the Oracle Communications Diameter Signaling Router. This sub-product provides topology hiding to and from Charging Trigger Functions and Charging Data Functions.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR Concurrent Sessions	Description: Determines the number of concurrent Diameter sessions allowed per node by Oracle Communications Diameter Signaling Router for policy proxy or off-line charging proxy. Licensing for concurrent sessions is provided on a per node basis.
		Nodal concurrent sessions are calculated as the peak 5- minute interval of the signaling node managed by a single system operation, administration, and maintenance server pair.
		Orderable in session increments that match session capacity product description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR IPFEGB/S	Determines the bandwidth per node of the IP Front End allowed by Oracle Communications Diameter Signaling Router.
		Orderable in bandwidth increments that match product description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR Policy Topology Hiding Per Node	Description: This sub-product adds policy topology hiding to the Oracle Communications Diameter Signaling Router. This feature hides the identities PCRFs from other elements in the network.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR Remote Congestion Control Per Node	<b>Description</b> : This sub-product enables the following remote congestion control features in the Oracle Communications Diameter Signaling Router:
		Remote BUSY congestion control Remote Transport congestion control
		Restrictions: This product SKU is for legacy customer
	EXG DSR Per Connection TPS Controls Per Node	<b>Description</b> : This sub-product enables the following per connection message control features in the Oracle Communications Diameter Signaling Router:
		Per-connection Ingress MPS control
		Per-connection Egress Message throttling
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR Policy DRA Per Node	Description: This sub-product adds Policy DRA to the Oracle Communications Diameter Signaling Router. Policy DRA enables dynamic routing of subscriber sessions to PCRFs, distributes Gx/Gxx/S9/Rx sessions across PCRFs and provides network-wide subscriber session binding
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	EXG DSR Policy Correlation PerNode	Description: This sub-product adds policy proxy correlation to the Oracle Communications Diameter Signaling Router. Policy correlation provides session correlation across interfaces, such as Gx and Rx, and across mated DSR pairs. Restrictions: This product SKU is for legacy customer applications only.
	DSR 5K MPS Per Network	<b>Description</b> : Determines the maximum number of network- wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:
		Processing ofan ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.
		Transmission of anyDiameter message that is associated with incremental actions/events associated with #1 above. For example, the rerouting of a Request upon connection failure or the copying of a Request.
		Messages excluded from this measure are:
		Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA
		Ingress Diameter messages discarded by the DSR due to Overload controls
		Answers received in response to Message Copy
		Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in increments that match product description.
		<b>Restrictions</b> : This license is for specific legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR 5M Concurrent Sessions PerNetwork	<b>Description</b> : Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for policy proxy.
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in increments that match product description.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Concurrent Sessions per 5MPer Network	<b>Description</b> : Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for policy proxy.
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in increments that match product description.
		Restrictions: This product SKU is for legacy customer applications only.
	SDS XML toPDBI Conversion PerNetwork	Description: This sub-product adds an XML to PDBI conversion capability to the Oracle Communications Diameter Signaling Router Subscriber Database Server. This interface conversion allows for interoperability between the Subscriber Database Server and legacy PDBI network elements.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR MPS Per 100K Per Network	Description: Determines the maximum number of network- wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:
		Processing ofan ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.
		Transmission of anyDiameter message that is associated with incremental actions/events associated with #1 above. For example, the rerouting of a Request upon connection
		failure or the copying of a Request. Messages excluded from this measure are:
		Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA
		Ingress Diameter messages discarded by the DSR due to Overload controls
		Answers received in response to Message Copy
		Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in increments that match product description.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Core Routing Per Blade	This sub-product provides the following base Oracle Communications Diameter Signaling Router functionality:
		<b>OAM</b> –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.
		Congestion Management–Ingress and egress, local and remote Diameter congestion control.
		Connection Management–TCP, SCTP uni- and multi- homing, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddressResolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		Message Copy  Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IPFront End –TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> –The Diameter Signaling Router can be deployed with or without geo-redundancy.
		components are engineered with high levels of redundancy to ensure high availability.
		Orderable in increments that match product description.
		Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Policy Proxy Per Blade	<b>Description</b> : This sub-product adds policy proxy to the Oracle Communications Diameter Signaling Router. The policy proxy enables dynamic routing of subscriber sessions to PCRFs and supports the following capabilities:
		Distributes Gx/Gxx/S9/Rx sessions across PCRFs Provides network-wide subscriber session binding Provides session correlation across mated pairs
		Performs topology hiding to hide the identities of the PCRFs from other elements in the network.
		Orderable in increments that match product description.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Diameter MPS Per Network	<b>Description</b> : Determines the maximum number of network- wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:
		Processing ofan ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the ingress message.
		Transmission of anyDiameter message that is associated with incremental actions/events associated with #1 above. For example, the rerouting of a Request upon connection failure or the copying of a Request.
		Messages excluded from this measure are:
		Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA
		Ingress Diameter messages discarded by the DSR due to Overload controls
		Answers received in response to Message Copy
		Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in single MPS increments.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Policy Concurrent	Description: Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter
	Sessions Per Network	Signaling Router for policy proxy.
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.
		Orderable in single session increments.
		Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Subscribers  – Per Network	Description: Determines the number of subscribers or entities allowed by Oracle Communications Diameter Signaling Router for full address resolution. Each entry (entity) in the provisioned subscriber database server (SDS) counts as one subscriber.  Orderable in single subscriber increments.  Restrictions: This product SKU is for legacy customer applications only.
	DSR Core Routing Per Server	Description: This sub-product provides the following base Oracle Communications Diameter Signaling Router functionality:
		<b>OAM</b> –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.
		Congestion Management–Ingress and egress, local and remote Diameter congestion control.
		Connection Management–TCP, SCTP uni- and multi- homing, IPv4-IPv6 interworking, IPSec, load balancing, and capabilities exchange.
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddress Resolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type, and routing entity address ranges.
		Message Copy  Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IPFront End – TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		Geo-redundant-The Diameter Signaling Router can be deployed with or without geo-redundancy.
		High Availability—All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Policy Proxy Per Server	<b>Description</b> : This sub-product adds policy proxy to the Oracle Communications Diameter Signaling Router. Policy Proxy enables dynamic routing of subscriber sessions to PCRFs.
		Policy Proxy supports the following capabilities: Distributes Gx/Gxx/S9/Rx sessions across PCRFs Provides network-wide subscriber session binding Provides session correlation across mated pairs
		Performs topology hiding to hide the identities of the PCRFs from other elements in the network.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Charging Proxy OFCS PerServer	Description: This sub-product adds off-line charging server proxy to the Oracle Communications Diameter Signaling Router. The off-line charging proxy supports a Diameter proxy agent over the Rf interface between multiple Charging Trigger Function (CTF) clients such as PGWs, SGWs, GGSNs, CSFCs, and multiple Charging Data Function (CDF) servers. The following features are provided with this sub-product:
		Session/Subscriber Binding Repository Charging Topology Hiding Restrictions:
		This product SKU is for legacy customer applications only.
	DSR Address Resolution Proxy Per Server	Description: This sub-product adds full address resolution to the Oracle Communications Diameter Signaling Router. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on app- ID, Command Code, Routing Entity type, and Individual Routing Entity. The following features are provided with this sub-product:
		Subscriber Database Server –Provides provisioning and storage of large amounts of database information for full address resolution. Supports querying, reports and audits.
		Database Processor— Provides real-time access to the subscriber database at the signaling node.  IMS HSS Address Resolution LTE HSS Address
		Resolution  Restrictions: This product SKU is for legacy customer applications only.
	DSR Roaming Proxy Per Server	Description: This sub-product adds roaming proxyto the Oracle Communications Diameter Signaling Router. The following features are provided with this sub-product:  • MME Topology Hiding
		<ul> <li>HSS Topology Hiding</li> <li>Path Topology Hiding</li> <li>Restrictions: This product SKU is for legacy customer applications only.</li> </ul>



Product	Subproduct	Licensing Information
	DSR Software Per lab	<b>Description</b> : This sub-product provides access to all functionality in the Oracle Communications Diameter Signaling Router and all sub-products for non-production lab or test environments.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	DSR Diameter MPS PerNode	Description: This sub-product includes base functionality of the Oracle Communications Diameter Signaling Router and determines the maximum number of nodal Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. The base functionality consists of:  Connections Routes Additional routing package IPsec MPS Diameter Mediation rules Message copy Message throttling Remote Congestion control LTE and IMS Range based address resolution Per connection TPS controls An MPS is defined as: Processing of an ingress Diameter message and either transmitting a single outgoing message or discarding the ingress message. The outgoing message may be a variant of, or a response to, the
		ingress message.  - Transmission of any Diameter message that is associated with incremental actions/events associated
		with #1 above. For example, the re-routing of a Request upon connection failure or the copying of a Request.
		Messages excluded from this measure are:
		<ul> <li>Diameter peer-to-peer messages: CER/CEA, DWR/DWA, and DPR/DPA</li> </ul>
		Ingress Diameter messages discarded by the DSR due to Overload controls
		Answers received in response to Message
		Copy Nodal MPS is calculated as the peak 5-minute interval of the signaling node. A node is defined as a network element that is managed by a single system operation, alarms, and measurements server pair.
		Orderable in single MPS increments.
		<b>Restrictions</b> : This license is for specific legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Initial Content Per Server	<b>Description</b> : This sub-product provides the base Oracle Communications Diameter Signaling Router functionality as follows:
		<b>OAM</b> –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.
		Congestion Management–Ingress and egress, local and remote Diameter congestion control.
		<b>Connection Management</b> –TCP, SCTP uni- and multi- homing, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddress Resolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		IPFront End – TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> —The Diameter Signaling Router can be deployed with or without geo-redundancy.
		High Availability—All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR 5 Initial Content Per Server	<b>Description</b> : This sub-product provides Oracle Communications Diameter Signaling Router functionality as follows:
		<b>OAM</b> –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		<b>Core Routing</b> – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.
		Congestion Management–Ingress and egress, local and remote Diameter congestion control.
		<b>Connection Management</b> –TCP, SCTP uni- and multi- homing, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddress Resolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		<b>Message Copy</b> –Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IPFront End –TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> –The Diameter Signaling Router can be deployed with or without geo-redundancy.
		<b>High Availability</b> –All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		PolicyProxy
		Off- LineChargingProxyRoamingProxyMessageCo
		py   FullAddressResolutionProxy
		Restrictions: This product SKU is for legacy customer applications only.
	DSR 5 Content Bundle Per Server	<b>Description</b> : This sub-product adds all DSR 5.0 content to the Oracle Communications Diameter Signaling Router:
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR RMS Initial Content Per Server	<b>Description</b> : This sub-product provides Oracle Communications Diameter Signaling Router functionality as follows:
		<b>OAM</b> –Operations, administration, measurements functionality including:
		SNMP, event logs, security logs, configuration, topology, user/group management, and reports.
		Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.
		Congestion Management–Ingress and egress, local and remote Diameter congestion control.
		<b>Connection Management</b> –TCP, SCTP uni- and multi- homing, IPv4-IPv6 interworking, IPsec, load balancing and capabilities exchange.
		<b>Diameter Mediation</b> –GUI-based Diameter mediation framework used to build mediation rules to resolve inter- operability issues.
		RangeBasedAddress Resolution—Stateless diameter proxy routing application that routes Diameter end-to-end transactions based on application ID, command code, routing entity type and routing entity address ranges.
		Message Copy—Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		IPFront End – TCP/SCTP connection based ingress load balancing which enables Diameter clients to access multiple Diameter Signaling Router servers via one or more virtual IP addresses.
		<b>Geo-redundant</b> –The Diameter Signaling Router can be deployed with or without geo-redundancy.
		High Availability—All message processing critical components are engineered with high levels of redundancy to ensure high availability.
		RoamingProxyMessageCopy
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Policy Proxy	<b>Description</b> : This sub-product adds policy proxy to the



Product	Subproduct	Licensing Information
	IPer Server	Oracle Communications Diameter Signaling Router. The policy proxy enables dynamic routing of subscriber sessions to PCRFs and supports the following capabilities:
		Distributes Gx/Gxx/S9/Rx sessions across PCRFs Provides network-wide subscriber session binding Provides session correlation across mated pairs
		Performs topology hiding to hide the identities of the PCRFs from other elements in the network.
		Prerequisites: Alicense to DSR Initial Content Per Server is a prerequisite to license and use DSR Policy Proxy I Per Server
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Full Address Resolution I Per Server	Description: This sub-product adds full address resolution features to the Oracle Communications Diameter Signaling Router. Full address resolution is an enhanced proxy routing application that routes end-to-end Diameter transactions based on app-ID, Command Code, Routing Entity type, and Individual Routing Entity. The following features are provided with this sub-product:
		Subscriber Database Server –Provides provisioning and storage of large amounts of database information for full address resolution. Supports querying, reports and audits.
		<b>Database Processor</b> – Provides real-time access to the subscriber database at the signaling node.
		IMS HSS Address Resolution LTE HSS Address Resolution
		Prerequisites: Alicense to DSR Initial Content Per Server is a prerequisite to license and use DSR Full Address Resolution I Per Server.
		Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR Message CopyPer Node	Description: This sub-product adds message copy capability to the Oracle Communications Diameter Signaling Router.
		Message Copy is the ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR HSS Topology Hiding Per Node	Description: This sub-product adds HSS Topology Hiding to the Oracle Communications Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	EXG DSR MME Topology Hiding Per Node	Description: This sub-product adds MME Topology Hiding to the Oracle Communications Diameter Signaling Router. Restrictions: This product SKU is for legacy customer applications only.
	EXG DSR Path Topology Hiding Per Node	Description: This sub-product adds Path Topology Hiding to the Oracle Communications Diameter Signaling Router.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	DSR Blacklisting Per Node	<b>Description</b> : This sub-product adds Blacklisting support to the Oracle Communications Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR User Config MSG Priority Per Node	<b>Description</b> : This sub-product adds user configurable message priority to the Oracle Communications Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR Message CopyPer Server	<b>Description</b> : This sub-product adds message copy capability to the Oracle Communications Diameter Signaling Router.
		Message Copy is the ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR RMS Message CopyPer Server	Description: This sub-product adds message copy capability to the rack-mount Oracle Communications Diameter Signaling Router.  Message Copy is the ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.
		Restrictions: This product SKU is for legacy customer applications only.
	DSR IPFE II Per Server	<b>Description</b> : This sub-product adds IPFE features to the Oracle Communications Diameter Signaling Router. The IPFE features added by this sub-product are:
		SCTP Multi-Homing for IPFE     Enhanced load balancing     Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR RMS IPFE II Per Server	Description: This sub-product adds IPFE features to the rack-mount Oracle Communications Diameter Signaling Router. The IPFE features added by this sub-product are:  SCTP Multi-Homing for IPFE  Enhanced load balancing Restrictions: This product SKU is for legacy customer applications only.
	DSR Core Routing III Per Server	Description: This sub-product adds core routing features to the Oracle Communications Diameter Signaling Router. The core routing features added by this sub-product are:  Maximum message size of 30k bytes  Route group entries up to 160  Enhanced pending answer timer configurations  Restrictions: This product SKU is for legacy customer applications only.
	DSR RMS Core Routing IIIPer Server	Description: This sub-product adds core routing features to the rack-mount Oracle     Communications Diameter Signaling Router. The core routing features added by this sub-product are:     Maximum message size of 30k bytes     Route group entries up to 160     Enhanced pending answer timer configurations     Restrictions: This product SKU is for legacy customer applications only.
	DSR Roaming Proxy Topology Hiding IPer Server	Description: This sub-product adds roaming proxy features to the Oracle Communications Diameter Signaling Router. The following features are added to this sub-product:  MME Topology Hiding HSS Topology Hiding Path Topology Hiding Restrictions: This product SKU is for legacy customer applications only.
	DSR RMS Roaming Proxy Topology Hiding IPer Server	Description: This sub-product adds roaming proxy features to the rack-mount Oracle Communications Diameter Signaling Router. The following features are added to this sub-product:  MME Topology Hiding HSS Topology Hiding Path Topology Hiding Restrictions: This product SKU is for legacy customer applications only.



Product	Subproduct	Licensing Information
	DSR Full Address Resolution II Per Server	Description: This sub-product adds full address resolution features to the Oracle Communications Diameter Signaling Router Full Address Resolution I license. The full address resolution features added by this sub-product are:  Blacklisting support  Ability to activate range and full address resolution on the same message Restrictions: This product SKU is for legacy customer applications only.
	DSR Charging Concurrent Sessions Per Network	<b>Description</b> : Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for Online Charging Proxy (OCS).
		Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operation, administration, and maintenance node.  Orderable in single session increments.
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.
	DSR Charging Proxy OCS Proxy Per Server	Description: This sub-product adds online charging server proxy features to the Oracle Communications Diameter Signaling Router. The online charging proxy supports a stateful Diameter proxy agent over the Gy interface between multiple charging clients such as LTE PGWs, 3G GGSNs, IMS AFs, and multiple online charging servers (OCS).
		<b>Restrictions</b> : This product SKU is for legacy customer applications only.



6

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Douglas C. Schmidt	ACE 6.5.12	For more information on ACE Copyright refer to Appendix P



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		github.com/alecthomas/template
		github.com/gogo/protobuf
		github.com/golang/protobuf
		github.com/google/go-cmp
		github.com/google/uuid
		github.com/jessevdk/go-flags
		github.com/miekg/dns
		github.com/pborman/uuid
		golang.org/x/crypto
		golang.org/x/net
		golang.org/x/sync
		golang.org/x/sys
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		github.com/cespare/xxhash/v2
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		Copyrights
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		github.com/stretchr/objx
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		github.com/stretchr/testify
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		Dependency
		gopkg.in/alecthomas/kingpin.v2
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		====== Dependencies Summary
		github.com/alecthomas/units
		github.com/armon/go-metrics
		github.com/armon/go-radix
		github.com/asaskevich/govalidator
		github.com/beorn7/perks
		github.com/bgentry/speakeasy
		github.com/cenkalti/backoff
		github.com/cespare/xxhash
		github.com/cespare/xxhash/v2
		github.com/fatih/color
		github.com/go-kit/kit
		github.com/go-logfmt/logfmt
		github.com/go-stack/stack
		github.com/json-iterator/go
		github.com/kisielk/errcheck
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		github.com/kr/pty
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		github.com/mattn/go-colorable
		github.com/mattn/go-isatty
		github.com/mitchellh/go-wordwrap
		github.com/mitchellh/mapstructure
		github.com/posener/complete
		github.com/rs/cors
		github.com/ryanuber/columnize
		github.com/satori/go.uuid
		github.com/shurcooL/httpfs
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		License: Apache License, Version 2.0
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		tomcat-websocket-api
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		tomcat-util-scan
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		tomcat-coyote



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		tomcat-tribes
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FasterXML		Jackson is a high-performance, Free/Open Sourc JSON processing library.
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		(http://www.w3.org/TR/ws-metadata-exchange/)
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