

**Oracle® Communications
Diameter Signaling Router
Licensing Information User Manual
Release 7.1.x
E64765-04**

January 2016

ORACLE®

Copyright © 2011,2016 Oracle and/or its affiliates. All rights reserved.

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

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are “commercial computer software” pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Introduction

This Licensing Information document is a part of the product or program documentation under the terms of your Oracle license agreement and is intended to help you understand the program editions, entitlements, restrictions, prerequisites, special license rights, and/or separately licensed third party technology terms associated with the Oracle software program(s) covered by this document (the “Program(s)”). Entitled or restricted use products or components identified in this document that are not provided with the particular Program may be obtained from the Oracle Software Delivery Cloud website (<https://edelivery.oracle.com>) or from media Oracle may provide. If you have a question about your license rights and obligations, please contact your Oracle salesrepresentative, review the information provided in Oracle’s Software Investment Guide (<http://www.oracle.com/us/corporate/pricing/software-investment-guide/index.html>), and/or contact the applicable Oracle License Management Services representative listed on <http://www.oracle.com/us/corporate/license-management-services/index.html>.

Licensing Information

Description of Product Editions and Permitted Features

Prerequisite Products

Entitled Products and Restricted Use Licenses

Product	Subproduct	Licensing Description
---------	------------	-----------------------

Product	Subproduct	Licensing Description
Oracle Communications Diameter Signaling Router	Oracle Communications Diameter Signaling Router (base fee)- per Server	<p>This product provides the following base Diameter Signaling Router functionality:</p> <p>OAM – Operations, administration, measurements functionality: SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Included Products:</p> <ul style="list-style-type: none"> • MySQL Enterprise Edition <p>Restriction:</p> <p>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).</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router (capacity) – per 100 Network-wide Messages per Second	<p>Description: Determines the maximum number of network-wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in 100 MPS increments.</p> <p>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)</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router Roaming Proxy - per Server	<p>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</p> <p>Prerequisites: A license to Oracle Communications Diameter Signaling Router (base fee) is a prerequisite to license and use Oracle Communications Diameter Signaling Router Roving 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.</p>
	Oracle Communications Diameter Signaling Router Full Address Resolution – per Server	<p>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:</p> <p>Subscriber Database Server - Provides provisioning and storage 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.</p> <p>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: DSR 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 Full Address Resolution.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router Full Address Resolution – per 25k Subscribers	<p>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.</p> <p>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.</p>
	Oracle Communications Diameter Signaling Router Policy Proxy – per Server	<p>Description: This sub-product adds policy proxy to the Oracle Communicaitons 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.</p> <p>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.</p>

Product	Subproduct	Licensing Description
	<p>Oracle Communications Diameter Signaling Router Policy Proxy – per 5K Network-wide Concurrent Sessions</p>	<p>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.</p> <p>Defined as a maximum of five thousand concurrent stateful diameter sessions between two or more end points. The total number of concurrent sessions across all signaling nodes that are managed by a single network Operations, Alarms and Measurements (OAM) node over a 5-minute interval during peak usage.</p> <p>The 5 minute interval measurement for concurrent sessions in a session database in a five minute window is determined by taking the count of sessions in that database every second and adding them up and dividing the total by 300. This is referred to as the 5 minute interval measurement for concurrent sessions. If there is a single session database in the network (not common), the network wide concurrent sessions equals the above number in any five minute interval. The peak 5 minute interval must be considered for licensing.</p> <p>If there are multiple session databases in the network (this is more common), the network wide concurrent sessions is the sum of the 5 minute intervals of each session database from all the session databases in the network in a five minute interval. The peak 5 minute interval must be considered for licensing.</p> <p>Policy Proxy supports Gx, Gxx, Gx-prime and Rx interfaces. Gx and Gxx sessions are considered as Anchor Sessions and Gx-Prime and Rx are considered as dependent sessions. Policy Proxy maintains state for all anchor sessions and can be configured to maintain state on dependent sessions. The state maintenance on dependent sessions is enabled if PCRF topology hiding is desired or if the clients of these dependent sessions cannot remember the name of the PCRF for subsequent requests within a session. The state can be enabled on a per client basis. Assuming that no topology hiding is required or the clients associated with the dependent sessions can remember the PCRFs for subsequent requests, then the only sessions that need to be licensed are the ones coming over Gx or Gxx.</p> <p>Orderable in 5k session increments.</p> <p>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: DSR Policy Proxy 1 per server DSR 5 Content Bundle per server DSR 5 Initial Content per server DSR Policy Concurrent Sessions per network is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy per 5k Network-wide Concurrent Sessions.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router Online Charging Proxy – per 5K Network-wide Concurrent Sessions	<p>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.</p> <p>Defined as a maximum of five thousand concurrent stateful diameter sessions between two or more end points. The total number of concurrent sessions across all signaling nodes that are managed by a single network Operations, Alarms and Measurements (OAM) node over a 5-minute interval during peak usage.</p> <p>The 5 minute interval measurement for concurrent sessions in a session database in a five minute window is determined by taking the count of sessions in that database every second and adding them up and dividing the total by 300. This is referred to as the 5 minute interval measurement for concurrent sessions. If there is a single session database in the network (not common), the network wide concurrent sessions equals the above number in any five minute interval. The peak 5 minute interval must be considered for licensing.</p> <p>If there are multiple session databases in the network (this is more common), the network wide concurrent sessions is the sum of the 5 minute intervals of each session database from all the session databases in the network in a five minute interval. The peak 5 minute interval must be considered for licensing.</p> <p>Online Charging Proxy supports the Gy interface. Online Charging Proxy can be configured to maintain session state if the clients cannot remember the name of the OCS for subsequent requests (CCR-U/T) within a session or if the Server cannot remember the name of a client (for RAR). The state can be enabled on a per client or per server basis or per realm basis.</p> <p>Orderable in 5k session increments.</p> <p>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 Network-wide 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 Charging Proxy per 5k Network-wide Concurrent Sessions.</p>

Product	Subproduct	Licensing Description
	<p>Oracle Communications Diameter Signaling Router, Policy Proxy II – per Server</p>	<p>Description: This sub-product adds policy proxy features to the Oracle Communications Diameter Signaling Router Policy Proxy.</p> <p>This sub-product adds::</p> <ul style="list-style-type: none"> • Support for multiple PCRF pools including the ability to select the pool based on the APN+IMSI • Support for Gx' and Gx-Lite messages • Gateway Location Application (GLA) interface support to access the binding database. • Policy Proxy Selection & routing to a PCRF pool based on APN <p>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: DSR Policy Proxy 1 per server DSR 5 Content Bundle per server DSR 5 Initial Content per server DSR Core Routing per blade DSR Policy Proxy per blade is a prerequisite to license and use Oracle Communications Diameter Signaling Router Policy Proxy II.</p>
	<p>Oracle Communications Diameter Signaling Router Translation Agent Base – per Server</p>	<p>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.</p> <p>Prerequisites: 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 RMS 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 is a prerequisite to license and use Oracle Communications Diameter Signaling Router Translation Agent Base.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router, Core Routing I – per Server	<p>Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.</p> <p>The following features are added with this sub-product:</p> <ul style="list-style-type: none"> • Active/Standby Peer Node Support • Mediation Enhancements: <ul style="list-style-type: none"> ○ Support for logical OR'ing and a mechanism to group conditions ○ Support for “optional” actions ○ Support for a combined ‘set/add AVP’ action ○ Support for grouped AVPs to a depth of 5 ○ Support for checking of ranges on numbers ○ Import/export of templates ○ Support for setting Message Priority and Route List in mediation. ○ Support for Discard message action ○ Support for Bit Set/Reset in conditions and actions ○ Ability to check for peers/connections in conditions ○ Special function to set Destination Realm from IMSI. ○ Support for setting “OctetString” type from the GUI. • DSR maximum message size of 60,000 bytes • PDU Pool Flexible Message Sizing • DSR NOAM/SDS 32 Node Support <p>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 RMS 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 is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing I.</p>

Product	Subproduct	Licensing Description
	<p>Oracle Communications Diameter Signaling Router, Core Routing II – Per Server</p>	<p>Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.</p> <p>The following features are added with this sub-product:</p> <ul style="list-style-type: none"> • IPFE Enhancements: <ul style="list-style-type: none"> ○ Peer Node Group aware least load distribution algorithm ○ IPFE initiator support: DSR 'initiator only' connections • Mediation Enhancements: <ul style="list-style-type: none"> ○ Mediation support for Re-routed requests ○ Support for “optional” actions ○ Mediation support for accessing components of the Diameter ingress request at the Answer Trigger Points ○ Ability to import/export mediation rules ○ Additional DCL trigger points ○ Additional DRL/DAL triggers ○ Support for Scripting in Mediation ○ Mediation: per rule pegging ○ Making AVP dictionary editable ○ Comcol logging for CAPM ○ Debug shell support for CAPM ○ Support for grouped AVPs that are 6 levels deep ○ Support for setting “OctetString” type from the GUI. • Pending Answer timer increase to 16 (from 8) • Extended Command Codes • RBAR -> PDRA Application Chaining • Ingress Message Screening <p>Prerequisites: A license to Oracle Communications Diameter Signaling Router Core Routing I is a prerequisite to license and use Oracle Communications Diameter Signaling Router Core Routing II.</p>
	<p>Oracle Communications Diameter Signaling, Roaming Proxy II – Per Server</p>	<p>Description: This sub-product adds the roaming proxy features listed below to the Oracle Communications Diameter Signaling Router.</p> <ul style="list-style-type: none"> S9 PCRF Topology Hiding S9 AF/pCSCF Topology Hiding S6a/S6d HSS Topology Hiding with multiple pseudo hosts names <p>Prerequisites: 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.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router, Online Charging Proxy – Per Server	<p>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).</p> <p>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 DSR 5 Initial Content per server is a prerequisite to license and use Oracle Communications Diameter Signaling Router Online Charging Server Proxy</p>
	Oracle Communications Diameter Signaling Router, Core Routing III – Per Server	<p>Description: This sub-product adds Active/Standby Peer Node Support and mediation enhancement features to the Oracle Communications Diameter Signaling Router.</p> <p>The following features are added with this sub-product:</p> <ul style="list-style-type: none"> • IPFE Enhancements: <ul style="list-style-type: none"> ◦ IPTE Initiator + Responder Support • Mediation Enhancements: <ul style="list-style-type: none"> ◦ Support for “Set Alarm/Event” as an action ◦ Support for grouped AVPs that are 8 levels deep • Coordinated Egress Throttling across multiple DSRs • Realm-Based Redirect Notification Support • DSR Support for Redirect Client • Support for “Parse Decorated NAI” as an action • Support for “Re-direct” as an action • Routing Attributes by (Extended) Command Code <p>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.</p>

Product	Subproduct	Licensing Description
Oracle Communications Integrated Diameter Intelligence Hub	Oracle Communications Integrated Diameter Intelligence Hub – per Server	<p>Description: This product provides a troubleshooting tool for the Oracle Communications Diameter Signaling Router. This product:</p> <ul style="list-style-type: none"> • 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 <p>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 Integrated Diameter Intelligence Hub.</p> <p>Included Products:</p> <ul style="list-style-type: none"> • MySQL Enterprise Edition <p>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.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Network Integrated Diameter Intelligence Hub – per Server	<p>Description: This sub-product provides network-wide Integrated Diameter Intelligence Hub (DIH) which enables correlation of trace data across a network of Integrated DIH instances. This sub-product:</p> <ul style="list-style-type: none"> • Provides the ability to correlate trace data across a network of Integrated DIH 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 node/server in the network to enable a network view. <p>Prerequisites: A license to Oracle Communications Integrated Diameter Intelligence Hub is a prerequisite to license and use Oracle Communications Network Integrated Diameter Intelligence Hub.</p>

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.

Prerequisite Products

Entitled Products and Restricted Use Licenses

Product	Subproduct	Licensing Description
---------	------------	-----------------------

Product	Subproduct	Licensing Description
Oracle Communications Diameter Signaling Router	Oracle Communications Diameter Signaling Router Network Function Edition - per Network-wide Messages per Second Perpetual	<p>Description: This product provides the following base Diameter Signaling Router functionality on a network-wide basis.</p> <p>OAM – Operations, administration, measurements functionality:</p> <p>SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve inter-operability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Core Routing – All core routing and process functionality which includes specific handling of real-time Diameter messages</p> <p>Active/Standby Peer Node Support, and mediation enhancement features to the Oracle Communications Diameter Signaling Router</p> <p>Roaming Proxy – All roaming proxy functionality for the Oracle Communication Diameter Signaling Router.</p> <p>Translation Agent – All Diameter Interworking functionality for the Oracle Communication Diameter Signaling Router.</p> <p>Included Products:</p> <ul style="list-style-type: none"> MySQL Enterprise Edition <p>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.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Diameter Signaling Router Network Function Edition for Database Applications - per 25k Subscribers Perpetual	<p>Description: This product provides subscriber application Diameter Signaling Router functionality, such as Full Address Based Resolution, on a network-wide basis.</p> <p>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.</p>
	Oracle Communications Diameter Signaling Router Network Function Edition for Stateful Applications - per 5k Network-wide Concurrent Sessions Perpetual	<p>Description: This product provides stateful session application Diameter Signaling Router functionality, such as PolicyProxy and On-line Charging Proxy, on a network-wide basis.</p> <p>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.</p>

Product	Subproduct	Licensing Description
	Oracle Communications Integrated Diameter Intelligence Hub Network Function Edition - per Server Perpetual	<p>Description: This product provides a troubleshooting tool for the Oracle Communications Diameter Signaling Router Network Function Edition.</p> <p>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.</p> <p>Included Products:</p> <ul style="list-style-type: none"> MySQL Enterprise Edition <p>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.</p>

Oracle Communications Diameter Signaling Router – Licensing Notes – Legacy

Product	Subproduct	Licensing Description
<p>Oracle Communications Diameter Signaling Router</p>	<p>EXG DSR MPS Per Node</p>	<p>Determines the maximum number of nodal Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>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 operations, alarms and measurements server pair.</p> <p>Orderable in MPS increments that match MPS capacity product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR IPSEC MPS Per Node	<p>Determines the maximum number of nodal Messages per Second (MPS) using IPsec encryption allowed by Oracle Communications Diameter Signaling Router.</p> <p>Orderable in MPS increments that match IPsec MPS capacity product description.</p> <p>Prerequisites:</p> <p>A license to Oracle Communications Diameter Signaling Router EXG DSR MPS Per Node is a prerequisite to license and use Oracle Communications Diameter Signaling Router EXG DSR IPSEC Per Node.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Connections per Node	<p>Determines the number of connections allowed by Oracle Communications Diameter Signaling Router.</p> <p>A connection is defined as an SCTP association or a TCP/IP connection.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR ADDL Routing Pkg 1	<p>Enables the capability per node of the Oracle Communications Diameter Signaling Router to route based on Command Code and Origin Realm.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR ADDL Routing Entries per Node	<p>Determines the number of routing entries allowed by Oracle Communications Diameter Signaling Router.</p> <p>A routing entry is defined as an entry in the DSR routing table.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR NPA Splits Per Node	<p>This sub-product enables the Oracle Communications Diameter Signaling Router Subscriber Database Server to automatically create temporary duplicate MSISDN records during Numbering Plan Area (NPA) split process.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR LTE Address Resolution	<p>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 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:</p> <p>Subscriber Database Server – Provides provisioning and storage of database information for full address resolution. Supports querying, reports and audits.</p> <p>Database Processor – Provides real-time access to the subscriber database at the signaling node.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR IMS Address Resolution	<p>This sub-product adds full address resolution features per node to the Oracle Communications Diameter Signaling Router for the IMSHSS. 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:</p> <p>Subscriber Database Server – Provides provisioning and storage of large amounts of database information for full address resolution. Supports querying, reports and audits.</p> <p>Database Processor – Provides real-time access to the subscriber database at the signaling node.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR IMS Range Address Resolution	<p>This sub-product adds range based address resolution features per node to the Oracle Communications Diameter Signaling Router for IMS.</p> <p>This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:</p> <ul style="list-style-type: none"> • Routing based on appl-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. <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR LTE Range Address Resolution	<p>This sub-product adds range based address resolution features per node to the Oracle Communications Diameter Signaling Router for LTE.</p> <p>This sub-product adds the following functionality to the Oracle Communications Diameter Signaling Router:</p> <ul style="list-style-type: none"> • Routing based on appl-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. <p>Restrictions: fg</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR SLF	<p>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:</p> <p>Subscriber Database Server – Provides provisioning and storage of database information for full address resolution. Supports querying, reports and audits.</p> <p>Database Processor – Provides real-time access to the subscriber database at the signaling node.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR Subscribers	<p>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.</p> <p>Orderable in subscriber increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	SDS Software Kernel	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	SDS Query Server	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Message Throttling	<p>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:</p> <ul style="list-style-type: none"> • Per-connection Ingress MPS control • Per-connection Egress Message throttling • Remote BUSY congestion control • Remote Transport congestion control <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR Mediation Rules Per Node	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Concurrent Sessions	<p>Determines the number of concurrent Diameter sessions allowed per node by Oracle Communications Diameter Signaling Router for policy proxy. Licensing for concurrent sessions is provided on a per node basis.</p> <p>Nodal concurrent sessions are calculated as the peak 5-minute interval of the signaling node managed by a single system operations, administration and maintenance server pair.</p> <p>Orderable in session increments that match session capacity product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR IPFE GB/S	<p>Determines the bandwidth per node of the IP Front End allowed by Oracle Communications Diameter Signaling Router.</p> <p>Orderable in bandwidth increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR Policy Topology Hiding Per Node	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Remote Congestion Control Per Node	<p>This sub-product enables the following remote congestion control features in the Oracle Communications Diameter Signaling Router:</p> <ul style="list-style-type: none"> • Remote BUSY congestion control • Remote Transport congestion control <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Per Connection TPS Controls Per Node	<p>This sub-product enables the following per connection message control features in the Oracle Communications Diameter Signaling Router:</p> <ul style="list-style-type: none"> • Per-connection Ingress MPS control • Per-connection Egress Message throttling <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Policy DRA Per Node	<p>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</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR Policy Correlation Per Node	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR 5K MPS Per Network	<p>Determines the maximum number of network-wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This license is for specific legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR 5M Concurrent Sessions Per Network	<p>Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for policy proxy.</p> <p>Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Concurrent Sessions per 5M Per Network	<p>Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for policy proxy.</p> <p>Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	SDS XML to PDBI Conversion Per Network	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR MPS Per 100K Per Network	<p>Determines the maximum number of network-wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in increments that match product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Core Routing Per Blade	<p>This sub-product provides the following base Oracle Communications Diameter Signaling Router functionality:</p> <p>OAM – Operations, administration, measurements functionality including SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Orderable in increments that product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Policy Proxy Per Blade	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Orderable in increments that product description.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Diameter MPS Per Network	<p>Determines the maximum number of network-wide Messages per Second (MPS) allowed by Oracle Communications Diameter Signaling Router. An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>Network-wide MPS is calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in single MPS increments.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Policy Concurrent Sessions Per Network	<p>Determines the number of concurrent Diameter sessions allowed by Oracle Communications Diameter Signaling Router for policy proxy.</p> <p>Network-wide concurrent sessions are calculated as the peak 5-minute interval of the sum of all signaling nodes managed by a single network operations, administration and maintenance node.</p> <p>Orderable in single session increments.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Subscribers - Per Network	<p>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.</p> <p>Orderable in single subscriber increments.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Core Routing Per Server	<p>This sub-product provides the following base Oracle Communications Diameter Signaling Router functionality</p> <p>OAM – Operations, administration, measurements functionality including SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Policy Proxy Per Server	<p>This sub-product adds policy proxy to the Oracle Communications Diameter Signaling Router. Policy Proxy enables dynamic routing of subscriber sessions to PCRFs.</p> <p>Policy Proxy supports the following capabilities:</p> <ul style="list-style-type: none"> • 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. <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Address Resolution Proxy Per Server	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Roaming Proxy Per Server	<p>This sub-product adds roaming proxy to the Oracle Communications Diameter Signaling Router. The following features are provided with this sub-product:</p> <ul style="list-style-type: none"> • MME Topology Hiding • HSS Topology Hiding • Path Topology Hiding <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Software Per lab	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Diameter MPS Per Node	<p>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.</p> <p>The base functionality consists of:</p> <ul style="list-style-type: none"> • 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 <p>An MPS is defined as:</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p>Messages excluded from this measure are:</p> <ul style="list-style-type: none"> • 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 <p>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 operations, alarms and measurements server pair.</p> <p>Orderable in single MPS increments.</p> <p>Restrictions:</p> <p>This license is for specific legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Initial Content Per Server	<p>This sub-product provides the base Oracle Communications Diameter Signaling Router functionality as follows:</p> <p>OAM – Operations, administration, measurements functionality including SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR 5 Initial Content Per Server	<p>This sub-product provides Oracle Communications Diameter Signaling Router functionality as follows:</p> <p>OAM – Operations, administration, measurements functionality including SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Policy Proxy</p> <p>Roaming Proxy</p> <p>Message Copy</p> <p>Full Address Resolution Proxy</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR 5 Content Bundle Per Server	<p>This sub-product adds all DSR 5.0 content to the Oracle Communications Diameter Signaling Router:</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR RMS Initial Content Per Server	<p>This sub-product provides Oracle Communications Diameter Signaling Router functionality as follows:</p> <p>OAM – Operations, administration, measurements functionality including SNMP, event logs, security logs, configuration, topology, user/group management and reports.</p> <p>Core Routing – Core routing and processing functionality that provides application specific handling of real-time Diameter messages.</p> <p>Congestion Management – Ingress and egress, local and remote Diameter congestion control.</p> <p>Connection Management – TCP, SCTP uni- and multi-homing, IPv4-IPv6 interworking, IPSec, load balancing and capabilities exchange.</p> <p>Diameter Mediation – GUI-based Diameter mediation framework used to build mediation rules to resolve interoperability issues.</p> <p>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.</p> <p>Message Copy – Ability to copy certain Diameter Requests or Requests and Answers that transit the Diameter Signaling Router.</p> <p>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.</p> <p>Geo-redundant – The Diameter Signaling Router can be deployed with or without geo-redundancy.</p> <p>High Availability – All message processing critical components are engineered with high levels of redundancy to ensure high availability.</p> <p>Roaming Proxy</p> <p>Message Copy</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Policy Proxy I Per Server	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Prerequisites:</p> <p>A license to DSR Initial Content Per Server is a prerequisite to license and use DSR Policy Proxy I Per Server.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Full Address Resolution I Per Server	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>Prerequisites:</p> <p>A license to DSR Initial Content Per Server is a prerequisite to license and use DSR Full Address Resolution I Per Server</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Message Copy Per Node	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	EXG DSR HSS Topology Hiding Per Node	<p>This sub-product adds HSS Topology Hiding to the Oracle Communications Diameter Signaling Router.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR MME Topology Hiding Per Node	<p>This sub-product adds MME Topology Hiding to the Oracle Communications Diameter Signaling Router.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	EXG DSR Path Topology Hiding Per Node	<p>This sub-product adds Path Topology Hiding to the Oracle Communications Diameter Signaling Router.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Blacklisting Per Node	<p>This sub-product adds Blacklisting support to the Oracle Communications Diameter Signaling Router.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR User Config MSG Priority Per Node	<p>This sub-product adds user configurable message priority to the Oracle Communications Diameter Signaling Router.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Message Copy Per Server	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR RMS Message Copy Per Server	<p>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.</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR IPFE II Per Server	<p>This sub-product adds IPFE features to the Oracle Communications Diameter Signaling Router. The IPFE features added by this sub-product are:</p> <ul style="list-style-type: none"> • SCTP Multi-Homing for IPFE • Enhanced load balancing <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR RMS IPFE II Per Server	<p>This sub-product adds IPFE features to the rack-mount Oracle Communications Diameter Signaling Router. The IPFE features added by this sub-product are:</p> <ul style="list-style-type: none"> • SCTP Multi-Homing for IPFE • Enhanced load balancing <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Core Routing III Per Server	<p>This sub-product adds core routing features to the Oracle Communications Diameter Signaling Router. The core routing features added by this sub-product are:</p> <ul style="list-style-type: none"> • Maximum message size of 30k bytes • Route group entries up to 160 • Enhanced pending answer timer configurations <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR RMS Core Routing III Per Server	<p>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:</p> <ul style="list-style-type: none"> • Maximum message size of 30k bytes • Route group entries up to 160 • Enhanced pending answer timer configurations <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Roaming Proxy Topology Hiding I Per Server	<p>This sub-product adds roaming proxy features to the Oracle Communications Diameter Signaling Router. The following features are added with this sub-product:</p> <ul style="list-style-type: none"> • MME Topology Hiding • HSS Topology Hiding • Path Topology Hiding <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR RMS Roaming Proxy Topology Hiding I Per Server	<p>This sub-product adds roaming proxy features to the rack-mount Oracle Communications Diameter Signaling Router. The following features are added with this sub-product:</p> <ul style="list-style-type: none"> • MME Topology Hiding • HSS Topology Hiding • Path Topology Hiding <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Product	Subproduct	Licensing Description
	DSR Full Address Resolution II Per Server	<p>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:</p> <ul style="list-style-type: none"> • Blacklisting support • Ability to activate range and full address resolution on the same message <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>
	DSR Charging Proxy OCS Proxy Per Server	<p>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).</p> <p>Restrictions:</p> <p>This product SKU is for legacy customer applications only.</p>

Third-Party Commercial and Open Source Software

Commercial Software

Commercial software used in Oracle Communications Diameter Signaling Router is identified in the following table with the following license notes, restrictions, and disclaimers.

Vendor	Product(s) and Version(s)	Functionality	Licensing Description/Disclaimer

Open Source Disclosure

Open Source Disclosure

Open source software used in Oracle Communications Diameter Signaling Router is identified in the following table with the following license notes, restrictions, and disclaimers. Additional open source software notices and licenses may be found in the Documentation or readme files of the products making

up the individual components.

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
Dmitry Zenovich	php-pecl-runkit-1.0.2-1	Modify constants and user-defined classes and functions	The Free BSD Project Copyright © Dmitry Zenovich, The php-pecl-runkit-1.0.21 software and sample code developed by Dmitry Zenovich licensed under The Free BSD Project. See above The Free BSD Project

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
The RE2 Authors	re2 v 20130115-2	Regular Expression Library	<p>Licensed under The Free BSD Project (Style), and you may not use this file except in compliance with the License. You may obtain a copy of the License at:</p> <p>http://www.freebsd.org/copyright/freebsd-license.html</p> <p>Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:</p> <p>Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.</p> <p>Neither the name of the nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.</p> <p>THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.</p> <p>Copyright © 2009 The RE2 Authors. All rights reserved.</p> <p>The re2 v 20130115-2 software and sample code developed by The Dojo foundation is licensed under the The Free BSD Project (Style).</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
QOS.ch	SLF4J-1.7.7	Simple Logging Façade For java	SLF4J source code and binaries are distributed under the MIT license
Google Inc.	Google-GWT-2.7.0	Google Development and Tools Library	The Free BSD Project (Modified) Copyright © 1995-2013 The FreeBSD Project software and sample code developed by The FreeBSD Project licensed under The Free BSD Project (Modified)
	SmartGWT-5.0	Google Development and Tools Library	
Chris Leonello	Jqplot-1.0.8	Plotting and charting plugin for the jQuery Javascript framework	jqPlot is an open source project dual licensed under the MIT and GPL version 2 licenses. You are free to choose the license that best suits your project..
iReasoning	iReasoning SNMP Libraries-5.0.05	Java SNMP Library	EULA
Dmitry Baranovskiy	Raphael-2.1.2	Javascript Library	MIT License Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software. The software is provided "as is", without warranty of any kind, express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose and noninfringement. In no event shall the authors or copyright holders be liable for any claim, damages or other liability, whether in an action of contract, tort or otherwise, arising from, out of or in connection with the software or the use or other dealings in the software.

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
jQuery Foundation	jQuery-1.9.1	JavaScript library	<p>MIT License</p> <p>Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:</p> <p>The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.</p> <p>The software is provided "as is", without warranty of any kind, express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose and noninfringement. In no event shall the authors or copyright holders be liable for any claim, damages or other liability, whether in an action of contract, tort or otherwise, arising from, out of or in connection with the software or the use or other dealings in the software.</p>
Lee Thomason, Yves Berquin, Andrew Ellerton	TinyXML-1.0.8	C++ XML parser	TinyXML is released under the ZLib license, so you can use it in open source or commercial code. The details of the license are at the top of every source file
Adrian Colyer	AspectJ-1.6.8	Seamless aspect-oriented extension to the Java programming language	Eclipse Public License 1.0
JCraft	JSch-0.1.30	Java implementation of SSH2.	BSD License
Bobby Van Der Sluis	SWFObject-2.2	Tool to embed Flash Player using a markup based approach and a method that relies on JavaScript	MIT License

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
The Apache Software Foundation version 2.0	xerces-c v.3.1.1	C++ XML Parsing Utility	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Log4j v.1.2.16	Logging service	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Jasypt-1.9.2	Java library which allows the developer to add basic encryption capabilities	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Apache ServiceMix v.4.5.2	SOA container	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Camel v.2.14.0	Routing/mediation engine	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	CXF-3.0.3	Open source services framework	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	RESTeasy-3.0.9.Final	Framework to build RESTful Web Services and RESTful Java applications.	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Spring Framework-4.1.2.RELEASE	Application framework and inversion of control container for the Java platform	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons Beanutils v.1.9.2	Wrappers around the Java reflection and introspection APIs	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Apache Commons Fileupload v.1.1.1	Utility	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons IO v.1.2	I/O Utilites	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons Lang v.2.1	Java Language extensions	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Apache Commons Logging v.1.0.4	Wrapper for logging APIs	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons Net v.1.4.1	Network utilities	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons Pool v.1.2	Generic object pooling component	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Apache Commons Validator v.1.0.2	Framework for xml file validators	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons VFS v.2	Virtual file system	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Apache Commons Digester v.1.6	Mapping utility	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Apache Xerces Java XML Parser v.2.90,2.9.1	XML library	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	JDOM-1.0	Tool for accessing, manipulating, and outputting XML data from Java code	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	POI-3.2-FINAL	Java API for Microsoft Documents	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

Vendor	Product(s) and Version(s)	Functionality	Licensing Description
	Maven Ant Tasks-2.1.3	Maven Ant Tasks allow several of Maven's artifact handling features to be used from within an Ant build	<p>Licensed under the Apache License v. 2.0, and you may not use this file except in compliance with the License.</p> <p>APACHE 2.0- See APPENDIX H</p> <p>Copyright © 2004 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>
	Ant-Contrib Tasks-1.0b3	Collection of tasks for Apache Ant	<p>Licensed under the Apache License v. 1.1, and you may not use this file except in compliance with the License.</p> <p>APACHE 1.1- See APPENDIX G</p> <p>Copyright © 2000 The Apache Software Foundation. All rights reserved.</p> <p>This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org/>.</p> <p>Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.</p>

APPENDIX A - GNU General Public License, version 2 (GPL-2.0)

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with

the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a)** You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b)** You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c)** If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it. Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a)** Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b)** Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c)** Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free

Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Appendix B: GNU General Public License, version 2 (GPL-2.1)

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this

license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library. We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you". A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables. The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law:

that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- **a)** The modified work must itself be a software library.
- **b)** You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- **c)** You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- **d)** If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it. Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy. This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License. However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- **a)** Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- **b)** Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

- **c)** Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- **d)** If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- **e)** Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- **a)** Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- **b)** Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other

circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

APPENDIX C - GNU General Public License, version 3 (GPL-3.0)

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works. The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too. When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things. To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others. For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights. Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it. For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions. Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users. Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

“This License” refers to version 3 of the GNU General Public License.

“Copyright” also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

“The Program” refers to any copyrightable work licensed under this License. Each licensee is addressed as “you”. “Licensees” and “recipients” may be individuals or organizations.

To “modify” a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a “modified version” of the earlier work or a work “based on” the earlier work.

A “covered work” means either the unmodified Program or a work based on the Program.

To “propagate” a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or

modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To “convey” a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying. An interactive user interface displays “Appropriate Legal Notices” to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it. “Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law

fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

- a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product

that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

- c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
- d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.
- e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A “User Product” is either (1) a “consumer product”, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, “normally used” refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

“Installation Information” for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

“Additional permissions” are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable

law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or
- d) Limiting the use for publicity purposes of names of licensors or authors of the material; or
- e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered “further restrictions” within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to

receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An “entity transaction” is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A “contributor” is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's “contributor version”.

A contributor's “essential patent claims” are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, “control” includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a “patent license” is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To “grant” such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. “Knowingly relying” means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is “discriminatory” if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party

based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007. Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License “or any later version” applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE

PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

APPENDIX D - GNU Lesser General Public License, version 2.0 (LGPL-2)

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you". Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it. Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1

and 2 above on a medium customarily used for software interchange; or,
c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add

an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

APPENDIX E - GNU Lesser General Public License, version 2.1 (LGPL-2.1)

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to

run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you". A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables. The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library. Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library. You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- **a)** The modified work must itself be a software library.
- **b)** You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- **c)** You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- **d)** If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License. However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- **a)** Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under

Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

- **b)** Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- **c)** Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- **d)** If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- **e)** Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- **a)** Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- **b)** Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR

INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

APPENDIX F - GNU Lesser General Public License, version 3 (LGPL-3)

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, “this License” refers to version 3 of the GNU Lesser General Public License, and the “GNU GPL” refers to version 3 of the GNU General Public License.

“The Library” refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An “Application” is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A “Combined Work” is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the “Linked Version”.

The “Minimal Corresponding Source” for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The “Corresponding Application Code” for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or
- b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated

material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

- a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

- a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the Combined Work with a copy of the GNU GPL and this license document.
- c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.
- d) Do one of the following:
 - 0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.
 - 1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.
- b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License “or any later version” applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU

Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

APPENDIX G – Apache License, version 1.1 (APACHE 1.1)

=====
The Apache Software License, Version 1.1

Copyright (c) 2000 The Apache Software Foundation. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The end-user documentation included with the redistribution, if any, must include the following acknowledgment:
"This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>)."
Alternately, this acknowledgment may appear in the software itself, if and wherever such third-party acknowledgments normally appear.
4. The names "Apache" and "Apache Software Foundation" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact apache@apache.org.
5. Products derived from this software may not be called "Apache", nor may "Apache" appear in their name, without prior written permission of the Apache Software Foundation.

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE APACHE SOFTWARE FOUNDATION OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====

This software consists of voluntary contributions made by many individuals on behalf of the Apache Software Foundation. For more information on the Apache Software Foundation, please see <<http://www.apache.org/>>.

Portions of this software are based upon public domain software originally written at the National Center for Supercomputing Applications, University of Illinois, Urbana-Champaign.

APPENDIX H – Apache License, version 2.0 (APACHE 2.0)

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- a. You must give any other recipients of the Work or Derivative Works a copy of this License; and
- b. You must cause any modified files to carry prominent notices stating that You changed the files; and
- c. You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- d. If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR

PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.