Oracle® Database

Database Licensing Information User Manual

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Oracle Database Database Licensing Information User Manual, 20c

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Preface

This Preface contains these topics:

- Audience
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Audience

This book is intended for all purchasers of Oracle Database 20c.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Documents

For more information, see these Oracle resources:

- *Oracle Database New Features Guide* for information on the features new to this release of Oracle Database
- The Software Investment Guide, available at:

  `http://www.oracle.com/us/corporate/pricing/index.html`

- Oracle Database licensing guidelines, available at:
  `https://www.oracle.com/assets/databaselicensing-070584.pdf`

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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1.1 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 sales representative, 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`.

1.2 Oracle Database Offerings

Table 1-1   Oracle Database Offerings

Oracle Database Offering	Offering Type	Abbreviated Name Used in this Guide	Description
Oracle Database Standard Edition 2	On-Premise	**SE2**	Oracle Database Standard Edition 2 includes features necessary to develop workgroup, department-level, and Web applications.

Table 1-1   (Cont.) Oracle Database Offerings

Oracle Database Offering	Offering Type	Abbreviated Name Used in this Guide	Description
Oracle Database Enterprise Edition	On-Premise	**EE**	Oracle Database Enterprise Edition provides performance, availability, scalability, and security for developing applications such as high-volume online transaction processing (OLTP) applications, query-intensive data warehouses, and demanding Internet applications.
			Oracle Database Enterprise Edition can be enhanced with the purchase of Oracle Database options and Oracle management packs.
Oracle Database Enterprise Edition on Engineered Systems	On-Premise	**EE-ES**	Oracle Database Enterprise Edition software installed on an on-premise engineered system (Oracle Exadata Database Machine or Oracle Database Appliance).
			Includes all of the components of Oracle Database. You can further enhance this offering with the purchase of Oracle Database options and Oracle management packs.
			The licensing policies for EE-ES vary depending on whether it is installed on Oracle Exadata Database Machine or Oracle Database Appliance. Be sure to make note of these differences, which are documented in the subsequent sections of this guide.
Oracle Database Personal Edition	On-Premise	**PE**	Oracle Database Personal Edition supports single-user development and deployment environments that require full compatibility with Oracle Database Standard Edition 2 and Oracle Database Enterprise Edition.
			Includes all of the components that are included with Enterprise Edition, as well as all Oracle Database options, with the exception of the Oracle RAC One Node and Oracle Real Application Clusters options, which cannot be used with Personal Edition. Personal Edition is available on Linux and Windows platforms only. Oracle management packs cannot be used with Personal Edition.
Oracle Database Cloud Service Standard Edition	Cloud	**DBCS SE**	Includes Oracle Database Standard Edition 2 software.
Oracle Database Cloud Service Enterprise Edition	Cloud	**DBCS EE**	Includes Oracle Database Enterprise Edition software.
Oracle Database Cloud Service Enterprise Edition - High Performance	Cloud	**DBCS EE-HP**	Includes Oracle Database Enterprise Edition software plus many Oracle Database options and Oracle management packs.
Oracle Database Cloud Service Enterprise Edition - Extreme Performance	Cloud	**DBCS EE-EP**	Includes Oracle Database Enterprise Edition software plus all Oracle Database options and Oracle management packs that are appropriate for use in Oracle Database Cloud Service.

Table 1-1   (Cont.) Oracle Database Offerings

Oracle Database Offering	Offering Type	Abbreviated Name Used in this Guide	Description
Oracle Database Exadata Cloud Service	Cloud	**ExaCS**	Includes Oracle Database Enterprise Edition software plus all Oracle Database options and Oracle management packs that are appropriate for use in Oracle Database Exadata Cloud Service. The licensing policies for ExaCS also apply to Oracle Database Exadata Cloud at Customer.

> ✎ **See Also:**
>
> • Oracle Database Options and Their Permitted Features
> • Oracle Management Packs and Their Permitted Features

1.3 Permitted Features, Options, and Management Packs by Oracle Database Offering

The tables in this section list Oracle Database features, Oracle Database options, and Oracle management packs, and their availability for each Oracle Database offering. The `Y` value in a column means that the feature, option, or pack is available for a particular offering; `N` means that it is unavailable; `N/A` means that it is not applicable. These tables can help you understand the difference between Oracle Database offerings to determine which one is right for you.

The tables are organized into the following functional categories:

• Autonomous - Table 1-2

• Consolidation - Table 1-3

• Development Platform - Table 1-4

• High Availability - Table 1-5

• Integration - Table 1-6

• Manageability - Table 1-7

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• Performance - Table 1-9

• Scalability - Table 1-10

• Security - Table 1-11

• Snapshots and Cloning - Table 1-12

• Spatial and Graph Data - Table 1-13

• VLDB, Data Warehousing, and Business Intelligence - Table 1-14

Table 1-2   Autonomous

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Automatic Zone Maps	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata and requires the Oracle Partitioning option. Not available on Oracle Database Appliance.
Cache Fusion Hardening	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.

Table 1-3   Consolidation

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Multitenant - # of PDBs	3	252	4096	3	3	4096	4096	4096	The number value in each column indicates the maximum number of pluggable databases (PDBs) that can be created for each offering. • For all offerings, if you are not licensed for Oracle Multitenant, then you may have up to 3 user-created PDBs in a given container database at any time. • **EE**: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 252 PDBs. • **EE-ES**: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 4096 PDBs. • **DBCS EE-HP**, **DBCS EE-EP**, and **ExaCS**: Included option; you can create up to 4096 PDBs. **Note:** For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB.
CDB Fleet Management	N	N	Y	N	Y	Y	Y	Y	

Table 1-3 (Cont.) Consolidation

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
PDB Snapshot Carousel	N	N	Y	N	Y	Y	Y	Y	
Refreshable PDB switchover	N	N	Y	Y	Y	Y	Y	Y	

Table 1-4 Development Platform

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
SQLJ	Y	Y	Y	Y	Y	Y	Y	Y	Requires Oracle Programmer
Oracle Developer Tools for Visual Studio .NET	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	Windows only
Microsoft Distributed Transaction Coordinator support	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	Windows only
Native .NET Data Provider—ODP.NET	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	Windows only
.NET Stored Procedures	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	Windows only

Table 1-5 High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Application Continuity	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option or the Oracle Real Application Clusters option

Table 1-5   (Cont.) High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Sharding	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: No limit on the number of either primary shards or standby shards if every shard has an Oracle Active Data Guard, Oracle GoldenGate, or Oracle RAC license. Without an Oracle Active Data Guard, Oracle GoldenGate, or Oracle RAC license, use is limited to three primary shards, with basic Data Guard standbys. **Authorized Cloud Environments**, **DBCS EE**, and **DBCS EE-HP**: Use is limited to three primary shards; there is no limit on the number of standby shards. **DBCS EE-EP** and **ExaCS**: No limit on the number of either primary shards or standby shards.
Oracle Fail Safe	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	Windows only
Oracle RAC One Node	N	Y	Y	N	N	N	N	Y	**EE** and **EE-ES**: Extra cost option
Oracle Data Guard —Redo Apply	N	Y	Y	N	Y	Y	Y	Y	
Oracle Data Guard —Far Sync Standby	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option
Oracle Data Guard —SQL Apply	N	Y	Y	N	Y	Y	Y	Y	
Oracle Data Guard —Snapshot Standby	N	Y	Y	N	Y	Y	Y	Y	
Oracle Data Guard —Real-Time Cascading Standbys	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option
Oracle Data Guard —Automatic Correction of Non-logged Blocks at a Data Guard Standby Database	N	N	Y	N	Y	Y	Y	Y	

Table 1-5   (Cont.) High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Active Data Guard	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Extra cost option **Authorized Cloud Environments**: Active Data Guard DML Redirection is not available
Rolling Upgrades—Patch Set, Database, and Operating System	N	Y	Y	N	Y	Y	Y	Y	
Rolling Upgrade Using Active Data Guard	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option
Online index rebuild	N	Y	Y	N	Y	Y	Y	Y	
Online table organization	N	Y	Y	N	Y	Y	Y	Y	`ALTER TABLE ... MOVE ONLINE` operations
Online table redefinition	N	Y	Y	N	Y	Y	Y	Y	Using the `DBMS_REDEFINITION` package
Duplexed backup sets	N	Y	Y	N	Y	Y	Y	Y	
Block change tracking for fast incremental backup	N	Y	Y	N	N	N	Y	Y	
Unused block compression in backups	N	Y	Y	N	Y	Y	Y	Y	
Block-level media recovery	N	Y	Y	N	Y	Y	Y	Y	
Lost Write Protection	N	Y	Y	N	Y	Y	Y	Y	
Automatic Block Repair	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option
Parallel backup and recovery	N	Y	Y	N	Y	Y	Y	Y	
Tablespace point-in-time recovery	N	Y	Y	N	Y	Y	Y	Y	
Trial recovery	N	Y	Y	N	Y	Y	Y	Y	
Fast-start fault recovery	N	Y	Y	N	Y	Y	Y	Y	
Flashback Table	N	Y	Y	N	Y	Y	Y	Y	
Flashback Database	N	Y	Y	N	Y	Y	Y	Y	
Flashback Transaction	N	Y	Y	N	Y	Y	Y	Y	

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Table 1-5   (Cont.) High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Flashback Transaction Query	N	Y	Y	N	Y	Y	Y	Y	
Optimization for Flashback Data Archive	N	Y	Y	N	N	Y	Y	Y	Basic Flashback Data Archive is in all offerings **EE** and **EE-ES**: Optimization for Flashback Data Archive requires the Oracle Advanced Compression option
Online Datafile Move	N	Y	Y	N	Y	Y	Y	Y	
Transaction Guard	N	Y	Y	N	Y	Y	Y	Y	
Cross-platform Backup and Recovery	N	Y	Y	N	Y	Y	Y	Y	
Global Data Services	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Active Data Guard option
Recovering tables and table partitions from RMAN backups	N	Y	Y	N	Y	Y	Y	Y	

Table 1-6   Integration

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Database Gateways	Y	Y	Y	Y	Y	Y	Y	Y	Database Gateway for ODBC is included in all offerings. All other Database Gateway products are available for all offerings, but require a separate product license.
Messaging Gateway	N	Y	Y	N	Y	Y	Y	Y	
Sharded Queues	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Partitioning option

Table 1-7   Manageability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Cloud Management Pack for Oracle Database	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Data Masking and Subsetting Pack	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Database Lifecycle Management Pack for Oracle Database	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Diagnostics Pack	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Tuning Pack	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: Extra cost option, also requires Oracle Diagnostics Pack
Oracle Real Application Testing	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Database Resource Manager	N	Y	Y	N	Y	Y	Y	Y	
I/O Resource Management	N	N	Y	N	N	N	N	Y	
Instance Caging	Y	Y	Y	Y	Y	Y	Y	Y	

Table 1-7   (Cont.) Manageability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
SQL Plan Management	Y (See Notes)	Y	Y	Y (See Notes)	Y	Y	Y	Y	**SE2 and DBCS SE Summary:** Only one SQL plan baseline per SQL statement is allowed and SQL plan evolution is disabled.

SE2 and DBCS SE Details:

1. SQL plan baselines can be created or captured using the following methods:

   - Auto capture (`OPTIMIZER_CAPTURE_SQL_PLAN_BASELINE=TRUE`)
   - Manual loading from the cursor cache (`DBMS_SPM.LOAD_PLANS_FROM_CURSOR_CACHE`)
   - Migration from stored outlines (`DBMS_SPM.MIGRATE_STORED_OUTLINE`)
   - Import using `DBMS_SPM.UNPACK_STGTAB_BASELINE`

2. All capture and creation methods store only one SQL plan baseline per SQL statement.

3. SQL plan baselines can be exported and imported using `DBMS_SPM.CREATE_STGTAB_BASELINE`, `DBMS_SPM.PACK_STGTAB_BASELINE`, and `DBMS_SPM.UNPACK_STGTAB_BASELINE`.

4. Unused SQL plan baselines are not auto-purged.

5. Alternative SQL execution plans for SQL statements are not

Table 1-7   (Cont.) Manageability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
									added to the SQL plan history.
									6. SQL plan baselines can be altered and dropped (`DBMS_SPM.ALTER_SQL_PLAN_BASELINE` and `DBMS_SPM.DROP_SQL_PLAN_BASELINE`).
									7. The following `DBMS_SPM` functions and procedures are not allowed: `CONFIGURE`, `LOAD_PLANS_FROM_AWR`, `LOAD_PLANS_FROM_SQLSET`, and all functions and procedures associated with SQL plan evolution.
Automatic SQL Plan Management	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.

Table 1-7   (Cont.) Manageability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
SQL Tuning Sets	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: SQL Tuning Sets can also be accessed by way of database server APIs and command-line interfaces. Usage of any subprograms in the `DBMS_SQLSET` package to manage SQL Tuning Sets is part of the EE and EE-ES offerings. In addition, the following subprograms, part of the `DBMS_SQLTUNE` package, provide an older interface to manage SQL Tuning Sets and are also part of the EE and EE-ES offerings: `ADD_SQLSET_REFERENCE`, `CAPTURE_CURSOR_CACHE_SQLSET`, `CREATE_SQLSET`, `CREATE_STGTAB_SQLSET`, `DELETE_SQLSET`, `DROP_SQLSET`, `LOAD_SQLSET`, `PACK_STGTAB_SQLSET`, `REMOVE_SQLSET_REFERENCE`, `SELECT_CURSOR_CACHE`, `SELECT_SQLSET`, `SELECT_WORKLOAD_REPOSITORY`, `UNPACK_STGTAB_SQLSET`, `UPDATE_SQLSET`.
Oracle Fleet Patching and Provisioning (formerly Rapid Home Provisioning)	N	Y	Y	N/A	N/A	N/A	N/A	N/A	**EE** and **EE-ES**: When deployed across multiple clusters, each FPP-managed target must be licensed for one of the following: Oracle Database Lifecycle Management Pack, Oracle RAC, or Oracle RAC One Node
Automatic Index Optimization	N	Y	Y	Y	Y	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option

Table 1-8   Networking

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Infiniband Support	N	Y	Y	N	N	N	N	Y	

Table 1-8   (Cont.) Networking

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Connection Manager	N	Y	Y	N	Y	Y	Y	Y	Available via a custom install of the Oracle Database client, usually installed on a separate machine or compute instance
Network Compression	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option

Table 1-9   Performance

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Automatic Indexing	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
SQL Quarantine	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
Real-Time Statistics	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
High-Frequency Automatic Optimizer Statistics Collection	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
High-Frequency Automatic SPM Evolve Advisor Task	N	N	Y	N	N	N	N	Y	You can enable this feature by setting the `AUTO_SPM_EVOLVE_TASK` parameter of the `DBMS_SPM.CONFIGURE` procedure. **EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
Client Side Query Cache	N	Y	Y	N	Y	Y	Y	Y	
Query Results Cache	N	Y	Y	N	Y	Y	Y	Y	
PL/SQL Function Result Cache	N	Y	Y	N	Y	Y	Y	Y	
Oracle TimesTen Application-Tier Database Cache	N	Y	Y	N	N	N	N	N	**EE** and **EE-ES**: Extra cost option

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Table 1-9   (Cont.) Performance

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Database Smart Flash Cache	N	Y	Y	N/A	N/A	N/A	N/A	N/A	**EE**: Solaris and Oracle Linux only **EE-ES**: Available on Oracle Database Appliance. Not available on Exadata
Support for Oracle Exadata Storage Server Software	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
Adaptive Execution Plans	N	Y	Y	N	Y	Y	Y	Y	
Concurrent Execution of UNION and UNION ALL Branches	N	Y	Y	N	Y	Y	Y	Y	
Oracle Database In-Memory	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Extra cost option
In-Memory Column Store	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
In-Memory Column Cache on Storage Servers	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata and requires the Oracle Database In-Memory option. Not available on Oracle Database Appliance. Requires Exadata, Supercluster, or Exadata Cloud Service.
In-Memory Column Store on Active Data Guard standby	N	N	Y	N	N	N	Y	Y	**EE-ES**: Available on Exadata and requires the Oracle Database In-Memory option and the Oracle Active Data Guard option. Not available on Oracle Database Appliance.
Fault Tolerant In-Memory Column Store	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata and Infiniband-based Oracle Database Appliance. Requires the Oracle Database In-Memory option and the Oracle Real Application Clusters option.
Automatic In-Memory Column Store	N	N	Y	N	N	N	Y	Y	
In-Memory Column Store support for External Tables	N	N	Y	N	N	N	Y	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.

Table 1-9   (Cont.) Performance

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
In-Memory Aggregation	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
Automatic In-Memory Population	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
In-Memory Deep Vectorization	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
In-Memory Full Text Columns	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
Text Index Support for Sharded Tables (Search Index)	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Database In-Memory option
Memoptimized Rowstore	N	N	Y	N	N	N	Y	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.
Attribute Clustering	N	Y	Y	N	Y	Y	Y	Y	
Zone Maps	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata and requires the Oracle Partitioning option. Not available on Oracle Database Appliance.
Buffer Cache RDMA-Read	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata. Not available on Oracle Database Appliance.

Table 1-10   Scalability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Real Application Clusters (Oracle RAC)	N	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Extra cost option
Automatic Workload Management	Y	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Real Application Clusters option
Quality of Service Management	Y	Y	Y	N	N	N	Y	Y	**EE** and **EE-ES**: Requires the Oracle Real Application Clusters option
Oracle NoSQL Database Basic Edition	N	Y	Y	N/A	N/A	N/A	N/A	N/A	

Table 1-11   Security

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Column-Level Encryption	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Security option
Tablespace Encryption	N	Y	Y	Y	Y	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Security option
Oracle Advanced Security	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Database Vault	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Label Security	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Enterprise User Security	N	Y	Y	N	Y	Y	Y	Y	**EE**, **EE-ES**, **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, and **ExaCS**: Enterprise User Security is a feature for directory-based management of database users. It requires a corresponding Oracle Identity Management Directory Services Plus to be licensed.
Centrally Managed Users	N	Y	Y	N	Y	Y	Y	Y	**EE**, **EE-ES**, **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, and **ExaCS**: Centrally Managed Users is a feature for centrally authenticating and authorizing database users with Microsoft Active Directory.
Fine-grained Auditing	N	Y	Y	N	Y	Y	Y	Y	
Privilege Analysis	N	Y	Y	N	Y	Y	Y	Y	
Real Application Security	N	Y	Y	N	Y	Y	Y	Y	
Redaction	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Security option
Transparent Sensitive Data Protection	N	Y	Y	N	Y	Y	Y	Y	
Virtual Private Database	N	Y	Y	N	Y	Y	Y	Y	
Keystore for Each Pluggable Database	N	N	Y	N	Y	Y	Y	Y	

Table 1-12   Snapshots and Cloning

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Storage Snapshot Optimization	N	Y	Y	N/A	N/A	N/A	N/A	N/A	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option

Table 1-13   Spatial and Graph Data

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Spatial and Graph	Y	Y	Y	Y	Y	Y	Y	Y	Oracle Spatial and Graph no longer requires an extra cost license. See Oracle Database Insider blog post for more information.
Property Graph and RDF Graph Technologies (RDF/ OWL)	Y	Y	Y	Y	Y	Y	Y	Y	Property Graph and RDF Graph Technologies (RDF/ OWL) no longer requires an extra cost license. See Oracle Database Insider blog post for more information.
Parallel spatial index builds	N	Y	Y	N	Y	Y	Y	Y	
Multimaster replication of `SDO_GEOMETRY` objects	N	Y	Y	N	Y	Y	Y	Y	**EE** and **EE-ES**: Single master/materialized view replication for `SDO_GEOMETRY` objects is supported
Partitioned spatial indexes	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Partitioning option

Table 1-14   VLDB, Data Warehousing, and Business Intelligence

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Partitioning	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle On-Line Analytical Processing (OLAP)	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option
Oracle Machine Learning (formerly Advanced Analytics)	Y	Y	Y	Y	Y	Y	Y	Y	Oracle Machine Learning no longer requires an extra cost license. See Oracle Database Insider blog post for more information.
Oracle Advanced Compression	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Extra cost option

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Table 1-14   (Cont.) VLDB, Data Warehousing, and Business Intelligence

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Advanced Index Compression	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option
Prefix Compression (also called Key Compression)	N	Y	Y	N	Y	Y	Y	Y	
Hybrid Columnar Compression	N	Y	Y	N	Y	Y	Y	Y	**EE**: Requires ZFS, Axiom, or FS1 storage
Hybrid Columnar Compression Row-Level Locking	N	Y	Y	N	N	N	N	Y	**EE**: Requires ZFS or FS1 storage, and the Oracle Advanced Compression option **EE-ES**: Requires the Oracle Advanced Compression option
Exadata Flash Cache Compression	N	N	Y	N	N	N	N	Y	**EE-ES**: Available on Exadata and requires the Oracle Advanced Compression option. Not available on Oracle Database Appliance.
Heat Map	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option or the Oracle Database In-Memory option
Automatic Data Optimization	N	Y	Y	N	N	Y	Y	Y	**EE** and **EE-ES**: Requires the Oracle Advanced Compression option or the Oracle Database In-Memory option
Basic Table Compression	N	Y	Y	N	Y	Y	Y	Y	
Deferred Segment Creation	N	Y	Y	N	Y	Y	Y	Y	
Bitmapped index, bitmapped join index, and bitmap plan conversions	N	Y	Y	N	Y	Y	Y	Y	
Parallel query/DML	N	Y	Y	N	Y	Y	Y	Y	
Parallel statistics gathering	N	Y	Y	N	Y	Y	Y	Y	
Parallel index build/ scans	N	Y	Y	N	Y	Y	Y	Y	
Parallel Data Pump Export/Import	N	Y	Y	N	Y	Y	Y	Y	

Table 1-14   (Cont.) VLDB, Data Warehousing, and Business Intelligence

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
In-memory Parallel Execution	N	Y	Y	N	Y	Y	Y	Y	
Parallel Statement Queuing	N	Y	Y	N	Y	Y	Y	Y	
Parallel capture and apply via XStream	N	Y	Y	N	Y	Y	Y	Y	
Transportable tablespaces, including cross-platform and full transportable export and import	N	Y	Y	N	Y	Y	Y	Y	Import of transportable tablespaces supported into **SE2**
Summary management—Materialized View Query Rewrite	N	Y	Y	N	Y	Y	Y	Y	

1.4 Oracle Database Options and Their Permitted Features

Table 1-15 lists Oracle Database options, the Oracle Database offerings for which each option is available, and the features that are included with each option. You must be licensed for an option in order to use any of its features.

Table 1-15   Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
Oracle Active Data Guard	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-EP**, **ExaCS**	Oracle Active Data Guard includes the following features: • Physical Standby with Real-time Query • Fast Incremental Backup on Physical Standby • Automatic Block Repair • Active Data Guard Far Sync • Global Data Services • Real-Time Cascade • Application Continuity • Rolling Upgrade using Active Data Guard • Active Data Guard DML Redirection (not available in Authorized Cloud Environments) In an Oracle Data Guard configuration: • Oracle Active Data Guard must be licensed on any standby databases with any of the above features in use, as well as the primary database. If there are additional standby databases in the Oracle Data Guard configuration that are not using any of the Oracle Active Data Guard features, those standby databases do not require an Oracle Active Data Guard license. **Note:** For customers who back up standby databases to Zero Data Loss Recovery Appliance (ZDLRA) and wish to use the Fast Incremental Backup on Physical Standby feature, an Oracle Active Data Guard license is not required. Oracle Active Data Guard must still be licensed on standby databases, if any other of the above features are in use. • The container root (`CDB$Root`) of the standby database may be opened read-only without requiring an Oracle Active Data Guard license. An Oracle Active Data Guard license is only required if any of the pluggable databases in the standby is opened for read.

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
Oracle Advanced Compression	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Advanced Compression includes the following features: • Advanced Row Compression • Advanced LOB Compression • Advanced LOB Deduplication • RMAN Backup Compression (`RMAN DEFAULT COMPRESS` does not require the Oracle Advanced Compression option) • Data Pump Export Data Compression (`COMPRESSION=METADATA_ONLY` does not require the Oracle Advanced Compression option) • Heat Map • Automatic Data Optimization • Data Guard Redo Transport Compression • Advanced Network Compression • Optimization for Flashback Data Archive History Tables • Storage Snapshot Optimization • Online Move Partition (to any compressed format) • Exadata Flash Cache Compression (This feature can be enabled only on Exadata storage servers, and all database processors that access the Exadata storage servers must be licensed for Oracle Advanced Compression.) • Advanced Index Compression • Hybrid Columnar Compression Row-Level Locking (Requires Exadata, Oracle Database Appliance, Supercluster, ZFS, or FS1 storage)
Oracle Advanced Security	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Advanced Security includes the following features: • Transparent Data Encryption (TDE) for tablespaces and columns (including Oracle SecureFiles) • DataPump Export File encryption • RMAN backup encryption to disk • TDE master key storage in an Oracle Wallet or external Hardware Security Module • Data Redaction of sensitive data returned to applications (Full, Partial, Regular Expression, and Random techniques) Oracle Advanced Security includes a restricted use license for certain Oracle Enterprise Manager features. Refer to Oracle Advanced Security in "Restricted Use Licenses" for more information. **Note:** Network encryption (native network encryption and SSL/TLS) and strong authentication services (Kerberos, PKI, and RADIUS) are no longer part of Oracle Advanced Security and are available in all licensed editions of all supported releases of Oracle Database.

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
Oracle Database In-Memory	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-EP**, **ExaCS**	Oracle Database In-Memory includes the following features: • In-Memory Column Store • In-Memory Column Cache on Storage Servers (Requires Exadata, Supercluster, or Exadata Cloud Service) • Fault Tolerant In-Memory Column Store (Requires Exadata, Supercluster, Oracle Database Appliance, or Exadata Cloud Service) • In-Memory Aggregation • Heat Map • Automatic Data Optimization
Oracle Database Vault	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Database Vault includes the following features: • Separation of Duties • Realms • Command Rules • Trusted Paths Oracle Database Vault includes special license rights for Oracle Label Security. Refer to Oracle Database Vault in "Special License Rights" for more information. Oracle Database Vault includes a restricted use license for certain Oracle Enterprise Manager features. Refer to Oracle Database Vault in "Restricted Use Licenses" for more information.
Oracle Label Security	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Label Security includes the following features: • Label based access control (LBAC) • Multi-level security (MLS) • Label factors for Oracle Database Vault (Confidential, Sensitive) • User label authorizations (Confidential, Sensitive: PII) • Data labels (Sensitive: PII) Oracle Label Security includes a restricted use license for certain Oracle Enterprise Manager features. Refer to Oracle Label Security in "Restricted Use Licenses" for more information.

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features

Oracle Machine Learning (formerly Advanced Analytics)	Included option: **SE2**, **EE**, **EE-ES**, **DBCS SE**, **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Machine Learning includes the following features:
		
		• In-database algorithms for Oracle Machine Learning for SQL (OML4SQL) (formerly Oracle Data Mining):
		  – Model build (accessed via the `DBMS_DATA_MINING` package)
		  – Data transformations (accessed via the `DBMS_DATA_MINING_TRANSFORM` package)
		  – Model scoring (accessed via SQL Scoring functions)
		  – Predictive Analytics (accessed via the `DBMS_PREDICTIVE_ANALYTICS` package)
		• Oracle Machine Learning for R (OML4R) (formerly Oracle R Enterprise) (integration with open-source R):
		  – OML4R Transparency Layer: Allows an R user to explore and prepare database-resident data using R language syntax and functions
		  – OML4R interface to in-database machine learning algorithms
		  – Embedded R Execution: Enables execution of user-defined R functions in database spawned and controlled R engines, also enabling data- and task- parallel execution
		  – All OML4R functionality is invoked using the ORE package

Oracle Multitenant	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Multitenant includes the following features: • For **EE** and **PE**, the ability to have up to 252 pluggable databases per multitenant container database • For **EE-ES**, **DBCS EE-HP**, **DBCS EE-EP**, and **ExaCS**, the ability to have up to 4096 pluggable databases per multitenant container database **Note:** For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB.
Oracle On-Line Analytical Processing (OLAP)	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle On-Line Analytical Processing (OLAP) includes the following features: • OLAP Cube Definition, Storage, and Querying • OLAP API and Metadata • OLAP Cube Materialized Views • Analytic Workspaces • SQL Access to OLAP Cubes
Oracle Partitioning	Extra cost option: **EE**, **EE-ES** Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Partitioning includes the following features: • Table Partitions and Subpartitions • Global and Local Index Partitions and Subpartitions • Sharded Queues • Zone Maps and Automatic Zone Maps (Available only on EE-ES and ExaCS – require Exadata or Supercluster)

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
Oracle RAC One Node	Extra cost option: **EE**, **EE-ES** Included option: **ExaCS**	Oracle RAC One Node includes the following features: • Database Cold Failover to another node in the cluster in case of server or instance failure • Online migration of the database instance to another server • Support for online rolling upgrades of the database, grid infrastructure, and OS homes • Online upgrade to Oracle Real Application Clusters • Policy-managed Server Pools • Quality of Service Management • Application Continuity • Zero-Downtime Oracle Grid Infrastructure Patching
Oracle Real Application Clusters (Oracle RAC)	Extra cost option: **EE**, **EE-ES** Included option: **DBCS EE-EP**, **ExaCS**	Oracle Real Application Clusters (Oracle RAC) includes the following features: • All of the features included with Oracle RAC One Node • Real Application Clusters scaling to multiple servers • Connection Load Balancing • Fast Connection Failover • Hot Cluster Failover

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features

Oracle Real Application Testing	Extra cost option: **EE**, **EE-ES**
	
	Included option: **PE**, **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**
		Oracle Real Application Testing includes the following features:
		
		• Database Replay
		• SQL Performance Analyzer (SPA)
		• Database Consolidation Workbench
		
		Database Replay
		
		• The Oracle Real Application Testing license is required on both capture and replay systems for Database Replay and is charged by the total number of CPUs on those systems.
		• Use of Capture and Replay ASH Analytics Reports, Compare Period ADDM Reports, and Replay Compare Period Reports also requires an Oracle Diagnostics Pack license.
		• An Oracle Real Application Testing license permits you to access Database Replay functionality through Oracle Enterprise Manager, as well as through the following database server command-line APIs: DBMS_WORKLOAD_CAPTURE package and DBMS_WORKLOAD_REPLAY package. The use of the DBMS_WORKLOAD_REPLAY.COMPARE_PERIOD_REPORT() function also requires a license for Oracle Diagnostics Pack.
		
		SQL Performance Analyzer (SPA)
		
		An Oracle Real Application Testing license permits you to access SQL Performance Analyzer functionality through Oracle Enterprise Manager, as well as through the following database server command-line API: DBMS_SQLPA package, which is part of the Oracle Real Application Testing option.
		
		Database Consolidation Workbench
		
		• Database Consolidation Workbench, introduced in Oracle Enterprise Manager Cloud Control 13*c*, provides a data-driven and systematic approach to consolidation by eliminating guess work and human errors. Database Consolidation Workbench has three key capabilities: consolidation planning, database migration, and performance validation.
		• Use of the consolidation planning feature of Database Consolidation Workbench requires an Oracle Diagnostics Pack license.
		• Use of the database migration feature of Database Consolidation Workbench requires an Oracle Database Lifecycle Management Pack for Oracle Database license.
		• An Oracle Real Application Testing license permits you to access the following links on the **Database Consolidation Workbench page** in Oracle Enterprise Manager:
		  – From the **Enterprise** menu, select **Consolidation**, then select **Database Consolidation Workbench**.
		  – On the database target home page, select the **Administration** menu, then select **Database Consolidation Workbench**.
		  – All features, functions, links, buttons, and drill-downs on this page are licensed as part of the Database Consolidation Workbench.

Table 1-15   (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features

Oracle Spatial and Graph	Included option: **PE**, **SE2**, **EE**, **EE-ES**, **DBCS SE**, **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	Oracle Spatial and Graph includes the following features:
		• Geospatial Data Features
		• Graph Database Features
		Geospatial Data Features
		• `SPATIAL_VECTOR_ACCELERATION` to significantly improve 2D and 3D spatial vector query performance
		• Classes in packages other than the `oracle.spatial.geometry` (`sdoapi.jar`) and `oracle.spatial.util` (`sdoutil.jar`) packages of the Spatial Java API
		• Linear Referencing System (LRS) support
		• GeoRaster Storage, Indexing, and Querying
		• Network Data Model
		• Topology Data Model
		• Spatial analysis and mining subprograms (`SDO_SAM` package)
		• Spatial Routing Engine
		• Geocoding Engine
		• Spatial Web Services including OpenLS support, including support for geocoding, mapping, business directory (Yellow Pages), and driving directions (routing) services, Web feature service (WFS) support (`SDO_WFS_PROCESS` and `SDO_WFS_LOCK` packages), and Catalog services for the Web (CSW) support (`SDO_CSW_PROCESS` package)
		• 3-D Geometry, Surface, Triangulated irregular network (TIN), and Point Cloud Storage, Indexing, and Querying
		• GeoJSON
		Graph Database Features
		Graph database features include the following models:
		• A property graph to model and analyze relationships found in social networks, cyber security, utilities and telecommunications, life sciences and clinical data, and knowledge networks. Typical graph analyses encompass graph traversal, recommendations, finding communities and influencers, and pattern matching. Its features include:
		  – A scalable graph database
		  – PGQL, a SQL-like declarative query language for the Property Graph data model
		  – Data import from relational, CSV, GraphML, GraphSON, GML sources
		  – Parallel bulk load and export of property graph data in Oracle-defined flat files format
		  – A parallel, in-memory graph analytics engine with over 40 built-in analytics that include ranking, centrality, recommender, community detection, path finding
		  – Developer-based APIs based upon Tinkerpop Blueprints, and Java graph APIs
		  – Text search and query through integration with Oracle Text, Apache Lucene, and optionally, SolrCloud
		  – SQL-based Property Graph query and analytics for several popular property graph operations in addition to the analytical functions offered by the in-memory analyst

Table 1-15 (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
		– Scripting languages support for Groovy and Python – Manageability through a Groovy-based console to execute Java and Tinkerpop Gremlin APIs • A Network Data Model (NDM) graph to model and analyze link-node graphs to represent physical and logical networks used in transportation, utilities, and telco. Its features include: 　– A storage model to represent graphs and networks in link and node tables 　– Java APIs to perform analysis in memory 　– Numerous graph analysis functions including shortest path, within cost, nearest neighbors, traveling salesman, spanning tree, and more 　– Explicit storage and connectivity of the graph with link- and node-level attributes 　– Support for directed and undirected graphs with or without cost • An RDF Semantic Graph to model and analyze data represented as triples for social network, linked data, and other semantic applications. Its features include: 　– Graph relationships represented as triples in compressed, partitioned tables 　– Indexing, querying, and ontology management 　– RDFS, OWL, and user-defined inferencing (parallel, batch, and incremental) 　– Support for SPARQL 1.1 and mixed SPARQL and SQL queries 　– Enhanced Open Source Tools including Jena, Sesame, Joseki Web Services Oracle Spatial and Graph includes a restricted use license for Oracle Partitioning. Refer to Oracle Spatial and Graph in "Restricted Use Licenses" for more information.
Oracle TimesTen Application-Tier Database Cache	Extra cost option: **EE**, **EE-ES** Included option: **PE**	Oracle TimesTen Application-Tier Database Cache includes the following features: • Data access using PL/SQL, JDBC, ODBC, ttClasses, OCI, and Pro*C/C++ interfaces • Transaction Log API (XLA) for change notification • Multi-node Cache Grid • Automatic data synchronization with the Oracle database • Transactional replication between the in-memory cache databases • Automated failure detection and database failovers • TimesTen Extension for Oracle SQL Developer • TimesTen Plug-in for Oracle Enterprise Manager

1.5 Oracle Management Packs and Their Permitted Features

Table 1-16 lists Oracle management packs, the Oracle Database offerings for which each pack is available, and the features that are included with each pack. The features

in these packs are accessible through Oracle Enterprise Manager, Desktop Widgets, and APIs provided with Oracle Database software. You must be licensed for a management pack in order to use any of its features.

Table 1-16   Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Cloud Management Pack for Oracle Database	Extra cost pack: **EE**, **EE-ES** Included pack: **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	**Features:** Oracle Cloud Management Pack for Oracle Database includes the following features: • Database-as-a-Service comprising self-service database provisioning on physical or virtual infrastructure • DBaaS Rapid Start Kit allowing users to set up and configure Enterprise Manager Cloud Control 12c in under a minute. • Pluggable Database-as-a-Service (PDBaaS) providing self-service provisioning on a pool of multitenant container databases (CDBs). • Support shared server, shared cluster, and shared database (Schema-as-a-Service) deployment models • Virtual assembly provisioning. For example, if there is an assembly topology of three VMs (two WebLogic Server-managed servers and one database), you will need both packs to cover the respective tiers. • Snap Clone, a fast, storage efficient way of cloning Oracle databases • Full clones using RMAN backups • Role based access and resource control through quotas and retirement policies • Schedule- and performance-based resource management policies • Metering and chargeback based on fixed cost, utilization metrics and configuration parameters of the database • Programmatic access to the Self-Service Portal • Blueprint driven orchestration of cloud operations **Prerequisites:** Oracle Cloud Management Pack for Oracle Database requires Oracle Database Lifecycle Management Pack for Oracle Database. **Licensed Links:** Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Cloud Management Pack for Oracle Database. Starting on the Enterprise Summary home page, click the **Enterprise** menu. Select: • **Cloud**, then **Infrastructure Home** • **Cloud**, then **Infrastructure Request Dashboard** • **Cloud**, then **Infrastructure Policies** • **Cloud**, then **Middleware and Database Home** • **Cloud**, then **Middleware and Database Request Dashboard** • **Cloud**, then **Self Service Portal** • **Cloud**, then **Service Instances** • **Chargeback** • **Provisioning and Patching**, then **Database Provisioning**. In the Database Provisioning page, in the Related Links section of the left menu pane, click **Provision Pluggable Databases**. Next, from the PDB Operations section, select **Create New Pluggable Databases**. Click **Launch**, and from Pluggable Database Creation Options, select **Clone an Existing PDB -> Snap Clone**.

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		Starting on the Enterprise Summary home page, click the **Setup** menu. Select:

- **Cloud**. Select **Infrastructure**
- **Cloud**. Select **Database**
- **Provisioning and Patching**, then **Storage Registration**

On the Multitenant container database's home page, from the Oracle Database menu, select **Provisioning**, then **Provision Pluggable Database**. Next, from the PDB Operations section, select **Create New Pluggable Databases**. Click **Launch**, and from Pluggable Database Creation Options, select **Clone an Existing PDB -> Snap Clone**.

Licensed APIs:

Use of the following APIs requires a license for Oracle Cloud Management Pack for Oracle Database:

- Assembly Operations — Any `POST`/`GET`/`PUT`/`DELETE` on `/em/cloud/iaas` URI space for Resources Assembly Template and Assembly Instance
- DBaaS Operations — Any `POST`/`GET`/`PUT`/`DELETE` on `/em/cloud/dbaas` URI space
- DBaaS Setup Operations — Any `POST`/`GET`/`PUT`/`DELETE` on `/em/websvcs/restful/extws/cloudservices/admin/cfw/v1` URI space.

Licensed Command Line Interface (CLI) Verbs:

The following Enterprise Manager Command Line Interface (CLI) verbs are licensed as part of Oracle Cloud Management Pack for Oracle Database. These verbs operate on a database pool.

- `add_pool_members`
- `create_charge_item`
- `create_dbaas_quota`
- `create_dbprofile`
- `create_pool`
- `create_service_template`
- `delete_charge_item`
- `delete_dbaas_quota`
- `delete_pool`
- `delete_service_template`
- `get_dbaas_quota`
- `get_dbaas_request_settings`
- `get_metering_data`
- `get_pool_capacity_data`
- `get_pool_capacity_summary_data`
- `get_pool_constraints`
- `get_pool_criteria`
- `get_pool_detail`
- `get_pool_instance_data`
- `get_pool_target_type`
- `get_pools`
- `get_service_template`

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• `list_charge_item_candidates` • `remove_pool_members` • `update_dbaas_quota` • `update_dbaas_request_settings` • `update_pool` **Licensed Views and Tables:** The following objects within the repository schema are licensed under Oracle Cloud Management Pack for Oracle Database: • Tables starting with `EMCT_CBA` • Views starting with `EMCT$CBA` • The `GP_EMCT_CBA_TARGET_CHARGE` views • The `MGMT$EMCT_CBA_CHARGE_DAILY` view • The `MGMT$EMCT_CBA_CHARGE_HOURLY` view **Licensed Chargeback Reports:** The following BI Publisher reports are licensed under Oracle Cloud Management Pack for Oracle Database: • Charge Trend Report • Charge Summary Report • Usage Trend Report • Usage Summary Report Also, any report created using the "create-like" feature of BI publisher referring the preceding reports, falls under this license.

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Data Masking and Subsetting Pack	Extra cost pack: **EE, EE-ES** Included pack: **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	**Features:** Oracle Data Masking and Subsetting Pack includes the following features: • Application Data Modeling • Data Masking Formats Library • Data Masking Definitions • Data Subsetting Definitions • Application Data Modeling, Data Masking and Subsetting Enterprise Manager Command Line Interface (CLI) verbs • Application Data Modeling accelerator for select versions of Oracle E-Business Suite • Application Data Modeling accelerator for select versions of Oracle Fusion Applications • Data Masking templates for select versions of Oracle Fusion Applications • Data Masking templates for select versions of Oracle E-Business Suite Oracle Data Masking and Subsetting Pack includes the following restricted use licenses: • Database Gateway for APPC • Database Gateway for DRDA • Database Gateway for Informix • Database Gateway for SQLServer • Database Gateway for Sybase • Database Gateway for Teradata If you want to use the Oracle Database Gateways listed above not solely for the purposes of Oracle Data Masking and Subsetting Pack, then you must purchase full-use licenses for the Oracle Database Gateways. When using Oracle Data Masking and Subsetting Pack for non-Oracle databases, the Oracle Database Gateways stage the data in a separately licensed Oracle Database. Oracle Data Masking and Subsetting functionality cannot be executed directly against the non-Oracle database. Oracle Data Masking and Subsetting Pack must be licensed only for the source database server, i.e., the databases from which the data originates. There is no requirement to license the pack for the staging database server on which masking and subsetting operations are executed, or for copies made of the masked database. **Notes:** 1. Oracle Data Masking and Subsetting Pack incorporates the previous Oracle Data Masking Pack, Oracle Test Data Management Pack, and Oracle Data Masking and Subsetting Pack for non-Oracle Databases. 2. Application Data Modeling was previously called Data Discovery and Modeling. **Licensed Links:** All features, functions, links, buttons, and drill-downs on these Oracle Enterprise Manager menus are licensed as part of the Oracle Data Masking and Subsetting Pack.

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		Starting on the Enterprise Summary home page, click the **Enterprise** menu, then **Quality Management**, then select: • **Application Data Modeling** • **Data Masking Definitions** • **Data Masking Formats** • **Data Subset Definitions** From the Oracle database or cluster database target home page, click the **Security** menu, then select: • **Application Data Modeling** • **Data Masking Definitions** • **Data Subsetting**

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Database Lifecycle Management Pack for Oracle Database	Extra cost pack: **EE**, **EE-ES** Included pack: **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	**Features:** Oracle Database Lifecycle Management Pack for Oracle Database includes the following features: • Change Activity Plans • Client system analyzer • Compliance • Configuration Collection Extensibility • Configuration Compare • Configuration History • Configuration Instance Browser • Configuration Save • Configuration Search • Configuration Topology • Copy Objects • Database Patching • Database Provisioning • Database Upgrade • Disaster Recovery via Site Guard • Enterprise Data Governance • File Synchronization • Notifications • Pluggable Database (PDB) Clone • PDB Create/Plug/Unplug (Multiple target operations or performed using a customized deployment procedure.) • PDB Migrate • RAC Scale Back • RAC Scale Out • Real-time configuration change detection • Real-time schema change detection • Schema and Data Comparisons • Schema and Data Synchronization • Schema Change Plans • Schema Comparisons • User Defined Deployment Procedures (UDDP) With the purchase of Oracle Database Lifecycle Management Pack for Oracle Database, you also are entitled to the features described in the following sections. These features are restricted to the Oracle Database targets in the Oracle Database Home and the Platform (hardware and operating system) for the CPUs you have licensed. • Application Configuration Console • The `oplan` Utility (The basic OPlan feature is free for everyone that has an Oracle Support contract. Use of OPlan metadata to drive orchestration logic from either Enterprise Manager or custom/third-party scripts is part of Oracle Database Lifecycle Management Pack for Oracle Database.) • Migrate to ASM • Self Update **Licensed Parameters:** The `init.ora` parameter `ENABLE_DDL_LOGGING` is licensed as part of Oracle Database Lifecycle Management Pack for Oracle

Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		Database when set to `TRUE`. When set to `TRUE`, the database reports schema changes in real time into the database alert log under the message group schema_ddl. The default setting is `FALSE`.

Licensed Links:

The Licensed Links, features, and functions listed in the following sections apply only to the Oracle Database target and the associated host an Oracle Database is deployed on. For management on non-Oracle Database targets, you must purchase the appropriate management pack.

Licensed Links – Database Provisioning Procedures:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Procedure Library**. All Procedures that Clone and Provision a Database are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.
- From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Database Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- From the Oracle database or cluster database target home page, click the Oracle Database menu, then **Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Database Upgrade:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Procedure Library**. All Procedures that Upgrade a Database are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.
- From the Oracle database or cluster database target home page, click the Oracle Database menu, then **Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – User Defined Deployment Procedures (UDDP)

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Procedure Library**. On the Provisioning Library page, from the list of actions, the Create New option is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		Licensed Links – RAC Scale Out and Scale Back
		Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:
		• From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Procedure Library**. All Procedures that Extend or Scale a database or RAC are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.
		• From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Database Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
		• From the Oracle cluster database target home page, click the Oracle Database menu, then **Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
		Licensed Links – Database Patching
		Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:
		• From the Enterprise Manager home page, click the **Enterprise** menu, **Provisioning and Patching**, then **Procedure Library**. All Procedures that patch a database, Clusterware or Real Application Clusters are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.
		Licensed Links – Offline Patching
		Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:
		• From the Enterprise Manager home page, click the **Setup** menu, **Provisioning and Patching**, then **Offline Patching**. From the Online and Offline Setting tab, the **Connection**, **Offline** setting is licensed with Oracle Database Lifecycle Management Pack for Oracle Database.
		Licensed Links – Configuration Instance Browser
		Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:
		• From the Enterprise Manager home page, click on **Targets**, **Databases**, and select a Database. From the database home page, click on **Oracle Database**, **Configuration**. All features, functions, links, buttons, and drill-downs on this menu, excluding Topology, are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
		• If the Target Home Page is accessed directly or by other paths:
		– From the database home page, click on **Oracle Database**, **Configuration**. All features, functions, links, buttons, and drill-downs on this menu, excluding Topology, are licensed

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Configuration Search

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, then **Configuration and Search**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Configuration History

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, then **Configuration and History**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Configuration Compare

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, then **Configuration and Compare**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Configuration Save

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu, then **Configuration and Save**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Configuration Topology

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Target Home Page, click on **Oracle Database**, **Configuration**, **Topology**. In the View Dropdown, Used By is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- From the Target Home Page, click on **Oracle Database**, **Configuration**, **Topology**, **Customization**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- If the Target Home Page is accessed directly or by other paths:

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Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		– From the Target Home Page, click on **Oracle Database**, **Configuration**, **Topology**. In the View drop-down, Used By is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. – From the Target Home Page, click on **Oracle Database**, **Configuration**, **Topology**, **Customization**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. **Licensed Links – Configuration Collection Extensibility** Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database: • From the Enterprise Manager home page, click the **Enterprise** menu, then **Configuration and Custom**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. **Licensed Links – File Synchronization** Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database: • When viewing comparison results differences as described in the Configuration Compare feature, select the configuration specification in the tree on the left. Select **Enable File Synchronization**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. **Licensed Links – Schema Comparison:** Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database: • From the Enterprise Manager home page, click on **Targets**, **Databases**, and then select a Database. From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. • If the Target Home Page is accessed directly or by other paths: – From the database home page, click on **Schema**, **Change Management**. All features, unctions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database. **Licensed Links – Schema and Data Comparisons:** Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database: • From the Enterprise Manager home page, click on **Targets**, **Databases**, and then select a Database. From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu

Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

- If the Target Home Page is accessed directly or by other paths:
  - From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Schema and Data Synchronization:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click on **Targets**, **Databases**, and then select a Database. From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- If the Target Home Page is accessed directly or by other paths:
  - From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Copy Objects:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click on **Targets**, **Databases**, and then select a Database. From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- If the Target Home Page is accessed directly or by other paths:
  - From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Real-Time Schema Change Detection:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click on **Targets**, **Databases**, and then select a Database. From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- If the Target Home Page is accessed directly or by other paths:
  - From the database home page, click on **Schema**, **Change Management**. All features, functions, links, buttons, and

Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Links – Real-time Configuration Change Detection and Compliance:

Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click the **Enterprise** menu and **Compliance**. All features, functions, links, buttons, and drill-downs associated with the Library, Results and Real-Time Observations pages are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

Licensed Reports:

The following reports are part of Oracle Database Lifecycle Management Pack for Oracle Database. All reports in each of these sections are licensed as part of this pack. To access the reports go to the Enterprise Manager home page, click the Reports, Information Publisher Reports or BI Publisher Enterprise Reports.

The following reporting areas, reports, and sub-reports under Information Publisher Reports are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database:

- Compliance
- Deployment and Configuration
- Sample Host reports, Configuration Reports
- Security

The following reporting areas, reports and sub-reports under BI Publisher Enterprise Reports are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database:

- Compliance
- Deployment and Configuration
- Sample Host reports, Configuration Reports
- Security

Licensed Command Line Interface (CLI) Verbs:

The following Enterprise Manager Command Line Interface (CLI) verbs are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

- `associate_cs_targets`
- `clone_database`
- `config_compare`
- `config_db_service_target`
- `configure_log_archive_locations`
- `confirm_instance`
- `create_database`
- `describe_instance`
- `describe_procedure_input`
- `disable_config_history`
- `enable_config_history`
- `export_compliance_group`
- `export_compliance_standard_rule`

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• `export_facet` • `export_standard` • `fix_compliance_state` • `get_config_searches` • `get_config_templates` • `get_executions` • `get_instance_data` • `get_instance_status` • `get_instances` • `get_oms_config_property` • `get_procedure_types` • `get_procedure_xml` • `get_procedures` • `get_retry_argument` • `get_saved_configs` • `ignore_instance` • `import_compliance_object` • `list_oms_config_properties` • `remove_cs_target_association` • `reschedule_instance` • `resume_instance` • `run_config_search` • `save_procedure` • `set_config_history_retention_period` • `stop_instance` • `submit_procedure` • `suspend_instance` • `update_and_retry_step` • `update_procedure_input` • `upgrade_database` **Licensed Repository Views – Compliance Views:** The following compliance views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database: • `MGMT$CCC_ALL_OBS_BUNDLES` • `MGMT$CCC_ALL_OBSERVATIONS` • `MGMT$CCC_DIAG_ANALYTICS` • `MGMT$CCC_DIAG_QUEUEBACKLOG` • `MGMT$COMPLIANCE_STANDARD` • `MGMT$COMPLIANCE_STANDARD_GROUP` • `MGMT$COMPLIANCE_STANDARD_RULE` • `MGMT$COMPOSITE_CS_EVAL_SUMMARY` • `MGMT$CS_ASM_DISKGRP_SETTINGS` • `MGMT$CS_DB_CONTROL_FILE_COUNT` • `MGMT$CS_DB_INIT_PARAMS` • `MGMT$CS_DB_RBS_IN_SYSTEM` • `MGMT$CS_DB_REC_SEG_SETTINGS`

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• MGMT$CS_DB_REC_TS_SETTINGS
		• MGMT$CS_DB_REC_USER_SETTINGS
		• MGMT$CS_DB_REDO_LOG_COUNT
		• MGMT$CS_DB_REDO_LOGS
		• MGMT$CS_DB_TABLESPACES
		• MGMT$CS_DB_TBSP_SEGSPACE_MGMT
		• MGMT$CS_EVAL_SUMMARY
		• MGMT$CS_FEATURE_USAGE
		• MGMT$CS_GROUP_EVAL_SUMMARY
		• MGMT$CS_GROUP_KEYWORD
		• MGMT$CS_HA_INFO
		• MGMT$CS_HIERARCHY
		• MGMT$CS_KEYWORD
		• MGMT$CS_RQS_HIERARCHY
		• MGMT$CS_RULE_ATTRS
		• MGMT$CS_RULE_EVAL_SUMMARY
		• MGMT$CS_RULEFOLDER
		• MGMT$CS_TARGET_ASSOC
		• MGMT$CS_TGT_ASSOC_TXF_REQ
		• MGMT$CSG_HIERARCHY
		• MGMT$CSG_SUBGROUP
		• MGMT$CSR_CURRENT_VIOLATION
		• MGMT$CSR_TARGET_ASSOC
		• MGMT$CSR_VIOLATION_CONTEXT
		• MGMT$CSRF_TARGET_ASSOC
		• MGMT$EM_CS_RULE_EVENT_ERROR
		• MGMT$EM_RULE_VIOL_CTXT_DEF
		• MGMT$ICS_TARGET_ASSOC
		• MGMT$REPO_RULE_CHK_DETAILS
		• MGMT$REPOSITORY_RULE_BIND_VARS
		• MGMT$REPOSITORY_RULE_PARAMS
		• MGMT$RULE_KEYWORD
		Licensed Repository Views – Provisioning and Patching Views:
		The following provisioning and patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
		• EM$PROV_APPTYPES
		• EM$PROVAPP_METADATA
		• EM$PROVAPP_METADATA_VERSION
		• EM$PROVAPP_TAG_PROPERTIES
		• EM$PROVAPP_TAGS
		• MGMT$PA_RECOM_METRIC_SOURCE
		Licensed Repository Views – Patching Views:
		The following patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
		• GC$EM_PC_PLAN_PATCHES

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• GC$EM_PC_PLANS
		• GC$EM_PC_PLAN_TARGETS
		• GC_PC_EXECUTION_INSTANCES
		• GC_PC_PLAN_ANALYSIS_RS
		• GC_PC_PLAN_REMEDY
		• GC_PC_PLAN_REMEDY_DETAILS
		• GC_PC_PLAN_USERS
		• GC_PC_TARGETS
		• MGMT$APPLIED_PATCHES
		• MGMT$APPLIED_PATCHSETS
		• MGMT$ARU_FAMILY_PRODUCT_MAP
		• MGMT$ARU_LANGUAGES
		• MGMT$ARU_PATCH_RECOMMENDATIONS
		• MGMT$ARU_PLATFORMS
		• MGMT$ARU_PRODUCT_RELEASE_MAP
		• MGMT$ARU_PRODUCTS
		• MGMT$ARU_RELEASES
		• MGMT$ARU_TARGETS
		• MGMT$PA_AFFTED_HOST_GUID_OH
		• MGMT$PA_AFFTED_HOST_OH
		• MGMT$PA_AFFTED_TARGETS
		• MGMT$PA_FINAL_PATCH_LIST
		• MGMT$PA_TARGET_MAPPING
		• MGMT$PR_APPL_PATCHES_TO_OH
		• MGMT$PR_APPL_PATCHES_TO_OH_TGT
		• MGMT$PR_HOME_INFO
		• MGMT$PR_HOMES_AFFECTED_COUNT
		• MGMT$RECOM_METRIC_SOURCE
		Licensed Repository Views – Configuration Views:
		The following configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
		• GC$ECM_COMP_PROPERTIES
		• GC$ECM_CONFIG_SUMMARY
		• GC$ECM_CURR_CONFIG
		• GC$ECM_CURR_CONFIG_FLAT_MEMS
		• GC$ECM_CURR_CONFIG_SNAPSHOTS
		• GC$ECM_CURR_TARGET_SNAPSHOTS
		• GC$ECM_DATA_RETENTION_TIME
		• GC$ECM_GEN_SNAPSHOT
		• GC$ECM_SAVED_CONFIG
		• GC$ECM_SAVED_CONFIG_FLAT_MEMS
		• GC$ECM_SAVED_CONFIG_SNAPSHOTS
		• GC$ECM_SAVED_CONFIG_TARGETS
		• GC$ECM_SAVED_TARGET_SNAPSHOTS
		• MGMT$CCS_DATA
		• MGMT$CCS_DATA_SOURCE

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Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• MGMT$CCS_DATA_SOURCE_VISIBLE • MGMT$CCS_DATA_VISIBLE • MGMT$DB_CONTROLFILES • MGMT$DB_DATAFILES • MGMT$DB_DBNINSTANCEINFO • MGMT$DB_FEATUREUSAGE • MGMT$DB_INIT_PARAMS • MGMT$DB_LICENSE • MGMT$DB_OPTIONS • MGMT$DB_REDOLOGS • MGMT$DB_ROLLBACK_SEGS • MGMT$DB_SGA • MGMT$DB_TABLESPACES • MGMT$DB_TABLESPACES_ALL • MGMT$ECM_CMP_JOB_LAST_RESULTS • MGMT$ECM_CMP_JOBS • MGMT$ECM_CMP_RPT_CCS_DS • MGMT$ECM_CMP_RPT_CCS_DS_DTLS • MGMT$ECM_CMP_RPT_CCS_PD_ALL • MGMT$ECM_CMP_RPT_CCS_PD_DIFFS • MGMT$ECM_CMP_RPT_CI_DIFFS • MGMT$ECM_CMP_VISIBLE_CONFIGS • MGMT$ECM_CURRENT_SNAPSHOTS • MGMT$ECM_VISIBLE_SNAPSHOTS • MGMT$SERVICETAG_INSTANCES • MGMT$SERVICETAG_REGISTRY • MGMT$UNPATCHABLE_DB_TARGETS **Licensed Repository Views – Oracle Home Patching Views:** The following Oracle home patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database: • MGMT$APPLIED_PATCHES • MGMT$APPLIED_PATCHSETS • MGMT$APPL_PATCH_AND_PATCHSET • MGMT$CPF_ADVISORY_INFO • MGMT$CPF_HOMES_INFO • MGMT$CPF_PATCH_INFO • MGMT$EM_HOMES_PLATFORM • MGMT$HOMES_AFFECTED • MGMT$OH_CLONE_PROPERTIES • MGMT$OH_COMP_DEP_RULE • MGMT$OH_COMP_INST_TYPE • MGMT$OH_COMPONENT • MGMT$OH_CRS_NODES • MGMT$OH_DEP_HOMES • MGMT$OH_FILE • MGMT$OH_HOME_INFO

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• MGMT$OH_INSTALLED_TARGETS
		• MGMT$OH_INV_SUMMARY
		• MGMT$OH_PATCH
		• MGMT$OH_PATCHED_COMPONENT
		• MGMT$OH_PATCHED_FILE
		• MGMT$OH_PATCH_FIXED_BUG
		• MGMT$OH_PATCHSET
		• MGMT$OH_VERSIONED_PATCHV
		• MGMT$PATCH_ADVISORIES
		Licensed Repository Views – Security Views:
		The following security views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
		• MGMT$ESA_ALL_PRIVS_REPORT
		• MGMT$ESA_ANY_DICT_REPORT
		• MGMT$ESA_ANY_PRIV_REPORT
		• MGMT$ESA_AUDIT_SYSTEM_REPORT
		• MGMT$ESA_BECOME_USER_REPORT
		• MGMT$ESA_CATALOG_REPORT
		• MGMT$ESA_CONN_PRIV_REPORT
		• MGMT$ESA_CREATE_PRIV_REPORT
		• MGMT$ESA_DBA_GROUP_REPORT
		• MGMT$ESA_DBA_ROLE_REPORT
		• MGMT$ESA_DIRECT_PRIV_REPORT
		• MGMT$ESA_EXMPT_ACCESS_REPORT
		• MGMT$ESA_KEY_OBJECTS_REPORT
		• MGMT$ESA_OH_OWNERSHIP_REPORT
		• MGMT$ESA_OH_PERMISSION_REPORT
		• MGMT$ESA_POWER_PRIV_REPORT
		• MGMT$ESA_PUB_PRIV_REPORT
		• MGMT$ESA_SYS_PUB_PKG_REPORT
		• MGMT$ESA_TABSP_OWNERS_REPORT
		• MGMT$ESA_TRC_AUD_PERM_REPORT
		• MGMT$ESA_WITH_ADMIN_REPORT
		• MGMT$ESA_WITH_GRANT_REPORT
		Licensed Repository Views – Client Configuration Views:
		The following client configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
		• MGMT$CSA_COLLECTIONS
		• MGMT$CSA_FAILED
		• MGMT$CSA_HOST_COOKIES
		• MGMT$CSA_HOST_CPUS
		• MGMT$CSA_HOST_CUSTOM
		• MGMT$CSA_HOST_IOCARDS
		• MGMT$CSA_HOST_NICS
		• MGMT$CSA_HOST_OS_COMPONENTS

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Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• MGMT$CSA_HOST_OS_FILESYSEMS
		• MGMT$CSA_HOST_OS_PROPERTIES
		• MGMT$CSA_HOST_RULES
		• MGMT$CSA_HOST_SW
		• MGMT$ECM_CONFIG_HISTORY

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Diagnostics Pack	Extra cost pack: **EE**, **EE-ES** Included pack: **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**	**Features:** Oracle Diagnostics Pack includes the following features: • Performance monitoring and diagnostics (database and host) • Automatic Workload Repository (AWR) • AWR Warehouse • Automatic Database Diagnostic Monitor (ADDM) • Compare Period ADDM • Real Time ADDM • Active Session History (ASH) • ASH analytics • Performance Hub • Exadata Cell Grid Administration • Exadata Cell Grid Performance • Exadata Cell Group Health Overview page • Exadata Resource Utilization • Blackouts • Notifications • Metric and Alert/Event history • User-Defined Metrics and Metric Extensions • Management Connectors • Dynamic metric baselines and Adaptive metric thresholds • Monitoring templates and Template Collections • Replay Compare Period Report • Supporting functionality to perform per stream bottleneck detection and per component top wait event analysis In order to use the features listed above, you must purchase licenses for Oracle Diagnostics Pack. A new initialization parameter, `CONTROL_MANAGEMENT_PACK_ACCESS`, controls access to Oracle Diagnostics Pack and Oracle Tuning Pack. This parameter can be set to one of three values: • `DIAGNOSTIC+TUNING`: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is enabled in the database server. • `DIAGNOSTIC`: Only Oracle Diagnostics Pack functionality is enabled in the server. • `NONE`: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is disabled in the database server. Any and all methods of accessing Oracle Diagnostics Pack functionality, whether through Enterprise Manager Console, Desktop Widgets, command-line APIs, or direct access to the underlying data, requires an Oracle Diagnostics Pack license. **Licensed Links:** To determine which links in Enterprise Manager are part of Oracle Diagnostics Pack, click the **Setup** link on the top right-hand part of the Enterprise Manager Home page. • When you click the **Setup** link, the navigation bar contains the **Management Pack Access** link. Click this link. • This will take you to the **Management Pack Access** page, which allows you to grant and remove access from all the management packs.

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		– For Enterprise Manager Database Control, click the **Remove Access** radio button for the Diagnostics Pack and click **Apply**.

– For Enterprise Manager Cloud Control, click the appropriate check box for the Diagnostics Pack and click **Apply**.

This procedure disables all the links and tabs associated with Oracle Diagnostics Pack in Enterprise Manager. All the disabled links and tabs are part of Oracle Diagnostics Pack and therefore require a pack license.

Licensed Command-Line APIs:

Oracle Diagnostics Pack features can also be accessed by way of database server APIs and command-line interfaces:

* The `DBMS_ADDM`, `DBMS_PERF`, `DBMS_UMF`, and `DBMS_WORKLOAD_REPOSITORY` packages are part of this pack.

* The `DBMS_ADVISOR` package is part of this pack if you specify ADDM as the value of the `advisor_name` parameter, or if you specify for the value of the `task_name` parameter any value starting with the ADDM prefix.

* The `DBMS_WORKLOAD_REPLAY.COMPARE_PERIOD_REPORT` function is part of this pack.

* The `V$ACTIVE_SESSION_HISTORY` dynamic performance view and its underlying table, `X$ASH`, are part of this pack.

* The `DBA_STREAMS_TP_PATH_BOTTLENECK` view is part of this pack.

* All views beginning with `DBA_ADDM_` are part of this pack.

* Some data in `DBA_STREAMS_TP_COMPONENT_STAT` requires Oracle Diagnostics Pack. The following filter clause to any query on `DBA_STREAMS_TP_COMPONENT_STAT` shows Diagnostics-Pack-dependent data:

```
where STATISTIC_UNIT = 'PERCENT'
```

For example, the following query shows Diagnostics-Pack-dependent data only:

```
SELECT * FROM DBA_STREAMS_TP_COMPONENT_STAT
  where STATISTIC_UNIT = 'PERCENT';
```

* All data dictionary views beginning with the prefix `DBA_HIST_` are part of this pack, along with their underlying tables.The only exception are the views: `DBA_HIST_SNAPSHOT`, `DBA_HIST_DATABASE_INSTANCE`, `DBA_HIST_SNAP_ERROR`, `DBA_HIST_SEG_STAT`, `DBA_HIST_SEG_STAT_OBJ`, and `DBA_HIST_UNDOSTAT`. They can be used without the Oracle Diagnostics Pack license.

* All data dictionary views with the prefix `DBA_ADVISOR_` are part of this pack if queries to these views return rows with the value `ADDM` in the `ADVISOR_NAME` column or a value of `ADDM*` in the `TASK_NAME` column or the corresponding `TASK_ID`.

* The following reports found in the `/rdbms/admin/` directory of the Oracle home directory are part of this pack: `awrrpt.sql`, `awrrpti.sql`, `awrgrpt.sql`, `awrgrpti.sql`, `awrgdrpt.sql`,

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		`awrgdrpi.sql`, `addmrpt.sql`, `addmrpti.sql`, `ashrpt.sql`, `ashrpti.sql`, `awrddrpt.sql`, `awrddrpi.sql`, `awrsqrpi.sql`, `awrsqrpt.sql`, `awrextr.sql`, `awrload.sql`, `awrinfo.sql`, `spawrio.sql`, and `spawrrac.sql`.

Licensed Repository Views – Monitoring Views:

The following monitoring views are licensed under Oracle Diagnostics Pack:

- `MGMT$ALERT_ANNOTATIONS`
- `MGMT$ALERT_CURRENT`
- `MGMT$ALERT_HISTORY`
- `MGMT$ALERT_NOTIF_LOG`
- `MGMT$AVAILABILITY_CURRENT`
- `MGMT$AVAILABILITY_HISTORY`
- `MGMT$BLACKOUT_HISTORY`
- `MGMT$BLACKOUTS`
- `MGMT$METRIC_COLLECTIONS`
- `MGMT$ALERT_CURRENT`
- `MGMT$METRIC_DAILY`
- `MGMT$METRIC_DETAILS`
- `MGMT$METRIC_HOURLY`
- `MGMT$TARGET_METRIC_COLLECTIONS`
- `MGMT$TARGET_METRIC_SETTINGS`

Licensed Repository Views – Template Views:

The following template views are licensed under Oracle Diagnostics Pack:

- `MGMT$TEMPLATES`
- `MGMT$TEMPLATE_METRIC_COLLECTION`
- `MGMT$TEMPLATE_METRIC_SETTINGS`
- `MGMT$TEMPLATE_POLICY_SETTINGS`

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features

Oracle Tuning Pack	Extra cost pack: **EE**, **EE-ES**
	
	Included pack: **DBCS EE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS**
		Features:
		Oracle Tuning Pack includes the following features:
		• SQL Access Advisor
		• SQL Tuning Advisor
		• Oracle Database In-Memory Advisor
		• Automatic SQL Tuning
		• SQL Profiles
		• Real-time SQL and PL/SQL Monitoring
		• Real-time Database Operations Monitoring
		• Reorganize objects
		A new initialization parameter, `CONTROL_MANAGEMENT_PACK_ACCESS`, is introduced to control access to Oracle Diagnostics Pack and Oracle Tuning Pack in the database server. This parameter can be set to one of three values:
		• `DIAGNOSTIC+TUNING`: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is enabled in the database server.
		• `DIAGNOSTIC`: Only Oracle Diagnostics Pack functionality is enabled in the server.
		• `NONE`: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is disabled in the database server.
		Any and all methods of accessing Oracle Tuning Pack functionality, whether through Enterprise Manager Console, Desktop Widgets, command-line APIs, or direct access to the underlying data, requires an Oracle Tuning Pack license.
		
		Prerequisites:
		Oracle Tuning Pack requires Oracle Diagnostics Pack.
		
		Licensed Links:
		To determine which links in Enterprise Manager are part of Oracle Tuning Pack, click the **Setup** link on the top right-hand part of the Enterprise Manager Home page.
		• When you click the **Setup** link, the navigation bar contains the **Management Pack Access** link. Click this link.
		• This will take you to the Management Pack Access page, which allows you to grant and remove access from all the management packs.
		  – For Enterprise Manager Database Control, click the **Remove Access** radio button for the Tuning Pack and click **Apply**.
		  – For Enterprise Manager Cloud Control, click the appropriate check box for the Tuning Pack and click **Apply**.
		This procedure disables all the links and tabs associated with Oracle Tuning Pack in Enterprise Manager. All the disabled links and tabs are part of Oracle Tuning Pack and therefore require a pack license.
		
		Licensed Command Line APIs:
		Oracle Tuning Pack features can also be accessed by way of database server APIs and command-line interfaces:

Table 1-16   (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		• `DBMS_ADVISOR`, when the value of the `advisor_name` parameter is either SQL Tuning Advisor or SQL Access Advisor. • `DBMS_AUTO_SQLTUNE` • `DBMS_PERF` • `DBMS_SQL_MONITOR` • `DBMS_SQLTUNE` (See Note) • `V$SQL_MONITOR` • `V$SQL_PLAN_MONITOR` • The following report found in the `/rdbms/admin/` directory of the Oracle home directory is part of this pack: `sqltrpt.sql`. **Note**: If you are licensed for the on-premise Oracle Database Enterprise Edition, then you can use certain subprograms of the `DBMS_SQLTUNE` package even if you do not have an Oracle Tuning Pack license. See the SQL Tuning Sets entry in Table 1-7 for more information.

1.6 Checking for Feature, Option, and Management Pack Usage

Oracle provides the script `options_packs_usage_statistics.sql`, which enables you to check feature usage, Oracle Database option usage, and Oracle management pack usage on your database. This script lists, in two distinct sections:

- Oracle Database option and Oracle management pack usage

- Features used by each option and management pack

You can obtain the script from My Oracle Support as follows:

1. Use a Web browser to view the My Oracle Support Web site:

   https://support.oracle.com

2. Log in to My Oracle Support.

   If you are not a My Oracle Support registered user, then click **Register** and follow the registration instructions.

3. Search for Document ID 1317265.1, or access it directly with the following URL:

   https://support.oracle.com/CSP/main/article?
   cmd=show&type=NOT&id=1317265.1

You can manually run the script on an individual database or use Oracle Enterprise Manager Job System to automatically run the script on multiple databases. Refer to *Oracle Enterprise Manager Cloud Control Administrator's Guide* for information on Oracle Enterprise Manager Job System.

> **Note:**
>
> The information obtained from this script will provide you an overview of the licensable Oracle Database options and Oracle management packs that were identified as used by your organization. This is to be used for informational purposes only and this does not represent your license entitlement or requirement. Please contact the License Management Services representative at `http://www.oracle.com/us/corporate/license-management-services/index.html` to understand your license requirements.

1.7 Special License Rights

Table 1-17   Special License Rights

Feature / Option	Licensing Information
Data Guard Far Sync	The far sync instance can be installed and used on a server different from the server where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the server running the far sync instance.
Enterprise User Security	If you wish to use Enterprise User Security in Oracle Database Enterprise Edition, you no longer need to license the Oracle Advanced Security option for Kerberos and PKI based authentication. It does require a corresponding Oracle Identity Management Directory Services Plus to be licensed. Any Oracle Advanced Security licenses purchased on or before January 31, 2004, have restricted use of the Oracle Internet Directory (OID) component of Oracle Directory Services Plus to support Enterprise User Security.
Global Data Services	The GSM listener can be installed and used on a server different from the server where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the server running the GSM listener.
Infrastructure repository databases	A separate single instance Oracle Database can be installed and used as an infrastructure repository for RMAN, Oracle Enterprise Manager Cloud Control, Automatic Workload Repository (AWR) Warehouse, Global Data Services Catalog, Sharding Catalog, and Grid Infrastructure Management Repository without additional license requirements, provided that all the targets are correctly licensed. It may not be used or deployed for other uses.
	The infrastructure repositories for RMAN, Oracle Enterprise Manager Cloud Control, AWR Warehouse, Global Data Services Catalog, and Sharding Catalog can be shared in one database, or deployed in separate databases. Enterprise Edition must be used for the infrastructure repository database(s).
	If Oracle RAC is used for the infrastructure database, then Oracle RAC licenses for all servers, and Enterprise Edition licenses for all but the first server, are required.
	If Data Guard is used for the infrastructure database for RMAN, Oracle Enterprise Manager Cloud Control, AWR Warehouse, Global Data Services, and Grid infrastructure management Repository, then an Enterprise Edition license for the standby server is required. The Infrastructure Database for the Sharding Catalog can be protected with Data Guard without a second Enterprise Edition license.

Table 1-17   (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle ASM Cluster File System (Oracle ACFS)	When used with non-Oracle Database files, all Oracle ACFS features are free. When used with Oracle Database files, all Oracle ACFS features are free, with the following exceptions: • ACFS Auditing - Not available (use Oracle Audit Vault*) • ACFS Compression - Not available (use Oracle Advanced Compression*) • ACFS Encryption - Not available (use Oracle Transparent Data Encryption, part of the Oracle Advanced Security option*) • ACFS Security - Not available (use Oracle Database Vault*) * Requires appropriate full-use licenses to these products or components. Oracle will provide support services for Oracle ACFS only if the server it operates on also operates an Oracle product, which may include Oracle Linux or Oracle Solaris, which is under an Oracle support contract.
Oracle Automatic Storage Management (Oracle ASM)	Oracle ASM is free to use with all Oracle databases and Oracle ACFS file systems.
Oracle Clusterware	Oracle Clusterware provides cluster membership and high availability monitoring and failover. Oracle Clusterware may be used to protect any application (restarting or failing over the application in the event of a failure) on any server, free of charge. Oracle will provide support for Clusterware only if the server is running an Oracle product, which may include Oracle Linux or Oracle Solaris, that is also under Oracle support.
Oracle Connection Manager	Oracle Connection Manager can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Connection Manager.
Oracle Data Guard broker	You can install the broker command line interface DGMGRL and run the observer software on computer systems that are separate from the Oracle Data Guard primary and standby systems. It is not necessary to obtain a separate license for a system hosting the observer.
Oracle Database Backup Cloud Service	Oracle Database Backup Cloud Service includes use of the following two features from the Oracle Advanced Security option or the Oracle Advanced Compression option at no additional cost: • RMAN backup encryption • All RMAN backup compression algorithms To use additional features of the Oracle Advanced Security option or the Oracle Advanced Compression option, you must license those options separately. In addition, the Oracle Advanced Security option must be separately licensed when performing RMAN encrypted backups directly to disk.
Oracle Database Gateway for ODBC	Oracle Database Gateway for ODBC can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Gateway for ODBC.
Oracle Database Provider for DRDA	Oracle Database Provider for DRDA can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Database Provider for DRDA.

Table 1-17 (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle Database Vault	When Oracle Database Vault is configured and enabled, it configures and enables Oracle Label Security. Oracle Label Security is solely restricted for use by the Oracle Database Vault software. If you want to create Oracle Label Security policies, then you must purchase a full-use license for Oracle Label Security.
Oracle Real Application Testing	The full functionality of Oracle Real Application Testing is available only on Oracle Database 11g Release 1 or higher. Partial functionality of Oracle Real Application Testing is available to customers wishing to upgrade from Oracle9i Database Release 2 or Oracle Database 10g. The functionality available on Oracle9i Database Release 2 is as follows: • **Database Replay**: Only the Workload Capture feature is supported, and the captured workload may only be replayed only on Oracle Database 11g. This feature can be used only to facilitate upgrades from Oracle 9i Database Release 2 to Oracle Database 11g or higher. The functionality available on Oracle Database 10g Release 2 is as follows: • **Database Replay**: Only the Workload Capture feature is supported, and the captured workload may be replayed only on Oracle Database 11g. This feature can be used only to facilitate upgrades from Oracle Database 10g Release 2 to Oracle Database 11g. • **SQL Performance Analyzer**: Only the Remote SQL Test Execute and SQL Capture into SQL Tuning Set features are supported. These features can be used only to facilitate upgrades from Oracle9i Database Release 2 and Oracle Database 10g Release 1 to Oracle Database 10g Release 2 or higher. When upgrading to Oracle Database 10g Release 2 from earlier releases (Oracle 9i Database or Oracle Database 10g Release 1), Oracle Database 11g is needed to remotely execute SQL on the target database (that is, Oracle Database 10g Release 2). Oracle Real Application Testing licensing is required for both systems, Oracle Database 10g Release 2 and Oracle Database 11g.
Oracle Secure Backup Oracle Secure Backup Cloud Module	For backup of Oracle Database Enterprise Edition, Oracle Secure Backup includes restricted use licenses for: • RMAN backup encryption to tape or Amazon S3 • RMAN backup compression leveraging LOW, MEDIUM, BASIC or HIGH algorithms The Oracle Secure Backup special-use licenses apply to RMAN backup encryption, which is a component of the Oracle Advanced Security option, and RMAN backup compression levels, which are components of the Oracle Advanced Compression option. To use additional features of the Oracle Advanced Security option or the Oracle Advanced Compression option, you must license those options separately. In addition, the Oracle Advanced Security option must be licensed when performing RMAN encrypted backups directly to disk whether or not Oracle Secure Backup is the media manager.
Oracle Secure Backup Express	Oracle Secure Backup Express is bundled with the Oracle Database. Support for Oracle Secure Backup Express is provided exclusively through a free Oracle Discussion Forum monitored by Oracle employees as well as community experts. Oracle Secure Backup Express can back up an Oracle database as well as Oracle home files and other file system data requiring tape protection. For more information, refer to *Oracle Secure Backup Licensing Information*.

Table 1-17   (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle Spatial and Graph	These Oracle Spatial and Graph components can be installed and used on a server different from the server where the Oracle Database is installed and used without a separate license: • Spatial Geocoder • Spatial Routing engine • Spatial Web Services • Property Graph client • In-memory analyst (PGX) • Spatial Visualization component • Spatial Studio For more information, see *Oracle Spatial and Graph Developer's Guide* and *Oracle Spatial and Graph Property Graph Developer's Guide*.
Oracle Wallet	An Oracle Wallet is a PKCS#12 container used to store authentication and encryption keys. The Oracle database secure external password store feature stores passwords in an Oracle Wallet for password-based authentication to the Oracle database. The Oracle Wallet may also be used to store credentials for PKI authentication to the Oracle Database, configuration of network encryption (SSL/TLS), and Oracle Advanced Security transparent data encryption (TDE) master encryption keys. Strong authentication services (Kerberos, PKI, and RADIUS) and network encryption (native network encryption and SSL/TLS) are no longer part of Oracle Advanced Security and are available in all licensed editions of all supported releases of the Oracle database.
Shard Director	The shard directors can be installed and used on a server different from the server where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the server running the shard directors.
XStream	XStream provides application programming interfaces (APIs) that enable client applications to receive real-time data changes from an Oracle database (using XStream Out APIs) and to send real-time data changes to an Oracle database (using XStream In APIs). These data changes can be shared between Oracle databases and other systems, such as filesystems and non-Oracle databases. XStream is licensed via the Oracle GoldenGate product. You must purchase a license for this product before using the XStream APIs. Please contact your Oracle sales representative for additional information.

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1.8 Restricted Use Licenses

Table 1-18   Restricted Use Licenses

Feature / Option	Licensing Information
Oracle Advanced Security	Any Oracle Advanced Security licenses purchased on or before January 31, 2004, have restricted use of the Oracle Internet Directory (OID) component of Oracle Directory Services Plus to support Enterprise User Security. Oracle Advanced Security includes a restricted use license for the following Oracle Enterprise Manager features: • Application Data Models (previously called Data Discovery and Modeling) • Sensitive Column Types and Sensitive Data Discovery • Application Accelerators If you want to use the Oracle Enterprise Manager features listed above not solely for the purposes of Oracle Advanced Security, then you must purchase a full-use license for Oracle Data Masking and Subsetting Pack.
Oracle Application Server Containers for J2EE	A restricted use license for Oracle Application Server Containers for J2EE (OC4J) is included with all editions (except for Oracle Database Express Edition). This embedded version is provided solely to support Oracle Enterprise Manager (Database and Cloud Control), Advanced Queuing Servlet, Ultra Search, and Application Express, and may not be used or deployed for other purposes
Oracle Applications Unlimited	An Oracle Database Cloud Service Enterprise Edition (DBCS-EE) instance being used to support an Oracle Cloud deployment of an Oracle Applications Unlimited application has restricted use of the following options: Oracle On-Line Analytical Processing (OLAP) and Oracle Partitioning. These options may be used only to support Oracle Applications Unlimited and may not be used or deployed for any other purpose.
Oracle Big Data SQL	Oracle Big Data SQL includes a Query Server that is used to query data sources including HDFS, Kafka, and NoSQL stores. Oracle Big Data SQL includes a restricted use license of Oracle Database for storing metadata (i.e. external tables and views) maintained by the Query Server. No other objects may be created in this Oracle Database.
Oracle Database Mobile Server	Oracle Database Mobile Server is a powerful tool for controlling networks of mobile or embedded devices from a centralized management console. It provides a secure, scalable method for connecting applications running locally on mobile or embedded devices to an Oracle enterprise backend. The synchronization system is robust and fault tolerant. It is able to successfully synchronize over unreliable or intermittently available networks. Oracle Database Mobile Server provides management for applications, users, and devices. It runs on a variety of application server platforms, including Oracle WebLogic, Oracle Glassfish, and Apache TomEE. On the client device side, it is designed to work with Oracle Berkeley DB as a data store, providing efficient, reliable, and secure data management running locally on mobile and embedded devices. It is also compatible with SQLite, a widely used open source data store. Database Mobile Server supports many popular device platforms including Oracle Java, Linux, Windows (laptop as well as mobile/CE), and Android.

Table 1-18   (Cont.) Restricted Use Licenses

Feature / Option	Licensing Information
Oracle Database Vault	Oracle Database Vault includes a restricted use license for the following Oracle Enterprise Management features: • Application Data Modeling (previously called Data Discovery and Modeling) • Application Data Modeling accelerator for select versions of Oracle E-Business Suite • Application Data Modeling accelerator for select versions of Oracle Fusion Applications
Oracle HTTP Server	A restricted use license for Oracle HTTP Server is included with all editions (except for Oracle Database Express Edition) when the HTTP Server is running on the same server as the database. Running Oracle HTTP server on a different server requires that other server be licensed to use the HTTP server, either through an Oracle Database license or an Oracle Application Server license
Oracle Internet Directory	A restricted use license for Oracle Identity Management Directory Services Plus component Oracle Internet Directory (OID) is included with all editions (except for Oracle Database Express Edition) if users use the Directory Naming feature to configure Oracle Net Services. OID may not be used or deployed for other uses.
Oracle Label Security	Oracle Label Security includes a restricted use license for the following Oracle Enterprise Manager features: • Application Data Models (previously called Data Discovery and Modeling) • Sensitive Column Types and Sensitive Data Discovery • Application Accelerators If you want to use the Oracle Enterprise Manager features listed above not solely for the purposes of Oracle Label Security, then you must purchase a full-use license for Oracle Data Masking and Subsetting Pack.
Oracle Programmer	Oracle Programmer provides application programmers with a programmatic interface to any edition of Oracle Database. However, in order to user Oracle Programmer, you must purchase a separate Oracle Programmer license. Oracle Programmer includes the following products: • Embedded SQL-style interfaces: Pro*C/C++, Pro*COBOL, Pro*Fortran, SQL*Module for Ada, SQLJ • Utilities to generate host-language bindings from database schemas: Object Type Translator and JPub
Oracle Real Application Testing	Restricted use licenses of Load Testing Accelerator for Oracle Database, Oracle Load Testing, and Oracle Load Testing Controller are included with Oracle Real Application Testing for use for Oracle Database testing and may not be used for application testing.
Oracle Secure Backup Express	Oracle Secure Backup Express is a centralized tape backup management solution that provides data protection for single-server Oracle Database environments. A restricted use license for Oracle Secure Backup Express is included with all Oracle Database editions. Oracle Secure Backup Express is limited to a single host with one direct-attached tape drive and has some restrictions on advanced feature usage. Refer to the *Oracle Secure Backup Licensing Information* for additional information.
Oracle Sharding	Oracle Sharding includes a restricted use license for Global Data Services. If you want to use Global Data Services not solely for the purposes of Oracle Sharding, then you must be licensed for the Oracle Active Data Guard option.

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Table 1-18   (Cont.) Restricted Use Licenses

Feature / Option	Licensing Information
Oracle Spatial and Graph	Restricted use of Oracle Partitioning is allowed on all offerings, free of charge, for the sole purpose of supporting the following Spatial, Property Graph, and RDF Graph Technologies (RDF/OWL) features: spatial topology, property graph schema, and RDF Semantic Graph. All other uses of Oracle Partitioning require a license for the Oracle Partitioning option, where available.

2
Third-Party Notices and/or Licenses

- Third-Party Notices and/or Licenses for Oracle Database
- Third-Party Notices and/or Licenses for Oracle Database Components
- Written Offer for Source Code

2.1 Third-Party Notices and/or Licenses for Oracle Database

2.1.1 Commercial Software Included in Oracle Database

Commercial software products or components distributed in Oracle Database 20c are identified in the following table along with the applicable licensing information.

Table 2-1   Commercial Software Included in Oracle Database

Provider	Component(s)	Licensing Information
DataDirect	DataDirect Technology	The DataDirect component provided with this Oracle Program is distributed only for use with Oracle Program.
Intel	Intel Integrated Performance Primitives Redistributables 2017.0.4	For a copy of the license, see Intel Integrated Performance Primitives Redistributables 2017.0.4 License.
MapInfo Corp.	Projections Code 1.0	Portions of this software Copyright 1992-2000, MapInfo Corporation, ALL RIGHTS RESERVED.

2.1.2 Open Source or Other Separately Licensed Software Included in Oracle Database

Required notices for open source or other separately licensed software products or components distributed in Oracle Database 20c are identified in the following table along with the applicable licensing information. Additional notices and/or licenses may be found in the included documentation or readme files of the individual third party software.

Table 2-2   Open Source or Other Separately Licensed Software Included in Oracle Database

Provider	Component(s)	Licensing Information
ANTLR	Antlr 3.2	ANTLR 3 License [The BSD License] Copyright (c) 2003-2007, Terence Parr All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: • 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. • Neither the name of the author nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. 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.
Apache	Batik SVG Toolkit 1.11	For a copy of the license, see Batik SVG Toolkit 1.11 License.
Apache	Commons CLI 1.4	Apache Commons CLI Copyright 2001-2017 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.
Apache	Commons CSV 1.6	Apache Commons CSV Copyright 2005-2019 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.

Table 2-2   (Cont.) Open Source or Other Separately Licensed Software Included in Oracle Database

Provider	Component(s)	Licensing Information
Apache	Commons Codec 1.13	This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0. COPYRIGHT NOTICE ============= Apache Commons Codec Copyright 2002-2019 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org/). src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java contains test data from http://aspell.net/test/orig/batch0.tab. Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org) == The content of package org.apache.commons.codec.language.bm has been translated from the original php source code available at http://stevemorse.org/phoneticinfo.htm with permission from the original authors. Original source copyright: Copyright (c) 2008 Alexander Beider & Stephen P. Morse.
Apache	Commons Compress 1.19	For a copy of the license, see Commons Compress 1.19 License.
Apache	Commons FileUpload 1.4	Apache Commons FileUpload Copyright 2002-2017 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org/). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.

Table 2-2   (Cont.) Open Source or Other Separately Licensed Software Included in Oracle Database

Provider	Component(s)	Licensing Information

Apache	Commons IO 2.6	Copyright Header:
		
		==============
		
		`/*`
		`* Licensed to the Apache Software Foundation (ASF) under one or more`
		`* contributor license agreements.  See the NOTICE file distributed with`
		`* this work for additional information regarding copyright ownership.`
		`* The ASF licenses this file to You under the Apache License, Version 2.0`
		`* (the "License"); you may not use this file except in compliance with`
		`* the License.  You may obtain a copy of the License at`
		`*`
		`*      http://www.apache.org/licenses/LICENSE-2.0`
		`*`
		`* Unless required by applicable law or agreed to in writing, software`
		`* distributed under the License is distributed on an "AS IS" BASIS,`
		`* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.`
		`* See the License for the specific language governing permissions and`
		`* limitations under the License.`
		`*/`
		
		Notice
		
		======
		
		Apache Commons IO
		
		Copyright 2002-2012 The Apache Software Foundation
		
		This product includes software developed by
		
		The Apache Software Foundation (http://www.apache.org/).
		
		License Text
		
		============
		
		http://www.apache.org/licenses/LICENSE-2.0
		
		This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.

Apache	Commons Logging 1.2-0548efb	Apache Commons Logging Copyright 2003-2016 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org/). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.
Apache	HttpComponents HttpClient 4.5.9	For a copy of the license, see HttpComponents HttpClient 4.5.9 License.

Table 2-2   (Cont.) Open Source or Other Separately Licensed Software Included in Oracle Database

Provider	Component(s)	Licensing Information
Apache	HttpComponents HttpClient 4.5.10	For a copy of the license, see HttpComponents HttpClient 4.5.10 License.
Apache	HttpCore 4.4.12	Apache HttpComponents Core Copyright 2005-2019 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.
Apache	Log4J 2.12.0	Apache Log4J Copyright 1999-2017 Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.
Apache	Lucene 7.7.2	For a copy of the license, see Lucene 7.7.2 License.
Apache	Mina SSHD 2.2.0	For a copy of the license, see Mina SSHD 2.2.0 License.
Apache	XML Graphics Commons 2.3	Apache XML Graphics Commons Copyright 2006-2018 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (http://www.apache.org/). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.
Apache	XMLBeans 2.6.0-6	For a copy of the license, see XMLBeans 2.6.0-6 License.
Apache	Xerces2 Java 2.12.0	For a copy of the license, see Xerces2 Java 2.12.0 License.
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		==========================
		
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		`jackson-module-jaxb-annotations`
		`jackson-annotations`
		`jackson-core`
		`jackson-databind`
		
		==========================
		
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		# Jackson JSON processor
		
		Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.
		
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		`jloup@gzip.org       madler@alumni.caltech.edu`

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		bzip2/libbzip2 version 1.0.8 of 13 July 2019

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		# Jackson JSON processor
		Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.
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		# Jackson JSON processor
		Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.
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The PyData Development Team	Pandas 0.24.1	For a copy of the license, see Pandas 0.24.1 License.

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		# Jackson JSON processor
		Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.
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		# Jackson JSON processor
		Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.
		It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.
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gdal/frmts/gtiff/tif_float.c

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gdal/frmts/hdf4/hdf-eos/*

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gdal/frmts/pcraster/libcsf

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gdal/ogr/ogrsf_frmts/dxf/intronurbs.cpp

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gdal/alg/thinplatespline.cpp

IEEE754 log() code derived from:

@(#)e_log.c 1.3 95/01/18

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gdal/frmts/pdf/pdfdataset.cpp (method PDFiumRenderPageBitmap())

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gdal/frmts/mrf/* (apply when MRF driver included in build)

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google guava v27.1 (APACHE)

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distributed under the License
 * is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF
ANY KIND, either express
 * or implied. See the License for the specific language governing
permissions and limitations under
 * the License.
 */

/**
 * Common annotation types. This package is a part of the open-source <a
 * href="http://github.com/google/guava">Guava</a> library.
 */
```

Apache 2.0

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=========================

Modules:

```
guava-bom
guava-gwt
```

```
    guava-testlib
    guava-tests
    guava
    refactorings
    util
```

==========================

4P Dependencies:

com.google.code.findbugs » jsr305 3.0.2

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=================================

com.google.errorprone » error_prone_annotations 2.2.0

```
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```

```
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 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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 */
```

====================================

com.google.guava » failureaccess 1.0.1

```
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distributed under the License
* is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF
ANY KIND, either express
* or implied. See the License for the specific language governing
permissions and limitations under
* the License.
*/
```

==============================

com.google.guava » listenablefuture 9999.0-empty-...

```
/*
*An empty artifact that Guava depends on to signal that it is providing
*ListenableFuture -- but is also available in a second "version" that
*contains com.google.common.util.concurrent.ListenableFuture class, without
*any other Guava classes. The idea is:

*- If users want only ListenableFuture, they depend on
listenablefuture-1.0.

*- If users want all of Guava, they depend on guava, which, as of Guava
27.0, depends on
*Listenablefuture-9999.0-empty-to-avoid-conflict-with-guava. The 9999.0-...
*version number is enough for some build systems (notably, Gradle) to
select
*that empty artifact over the "real" listenablefuture-1.0 -- avoiding a
*conflict with the copy of ListenableFuture in guava itself. If users are
*using an older version of Guava or a build system other than Gradle, they
*may see class conflicts. If so, they can solve them by manually excluding
*the listenablefuture artifact or manually forcing their build systems to
*use 9999.0-....
*/
```

==

com.google.j2objc » j2objc-annotations 1.1

```
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    * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied.
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    * limitations under the License.
    */
```

==

org.checkerframework » checker-qual 2.5.2

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- plume-lib is licensed under the MIT License.

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Version 2, June 1991

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google guava v28.1

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========================

Modules:

```
guava-bom
guava-gwt
guava-testlib
guava-tests
guava
refactorings
util
```

========================

4P Dependencies:

com.google.code.findbugs » jsr305 3.0.2

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com.google.errorprone » error_prone_annotations 2.3.0

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com.google.guava » failureaccess 1.0.1

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---

com.google.guava » listenablefuture 9999.0-empty-...

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javaparser 3.14.14

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A.16 Guice 4.2.2 License

Google Guice 4.2.2

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****

Modules:

```
    bom
    core
    extensions
```

Modules within extensions:

```
    assistedinject
    dagger-adapter
    grapher
    jmx
    jndi
    multibindings
    persist
    servlet
    spring
    struts2
    testlib
    throwingproviders
```

****

Mandatory Fourth-party Dependency: AOP Alliance 1.0

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****

Modules:

****

```
    httpclient
    httpmime
    fluent-hc
    httpclient-cache
    httpclient-win
    httpclient-osgi
```

****

4P Dependencies:

****

commons-codec » commons-codec 1.11, commons-codec-1.12.jar

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org.apache.httpcomponents » httpcore 4.4.11

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commons-lang3-3.9.jar

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  version 1.2.11, January 15th, 2017

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  jloup@gzip.org          madler@alumni.caltech.edu


  The data format used by the zlib library is described by RFCs (Request
for
  Comments) 1950 to 1952 in the files http://tools.ietf.org/html/rfc1950
  (zlib format), rfc1951 (deflate format) and rfc1952 (gzip format).
*/
```

————————————————————————

```
/* adler32.c -- compute the Adler-32 checksum of a data stream
 * Copyright (C) 1995-2011, 2016 Mark Adler
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 */
```

————————————————————————

```
/* crc32.c -- compute the CRC-32 of a data stream
 * Copyright (C) 1995-2006, 2010, 2011, 2012, 2016 Mark Adler
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 *
 * Thanks to Rodney Brown <rbrown64@csc.com.au> for his contribution of
faster
 * CRC methods: exclusive-oring 32 bits of data at a time, and pre-
computing
 * tables for updating the shift register in one step with three exclusive-
ors
 * instead of four steps with four exclusive-ors.  This results in about a
 * factor of two increase in speed on a Power PC G4 (PPC7455) using gcc -
O3.
 */
```

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```
/* deflate.c -- compress data using the deflation algorithm
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 */
```

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  Knockout Fast Foreach v0.6.0 (2016-07-28T11:02:54.197Z)
  By: Brian M Hunt (C) 2015 | License: MIT
*/
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/*! Hammer.JS - v2.0.4 - 2014-09-28
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 * v0.12.0 (2013/01/21 13:47)
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/*!
 * History API JavaScript Library v4.1.0
 *
 * Support: IE8+, FF3+, Opera 9+, Safari, Chrome and other
 *
 * Copyright 2011-2013, Dmitrii Pakhtinov ( spb.piksel@gmail.com )
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 *
 * Update: 2014-03-24 13:14
 */


/*! jQuery UI - v1.11.4 - 2015-03-18
* http://jqueryui.com
* Includes: core.js, widget.js, mouse.js, position.js, draggable.js,
sortable.js
* Copyright 2015 jQuery Foundation and other contributors; Licensed MIT */


/*!
 * jQuery JavaScript Library v2.2.3
 * http://jquery.com/
 *
 * Includes Sizzle.js
 * http://sizzlejs.com/
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 * Date: 2014-12-18T15:11Z
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 * Released under the MIT license
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 * Version: 1.0.0 - Build: 268 (2012/11/29 05:48 PM)
 */
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======================== Proj4js ========================

Mike Adair madairATdmsolutions.ca

Richard Greenwood richATgreenwoodmap.com

Didier Richard didier.richardATign.fr

Stephen Irons stephen.ironsATclear.net.nz

Olivier Terral oterralATgmail.com

Calvin Metcalf cmetcalfATappgeo.com

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========================= Proj4js =========================

Mike Adair madairATdmsolutions.ca

Richard Greenwood richATgreenwoodmap.com

Didier Richard didier.richardATign.fr

Stephen Irons stephen.ironsATclear.net.nz

Olivier Terral oterralATgmail.com

Calvin Metcalf cmetcalfATappgeo.com

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======================== Proj4js =========================

Mike Adair madairATdmsolutions.ca

Richard Greenwood richATgreenwoodmap.com

Didier Richard didier.richardATign.fr

Stephen Irons stephen.ironsATclear.net.nz

Olivier Terral oterralATgmail.com

Calvin Metcalf cmetcalfATappgeo.com

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org.apache.tomcat:tomcat-el-api
org.apache.tomcat:tomcat-jasper-el
org.apache.tomcat:tomcat-api
org.apache.tomcat:tomcat-util-scan
org.apache.tomcat:tomcat-util

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org.ow2.asm asm / asm-common / asm-tree / asm-analysis 7.0

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org.eclipse.jetty.toolchain jetty-schema 3.1.2

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org.eclipse.jetty.orbit javax.security.auth.message 1.0.0.v201108011116

org.eclipse.jetty.orbit javax.activation 1.1.0.v201105071233

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org.mortbay.jasper apache-jsp 8.5.40

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org.apache.taglibs taglibs-standard-imp 1.2.5

org.apache.taglibs taglibs-standard-spec 1.2.5

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org.jboss.logging 3.3.2.Final

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org.infinispan » infinispan-query 9.4.8.Final

org.infinispan » infinispan-client-hotrod 9.4.8.Final

org.infinispan » infinispan-remote-query-client 9.4.8.Final

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org.conscrypt » conscrypt-openjdk-uber v2.1.0

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org.mongodb » mongo-java-driver 2.13.2

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7. The following files (originally from https://github.com/marianobarrios/tls-channel):

```
AsynchronousTlsChannel.java
AsynchronousTlsChannelGroup.java
ExtendedAsynchronousByteChannel.java
BufferHolder.java
ByteBufferSet.java
```

```
ByteBufferUtil.java
TlsChannelImpl.java
TlsChannelCallbackException.java
Util.java
BufferAllocator.java
ClientTlsChannel.java
NeedsReadException.java
NeedsTaskException.java
NeedsWriteException.java
TlsChannel.java
TlsChannelBuilder.java
TlsChannelFlowControlException.java
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WouldBlockException.java
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com.hazelcast » hazelcast 3.9.4

com.hazelcast » hazelcast-client 3.9.4

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```
com.hazelcast.util.collection
com.hazelcast.internal.util.concurrent
```

and the classes:

```
com.hazelcast.util.QuickMath
com.hazelcast.client.impl.protocol.util.UnsafeBuffer
com.hazelcast.client.impl.protocol.util.BufferBuilder
```

contain code originating from the Agrona project (https://github.com/real-logic/Agrona).

The class com.hazelcast.util.HashUtil contains code originating from the Koloboke project (https://github.com/OpenHFT/Koloboke).

The class classloading.ThreadLocalLeakTestUtils contains code originating from the Tomcat project (https://github.com/apache/tomcat).

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- io.grpc:grpc-stub (io.grpc:grpc-stub:1.0.1 - https://github.com/grpc/grpc-java)
- ANTLR 3 Runtime (org.antlr:antlr-runtime:3.5.2 - http://www.antlr.org)
- Hamcrest (org.hamcrest:hamcrest:2.1 - http://hamcrest.org/JavaHamcrest/)
- asm (org.ow2.asm:asm:7.1 - http://asm.ow2.org/)
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- asm-tree (org.ow2.asm:asm-tree:7.1 - http://asm.ow2.org/)
- ASM Util (org.ow2.asm:asm-util:5.0.3 - http://asm.objectweb.org/asm-util/)

- ThreeTen backport (org.threeten:threetenbp:1.3.3 - https://www.threeten.org/threetenbp)

- Google Auth Library for Java - Credentials (com.google.auth:google-auth-library-credentials:0.6.1 - https://github.com/google/google-auth-library-java/google-auth-library-credentials)

- Google Auth Library for Java - OAuth2 HTTP (com.google.auth:google-auth-library-oauth2-http:0.6.1 - https://github.com/google/google-auth-library-java/google-auth-library-oauth2-http)

- Protocol Buffers [Core] (com.google.protobuf:protobuf-java:3.0.2 - https://developers.google.com/protocol-buffers/protobuf-java/)

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- Jetty :: Apache JSP Implementation (org.eclipse.jetty:apache-jsp:
9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Apache :: JSTL module (org.eclipse.jetty:apache-jstl:9.4.21.v20190916 - http://tomcat.apache.org/taglibs/standard/)

- Jetty :: Infinispan Session Manager Common (org.eclipse.jetty:infinispan-common:
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- Jetty :: Infinispan Session Manager Remote (org.eclipse.jetty:infinispan-remote-query:9.4.21.v20190916 - http://www.eclipse.org/jetty)

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- Jetty :: ALPN :: Conscrypt Server Implementation (org.eclipse.jetty:jetty-alpn-conscrypt-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-conscrypt-server)

- Jetty :: ALPN :: OpenJDK8 Client Implementation (org.eclipse.jetty:jetty-alpn-openjdk8-client:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-openjdk8-client)

- Jetty :: ALPN :: OpenJDK8 Server Implementation (org.eclipse.jetty:jetty-alpn-openjdk8-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-openjdk8-server)

- Jetty :: ALPN :: Server (org.eclipse.jetty:jetty-alpn-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-server)

- Jetty :: Servlet Annotations (org.eclipse.jetty:jetty-annotations:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Asynchronous HTTP Client (org.eclipse.jetty:jetty-client:9.4.21.v20190916 - http://www.eclipse.org/jetty)

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- Jetty :: Utilities :: Ajax(JSON) (org.eclipse.jetty:jetty-util-ajax:9.4.21.v20190916 - http://www.eclipse.org/jetty)

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- Jetty :: XML utilities (org.eclipse.jetty:jetty-xml:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Test :: Jetty Test Webapp (org.eclipse.jetty:test-jetty-webapp:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: ALPN :: API (org.eclipse.jetty.alpn:alpn-api:1.1.3.v20160715 - http://www.eclipse.org/jetty/alpn-api)

- Example Async Rest :: Jar (org.eclipse.jetty.example-async-rest:example-async-rest-jar:9.4.21.v20190916 - https://eclipse.org/jetty/examples-parent/example-async-rest/example-async-rest-jar)

- Jetty :: FastCGI :: Client (org.eclipse.jetty.fcgi:fcgi-client:9.4.21.v20190916 - https://eclipse.org/jetty/fcgi-parent/fcgi-client)

- Jetty :: GCloud :: Session Manager (org.eclipse.jetty.gcloud:jetty-gcloud-session-manager:9.4.21.v20190916 - https://eclipse.org/jetty/gcloud-parent/jetty-gcloud-session-manager)

- Jetty :: HTTP2 :: Client (org.eclipse.jetty.http2:http2-client:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-client)

- Jetty :: HTTP2 :: Common (org.eclipse.jetty.http2:http2-common:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-common)

- Jetty :: HTTP2 :: HPACK (org.eclipse.jetty.http2:http2-hpack:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-hpack)

- Jetty :: HTTP2 :: Server (org.eclipse.jetty.http2:http2-server:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-server)

- Jetty :: Memcached :: Sessions (org.eclipse.jetty.memcached:jetty-memcached-sessions:9.4.21.v20190916 - https://eclipse.org/jetty/memcached-parent/jetty-memcached-sessions)

- Jetty Orbit :: Activation (org.eclipse.jetty.orbit:javax.activation: 1.1.0.v201105071233 - http://www.eclipse.org/jetty/jetty-orbit/javax.activation)

- Jetty Orbit :: Glassfish Mail (org.eclipse.jetty.orbit:javax.mail.glassfish: 1.4.1.v201005082020 - http://www.eclipse.org/jetty/jetty-orbit/javax.mail.glassfish)

- Jetty Orbit :: JASPI API (org.eclipse.jetty.orbit:javax.security.auth.message: 1.0.0.v201108011116 - http://www.eclipse.org/jetty/jetty-orbit/javax.security.auth.message)

- Jetty Orbit :: JSP JSTL (org.eclipse.jetty.orbit:javax.servlet.jsp.jstl: 1.2.0.v201105211821 - http://www.eclipse.org/jetty/jetty-orbit/javax.servlet.jsp.jstl)

- Jetty :: OSGi :: Boot (org.eclipse.jetty.osgi:jetty-osgi-boot:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty Tests :: JMX :: WebApp (org.eclipse.jetty.tests:jmx-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Test :: CDI :: Common Demo Webapp (org.eclipse.jetty.tests:test-cdi-common-webapp:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-cdi-common-webapp)

- Jetty Tests :: WebApp :: Servlet Spec :: ServletContainerInitializer Test Jar (org.eclipse.jetty.tests:test-container-initializer:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-container-initializer)

- Jetty Tests :: WebApp :: JNDI (org.eclipse.jetty.tests:test-jndi-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty/test-jndi-webapp)

- Jetty Tests :: WebApp :: Mock Resources (org.eclipse.jetty.tests:test-mock-resources:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-mock-resources)

- Jetty Tests :: Sessions :: Common (org.eclipse.jetty.tests:test-sessions-common: 9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty Tests :: Webapps :: Spec Webapp (org.eclipse.jetty.tests:test-spec-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-spec-webapp)

- Jetty Tests :: WebApp :: Servlet Spec :: Fragment Jar (org.eclipse.jetty.tests:test-web-fragment:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-web-fragment)

- Jetty :: Servlet API and Schemas for OSGi (org.eclipse.jetty.toolchain:jetty-osgi-servlet-api:3.1.0.M3 - http://www.eclipse.org/jetty/jetty-toolchain/jetty-osgi-servlet-api)

- Jetty :: Schemas (org.eclipse.jetty.toolchain:jetty-schemas:3.1.2 - https://eclipse.org/jetty/jetty-schemas)

- Jetty Toolchain :: Test Helper (org.eclipse.jetty.toolchain:jetty-test-helper:5.3 - https://eclipse.org/jetty/jetty-test-helper)

- Jetty :: Websocket :: javax.websocket :: Client Implementation (org.eclipse.jetty.websocket:javax-websocket-client-impl:9.4.21.v20190916 - http://www.eclipse.org/jetty/javax-websocket-client-impl)

- Jetty :: Websocket :: javax.websocket.server :: Server Implementation (org.eclipse.jetty.websocket:javax-websocket-server-impl:9.4.21.v20190916 - http://www.eclipse.org/jetty/javax-websocket-server-impl)

- Jetty :: Websocket :: API (org.eclipse.jetty.websocket:websocket-api: 9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-api)

- Jetty :: Websocket :: Client (org.eclipse.jetty.websocket:websocket-client: 9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-client)

- Jetty :: Websocket :: Common (org.eclipse.jetty.websocket:websocket-common: 9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-common)

- Jetty :: Websocket :: Server (org.eclipse.jetty.websocket:websocket-server: 9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-server)

- Jetty :: Websocket :: Servlet Interface (org.eclipse.jetty.websocket:websocket-servlet:9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-servlet)

- org.eclipse.osgi (org.eclipse.osgi:org.eclipse.osgi:3.6.0.v20100517 - http://www.eclipse.org/org.eclipse.osgi)

- org.eclipse.osgi.services (org.eclipse.osgi:org.eclipse.osgi.services: 3.2.100.v20100503 - http://www.eclipse.org/org.eclipse.osgi.services)

- org.eclipse.sisu.inject (org.eclipse.sisu:org.eclipse.sisu.inject:0.3.3 - http://www.eclipse.org/sisu/org.eclipse.sisu.inject/)

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- JOpt Simple (net.sf.jopt-simple:jopt-simple:4.6 - http://pholser.github.com/jopt-simple)

- Checker Qual (org.checkerframework:checker-compat-qual:2.0.0 - http://checkerframework.org)

- Animal Sniffer Annotations (org.codehaus.mojo:animal-sniffer-annotations:1.14 - http://mojo.codehaus.org/animal-sniffer/animal-sniffer-annotations)

- Animal Sniffer Annotations (org.codehaus.mojo:animal-sniffer-annotations:1.9 - http://mojo.codehaus.org/animal-sniffer/animal-sniffer-annotations)

- JCL 1.2 implemented over SLF4J (org.slf4j:jcl-over-slf4j:1.7.25 - http://www.slf4j.org)

- SLF4J API Module (org.slf4j:slf4j-api:1.7.25 - http://www.slf4j.org)

- SLF4J Simple Binding (org.slf4j:slf4j-simple:1.7.25 - http://www.slf4j.org)

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- A Swiss Army Knife for OSGi (biz.aQute.bnd:bndlib:2.4.0 - http://www.aQute.biz/Code/Bnd/bndlib)

- Jackson-core (com.fasterxml.jackson.core:jackson-core:2.1.3 - http://wiki.fasterxml.com/JacksonHome)

- Caffeine cache (com.github.ben-manes.caffeine:caffeine:2.6.2 - https://github.com/ben-manes/caffeine)

- jffi (com.github.jnr:jffi:1.2.16 - http://github.com/jnr/jffi)

- jffi (com.github.jnr:jffi:1.2.17 - http://github.com/jnr/jffi)

- jnr-a64asm (com.github.jnr:jnr-a64asm:1.0.0 - http://nexus.sonatype.org/oss-repository-hosting.html/jnr-a64asm)

- jnr-constants (com.github.jnr:jnr-constants:0.9.11 - http://github.com/jnr/jnr-constants)

- jnr-enxio (com.github.jnr:jnr-enxio:0.20 - http://github.com/jnr/jnr-enxio)

- jnr-ffi (com.github.jnr:jnr-ffi:2.1.9 - http://github.com/jnr/jnr-ffi)

- jnr-unixsocket (com.github.jnr:jnr-unixsocket:0.22 - http://github.com/jnr/jnr-unixsocket)

- Google APIs Client Library for Java (com.google.api-client:google-api-client:1.21.0 - https://github.com/google/google-api-java-client/google-api-client)

- com.google.api.grpc:grpc-google-common-protos (com.google.api.grpc:grpc-google-common-protos:0.1.0 - https://github.com/googleapis/googleapis)

- com.google.api.grpc:proto-google-common-protos (com.google.api.grpc:proto-google-common-protos:0.1.9 - https://github.com/googleapis/googleapis)

- com.google.api.grpc:proto-google-iam-v1 (com.google.api.grpc:proto-google-iam-v1:0.1.9 - https://github.com/googleapis/googleapis)

- AutoValue (com.google.auto.value:auto-value:1.2 - https://github.com/google/auto/auto-value)

- com.google.cloud.datastore:datastore-v1-proto-client (com.google.cloud.datastore:datastore-v1-proto-client:1.3.0 - https://cloud.google.com/datastore/datastore-v1-proto-client/)

- com.google.cloud.datastore:datastore-v1-protos (com.google.cloud.datastore:datastore-v1-protos:1.3.0 - https://cloud.google.com/datastore/)

- FindBugs-jsr305 (com.google.code.findbugs:jsr305:3.0.0 - http://findbugs.sourceforge.net/)

- Gson (com.google.code.gson:gson:2.7 - https://github.com/google/gson/gson)

- Gson (com.google.code.gson:gson:2.8.1 - https://github.com/google/gson/gson)

- error-prone annotations (com.google.errorprone:error_prone_annotations:2.1.3 - http://nexus.sonatype.org/oss-repository-hosting.html/error_prone_parent/error_prone_annotations)

- Guava: Google Core Libraries for Java (com.google.guava:guava:19.0 - https://github.com/google/guava/guava)

- Guava: Google Core Libraries for Java (com.google.guava:guava:25.1-android - https://github.com/google/guava/guava)

- Google HTTP Client Library for Java (com.google.http-client:google-http-client:1.21.0 - https://github.com/google/google-http-java-client/google-http-client)

- Google App Engine extensions to the Google HTTP Client Library for Java. (com.google.http-client:google-http-client-appengine:1.21.0 - https://github.com/google/google-http-java-client/google-http-client-appengine)

- Jackson extensions to the Google HTTP Client Library for Java. (com.google.http-client:google-http-client-jackson:1.21.0 - https://github.com/google/google-http-java-client/google-http-client-jackson)

- Jackson 2 extensions to the Google HTTP Client Library for Java.
  (com.google.http-client:google-http-client-jackson2:1.21.0 - https://github.com/
  google/google-http-java-client/google-http-client-jackson2)

- Protocol Buffer extensions to the Google HTTP Client Library for Java.
  (com.google.http-client:google-http-client-protobuf:1.20.0 - https://github.com/
  google/google-http-java-client/google-http-client-protobuf)

- Google Guice - Core Library (com.google.inject:guice:4.2.1 - https://github.com/
  google/guice/guice)

- J2ObjC Annotations (com.google.j2objc:j2objc-annotations:1.1 - https://
  github.com/google/j2objc/)

- Google OAuth Client Library for Java (com.google.oauth-client:google-oauth-
  client:1.21.0 - https://github.com/google/google-oauth-java-client/google-oauth-
  client)

- xmemcached (com.googlecode.xmemcached:xmemcached:2.4.5 - https://
  github.com/killme2008/xmemcached)

- hazelcast (com.hazelcast:hazelcast:3.9.4 - http://www.hazelcast.com/hazelcast/)

- hazelcast-client (com.hazelcast:hazelcast-client:3.9.4 - http://www.hazelcast.com/
  hazelcast-client/)

- ProtoParser (com.squareup:protoparser:4.0.3 - http://github.com/square/
  protoparser/)

- OkHttp (com.squareup.okhttp:okhttp:2.5.0 - https://github.com/square/okhttp/
  okhttp)

- Okio (com.squareup.okio:okio:1.6.0 - https://github.com/square/okio/okio)

- Apache Commons Codec (commons-codec:commons-codec:1.10 - http://
  commons.apache.org/proper/commons-codec/)

- Codec (commons-codec:commons-codec:1.3 - http://jakarta.apache.org/
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  commons.apache.org/logging)

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- Netty/Buffer (io.netty:netty-buffer:4.1.28.Final - http://netty.io/netty-buffer/)

- Netty/Buffer (io.netty:netty-buffer:4.1.3.Final - http://netty.io/netty-buffer/)

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- Netty/Codec/HTTP2 (io.netty:netty-codec-http2:4.1.3.Final - http://netty.io/netty-
  codec-http2/)

- Netty/Common (io.netty:netty-common:4.1.28.Final - http://netty.io/netty-common/)

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- Netty/Transport/Native/Unix/Common (io.netty:netty-transport-native-unix-common:4.1.28.Final - http://netty.io/netty-transport-native-unix-common/)

- RxJava (io.reactivex.rxjava2:rxjava:2.2.4 - https://github.com/ReactiveX/RxJava)

- Joda-Time (joda-time:joda-time:2.9.2 - http://www.joda.org/joda-time/)

- Apache Ant Core (org.apache.ant:ant:1.8.4 - http://ant.apache.org/ant/)

- Apache Ant Launcher (org.apache.ant:ant-launcher:1.8.4 - http://ant.apache.org/ant-launcher/)

- Apache Avro (org.apache.avro:avro:1.7.6 - http://avro.apache.org)

- Commons Compress (org.apache.commons:commons-compress:1.4.1 - http://commons.apache.org/compress/)

- Apache Commons Lang (org.apache.commons:commons-lang3:3.8.1 - http://commons.apache.org/proper/commons-lang/)

- Commons Math (org.apache.commons:commons-math3:3.2 - http://commons.apache.org/proper/commons-math/)

- Apache Felix Framework (org.apache.felix:org.apache.felix.framework:6.0.3 - http://felix.apache.org/org.apache.felix.framework/)

- HttpClient (org.apache.httpcomponents:httpclient:4.0.1 - http://hc.apache.org/httpcomponents-client)

- Apache HttpClient (org.apache.httpcomponents:httpclient:4.5.6 - http://hc.apache.org/httpcomponents-client)

- HttpCore (org.apache.httpcomponents:httpcore:4.0.1 - http://hc.apache.org/httpcomponents-core/)

- Apache HttpCore (org.apache.httpcomponents:httpcore:4.4.10 - http://hc.apache.org/httpcomponents-core-ga)

- Lucene Common Analyzers (org.apache.lucene:lucene-analyzers-common:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-analyzers-common)

- Lucene Core (org.apache.lucene:lucene-core:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-core)

- Lucene Facets (org.apache.lucene:lucene-facet:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-facet)

- Lucene Miscellaneous (org.apache.lucene:lucene-misc:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-misc)

- Lucene Queries (org.apache.lucene:lucene-queries:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-queries)

- Lucene QueryParsers (org.apache.lucene:lucene-queryparser:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-queryparser)

- EL 2.2 plugin (org.apache.openwebbeans:openwebbeans-el22:2.0.11 - openwebbeans.apache.org/openwebbeans-el22)

- OpenWebBeans Core (org.apache.openwebbeans:openwebbeans-impl:2.0.11 - openwebbeans.apache.org/openwebbeans-impl)

- Jetty 9 plugin (org.apache.openwebbeans:openwebbeans-jetty9:2.0.11 - openwebbeans.apache.org/openwebbeans-jetty9)

- SPI definition (org.apache.openwebbeans:openwebbeans-spi:2.0.11 - openwebbeans.apache.org/openwebbeans-spi)

- Web plugin (org.apache.openwebbeans:openwebbeans-web:2.0.11 - openwebbeans.apache.org/openwebbeans-web)

- Apache Standard Taglib Implementation (org.apache.taglibs:taglibs-standard-impl:1.2.5 - http://tomcat.apache.org/taglibs/standard-1.2.5/taglibs-standard-impl)

- Apache Standard Taglib Specification API (org.apache.taglibs:taglibs-standard-spec:1.2.5 - http://tomcat.apache.org/taglibs/standard-1.2.5/taglibs-standard-spec)

- org.apiguardian:apiguardian-api (org.apiguardian:apiguardian-api:1.1.0 - https://github.com/apiguardian-team/apiguardian)

- Jackson (org.codehaus.jackson:jackson-core-asl:1.9.11 - http://jackson.codehaus.org)

- Jackson (org.codehaus.jackson:jackson-core-asl:1.9.13 - http://jackson.codehaus.org)

- Data Mapper for Jackson (org.codehaus.jackson:jackson-mapper-asl:1.9.13 - http://jackson.codehaus.org)

- Plexus Classworlds (org.codehaus.plexus:plexus-classworlds:2.5.2 - http://plexus.codehaus.org/plexus-classworlds/)

- Plexus :: Component Annotations (org.codehaus.plexus:plexus-component-annotations:1.5.5 - http://plexus.codehaus.org/plexus-containers/plexus-component-annotations/)

- Plexus :: Component Annotations (org.codehaus.plexus:plexus-component-annotations:1.7.1 - http://codehaus-plexus.github.io/plexus-containers/plexus-component-annotations/)

- Plexus Interpolation API (org.codehaus.plexus:plexus-interpolation:1.11 - http://plexus.codehaus.org/plexus-components/plexus-interpolation)

- Plexus Interpolation API (org.codehaus.plexus:plexus-interpolation:1.25 - http://codehaus-plexus.github.io/plexus-interpolation/)

- Plexus Common Utilities (org.codehaus.plexus:plexus-utils:3.1.0 - http://codehaus-plexus.github.io/plexus-utils/)

- org.conscrypt:conscrypt-openjdk-uber (org.conscrypt:conscrypt-openjdk-uber:2.1.0 - https://conscrypt.org/)

- Jetty :: Apache JSP Implementation (org.eclipse.jetty:apache-jsp:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Apache :: JSTL module (org.eclipse.jetty:apache-jstl:9.4.21.v20190916 - http://tomcat.apache.org/taglibs/standard/)

- Jetty :: Infinispan Session Manager Common (org.eclipse.jetty:infinispan-common: 9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Infinispan Session Manager Remote (org.eclipse.jetty:infinispan-remote-query:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: ALPN :: Client (org.eclipse.jetty:jetty-alpn-client:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-client)

- Jetty :: ALPN :: Conscrypt Server Implementation (org.eclipse.jetty:jetty-alpn-conscrypt-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-conscrypt-server)

- Jetty :: ALPN :: OpenJDK8 Client Implementation (org.eclipse.jetty:jetty-alpn-openjdk8-client:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-openjdk8-client)

- Jetty :: ALPN :: OpenJDK8 Server Implementation (org.eclipse.jetty:jetty-alpn-openjdk8-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-openjdk8-server)

- Jetty :: ALPN :: Server (org.eclipse.jetty:jetty-alpn-server:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-alpn-parent/jetty-alpn-server)

- Jetty :: Servlet Annotations (org.eclipse.jetty:jetty-annotations:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Asynchronous HTTP Client (org.eclipse.jetty:jetty-client:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Continuation (org.eclipse.jetty:jetty-continuation:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Deployers (org.eclipse.jetty:jetty-deploy:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Distribution Assemblies (org.eclipse.jetty:jetty-distribution: 9.4.21.v20190916 - https://eclipse.org/jetty/jetty-distribution)

- Jetty :: Hazelcast Session Manager (org.eclipse.jetty:jetty-hazelcast: 9.4.21.v20190916 - https://eclipse.org/jetty/jetty-hazelcast)

- Jetty :: Http Utility (org.eclipse.jetty:jetty-http:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: IO Utility (org.eclipse.jetty:jetty-io:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: JAAS (org.eclipse.jetty:jetty-jaas:9.4.21.v20190916 - https://eclipse.org/jetty/jetty-jaas)

- Jetty :: JMX Management (org.eclipse.jetty:jetty-jmx:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: JNDI Naming (org.eclipse.jetty:jetty-jndi:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: NoSQL Session Managers (org.eclipse.jetty:jetty-nosql:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Plus (org.eclipse.jetty:jetty-plus:9.4.21.v20190916 - http://www.eclipse.org/jetty)

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- Jetty :: Quick Start (org.eclipse.jetty:jetty-quickstart:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Rewrite Handler (org.eclipse.jetty:jetty-rewrite:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Security (org.eclipse.jetty:jetty-security:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Server Core (org.eclipse.jetty:jetty-server:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Servlet Handling (org.eclipse.jetty:jetty-servlet:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Utility Servlets and Filters (org.eclipse.jetty:jetty-servlets:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Utilities (org.eclipse.jetty:jetty-util:9.3.0.RC0 - http://www.eclipse.org/jetty)

- Jetty :: Utilities (org.eclipse.jetty:jetty-util:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Utilities :: Ajax(JSON) (org.eclipse.jetty:jetty-util-ajax:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: Webapp Application Support (org.eclipse.jetty:jetty-webapp:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: XML utilities (org.eclipse.jetty:jetty-xml:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Test :: Jetty Test Webapp (org.eclipse.jetty:test-jetty-webapp:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty :: ALPN :: API (org.eclipse.jetty.alpn:alpn-api:1.1.3.v20160715 - http://www.eclipse.org/jetty/alpn-api)

- Example Async Rest :: Jar (org.eclipse.jetty.example-async-rest:example-async-rest-jar:9.4.21.v20190916 - https://eclipse.org/jetty/examples-parent/example-async-rest/example-async-rest-jar)

- Jetty :: FastCGI :: Client (org.eclipse.jetty.fcgi:fcgi-client:9.4.21.v20190916 - https://eclipse.org/jetty/fcgi-parent/fcgi-client)

- Jetty :: GCloud :: Session Manager (org.eclipse.jetty.gcloud:jetty-gcloud-session-manager:9.4.21.v20190916 - https://eclipse.org/jetty/gcloud-parent/jetty-gcloud-session-manager)

- Jetty :: HTTP2 :: Client (org.eclipse.jetty.http2:http2-client:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-client)

- Jetty :: HTTP2 :: Common (org.eclipse.jetty.http2:http2-common:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-common)

- Jetty :: HTTP2 :: HPACK (org.eclipse.jetty.http2:http2-hpack:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-hpack)

- Jetty :: HTTP2 :: Server (org.eclipse.jetty.http2:http2-server:9.4.21.v20190916 - https://eclipse.org/jetty/http2-parent/http2-server)

- Jetty :: Memcached :: Sessions (org.eclipse.jetty.memcached:jetty-memcached-sessions:9.4.21.v20190916 - https://eclipse.org/jetty/memcached-parent/jetty-memcached-sessions)

- Jetty Orbit :: Activation (org.eclipse.jetty.orbit:javax.activation: 1.1.0.v201105071233 - http://www.eclipse.org/jetty/jetty-orbit/javax.activation)

- Jetty Orbit :: Glassfish Mail (org.eclipse.jetty.orbit:javax.mail.glassfish: 1.4.1.v201005082020 - http://www.eclipse.org/jetty/jetty-orbit/javax.mail.glassfish)

- Jetty Orbit :: JASPI API (org.eclipse.jetty.orbit:javax.security.auth.message: 1.0.0.v201108011116 - http://www.eclipse.org/jetty/jetty-orbit/javax.security.auth.message)

- Jetty Orbit :: JSP JSTL (org.eclipse.jetty.orbit:javax.servlet.jsp.jstl: 1.2.0.v201105211821 - http://www.eclipse.org/jetty/jetty-orbit/javax.servlet.jsp.jstl)

- Jetty :: OSGi :: Boot (org.eclipse.jetty.osgi:jetty-osgi-boot:9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty Tests :: JMX :: WebApp (org.eclipse.jetty.tests:jmx-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Test :: CDI :: Common Demo Webapp (org.eclipse.jetty.tests:test-cdi-common-webapp:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-cdi-common-webapp)

- Jetty Tests :: WebApp :: Servlet Spec :: ServletContainerInitializer Test Jar (org.eclipse.jetty.tests:test-container-initializer:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-container-initializer)

- Jetty Tests :: WebApp :: JNDI (org.eclipse.jetty.tests:test-jndi-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty/test-jndi-webapp)

- Jetty Tests :: WebApp :: Mock Resources (org.eclipse.jetty.tests:test-mock-resources:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-mock-resources)

- Jetty Tests :: Sessions :: Common (org.eclipse.jetty.tests:test-sessions-common: 9.4.21.v20190916 - http://www.eclipse.org/jetty)

- Jetty Tests :: Webapps :: Spec Webapp (org.eclipse.jetty.tests:test-spec-webapp: 9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-spec-webapp)

- Jetty Tests :: WebApp :: Servlet Spec :: Fragment Jar (org.eclipse.jetty.tests:test-web-fragment:9.4.21.v20190916 - http://www.eclipse.org/jetty/test-servlet-spec-parent/test-web-fragment)

- Jetty :: Servlet API and Schemas for OSGi (org.eclipse.jetty.toolchain:jetty-osgi-servlet-api:3.1.0.M3 - http://www.eclipse.org/jetty/jetty-toolchain/jetty-osgi-servlet-api)

- Jetty :: Schemas (org.eclipse.jetty.toolchain:jetty-schemas:3.1.2 - https://eclipse.org/jetty/jetty-schemas)

- Jetty Toolchain :: Test Helper (org.eclipse.jetty.toolchain:jetty-test-helper:5.3 - https://eclipse.org/jetty/jetty-test-helper)

- Jetty :: Websocket :: javax.websocket :: Client Implementation (org.eclipse.jetty.websocket:javax-websocket-client-impl:9.4.21.v20190916 - http://www.eclipse.org/jetty/javax-websocket-client-impl)

- Jetty :: Websocket :: javax.websocket.server :: Server Implementation (org.eclipse.jetty.websocket:javax-websocket-server-impl:9.4.21.v20190916 - http://www.eclipse.org/jetty/javax-websocket-server-impl)

- Jetty :: Websocket :: API (org.eclipse.jetty.websocket:websocket-api:
  9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-api)

- Jetty :: Websocket :: Client (org.eclipse.jetty.websocket:websocket-client:
  9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-client)

- Jetty :: Websocket :: Common (org.eclipse.jetty.websocket:websocket-common:
  9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-common)

- Jetty :: Websocket :: Server (org.eclipse.jetty.websocket:websocket-server:
  9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-server)

- Jetty :: Websocket :: Servlet Interface (org.eclipse.jetty.websocket:websocket-
  servlet:9.4.21.v20190916 - http://www.eclipse.org/jetty/websocket-servlet)

- Infinispan Hot Rod Client (org.infinispan:infinispan-client-hotrod:9.4.8.Final - http://
  www.infinispan.org/infinispan-client-hotrod)

- Infinispan Commons (org.infinispan:infinispan-commons:9.4.8.Final - http://
  www.infinispan.org/infinispan-commons)

- Infinispan Core (org.infinispan:infinispan-core:9.4.8.Final - http://
  www.infinispan.org/infinispan-core)

- Infinispan Directory Provider for Hibernate Search (org.infinispan:infinispan-
  directory-provider:9.4.8.Final - http://www.infinispan.org/infinispan-lucene-parent/
  infinispan-directory-provider)

- Infinispan Lucene Directory Implementation (org.infinispan:infinispan-lucene-
  directory:9.4.8.Final - http://www.infinispan.org/infinispan-lucene-parent/infinispan-
  lucene-directory)

- Infinispan Object Querying and Filtering API (org.infinispan:infinispan-objectfilter:
  9.4.8.Final - http://www.infinispan.org/infinispan-objectfilter)

- Infinispan Query (org.infinispan:infinispan-query:9.4.8.Final - http://
  www.infinispan.org/infinispan-query)

- Infinispan Query DSL API (org.infinispan:infinispan-query-dsl:9.4.8.Final - http://
  www.infinispan.org/infinispan-query-dsl)

- Infinispan Remote Query Client (org.infinispan:infinispan-remote-query-client:
  9.4.8.Final - http://www.infinispan.org/infinispan-remote-query-client)

- ProtoStream - core (org.infinispan.protostream:protostream:4.2.2.Final - http://
  infinispan.org/protostream)

- classfilewriter (org.jboss.classfilewriter:jboss-classfilewriter:1.2.4.Final - https://
  github.com/jbossas/jboss-classfilewriter)

- JBoss Logging 3 (org.jboss.logging:jboss-logging:3.3.2.Final - http://
  www.jboss.org)

- JBoss Marshalling OSGi Bundle (org.jboss.marshalling:jboss-marshalling-osgi:
  2.0.6.Final - http://www.jboss.org/jboss-marshalling-parent/jboss-marshalling-osgi)

- Weld APIs (org.jboss.weld:weld-api:3.1.SP1 - http://weld.cdi-spec.org)

- Weld Implementation (Core) (org.jboss.weld:weld-core-impl:3.1.2.Final - http://
  weld.cdi-spec.org)

- Weld SPIs for container integration (org.jboss.weld:weld-spi:3.1.SP1 - http://
  weld.cdi-spec.org)

- Weld Environment Common (org.jboss.weld.environment:weld-environment-
  common:3.1.2.Final - http://weld.cdi-spec.org)

- Weld JSF (org.jboss.weld.module:weld-jsf:3.1.2.Final - http://weld.cdi-spec.org)

- Weld Web (org.jboss.weld.module:weld-web:3.1.2.Final - http://weld.cdi-spec.org)

- Weld Probe Core (org.jboss.weld.probe:weld-probe-core:3.1.2.Final - http://weld.cdi-spec.org/weld-core-parent/weld-probe-parent/weld-probe-core)

- Weld Servlet Core (org.jboss.weld.servlet:weld-servlet-core:3.1.2.Final - http://weld.cdi-spec.org)

- JGroups (org.jgroups:jgroups:4.0.18.Final - http://www.jgroups.org)

- MongoDB Java Driver (org.mongodb:mongo-java-driver:2.13.2 - http://www.mongodb.org)

- MortBay :: Apache EL :: API and Implementation (org.mortbay.jasper:apache-el:8.5.40 - https://github.com/jetty-project/jasper-jsp/apache-el)

- MortBay :: Apache Jasper :: JSP Implementation (org.mortbay.jasper:apache-jsp:8.5.40 - https://github.com/jetty-project/jasper-jsp/apache-jsp)

- org.opentest4j:opentest4j (org.opentest4j:opentest4j:1.2.0 - https://github.com/ota4j-team/opentest4j)

- Plexus Cipher: encryption/decryption Component (org.sonatype.plexus:plexus-cipher:1.4 - http://spice.sonatype.org/plexus-cipher)

- Plexus Security Dispatcher Component (org.sonatype.plexus:plexus-sec-dispatcher:1.4 - http://spice.sonatype.org/plexus-sec-dispatcher)

- Sisu - Guice (org.sonatype.sisu:sisu-guice:2.1.7 - http://forge.sonatype.com/sisu-guice/)

- Sisu - Inject (JSR330 bean support) (org.sonatype.sisu:sisu-inject-bean:1.4.2 - http://sisu.sonatype.org/sisu-inject/guice-bean/sisu-inject-bean/)

- Sisu - Inject (Plexus bean support) (org.sonatype.sisu:sisu-inject-plexus:1.4.2 - http://sisu.sonatype.org/sisu-inject/guice-bean/guice-plexus/sisu-inject-plexus/)

- Spring Beans (org.springframework:spring-beans:3.2.8.RELEASE - https://github.com/SpringSource/spring-framework)

- Spring Core (org.springframework:spring-core:3.2.8.RELEASE - https://github.com/SpringSource/spring-framework)

- Google Cloud Core (com.google.cloud:google-cloud-core:1.0.0 - https://github.com/GoogleCloudPlatform/google-cloud-java/tree/master/google-cloud-core)

- Google Cloud Core HTTP (com.google.cloud:google-cloud-core-http:1.0.0 - https://github.com/GoogleCloudPlatform/google-cloud-java/tree/master/google-cloud-core-http)

- Google Cloud Datastore (com.google.cloud:google-cloud-datastore:1.0.0 - https://github.com/GoogleCloudPlatform/google-cloud-java/tree/master/google-cloud-datastore)

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The JSON License:

- JSON in Java (org.json:json:20160810 - https://github.com/douglascrockford/JSON-java)

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A.27 Kerberos 1.16.2 License

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in src/lib/gssapi, including the following files:

```
lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
```

lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
slave/kpropd_rpc.c
slave/kproplog.c

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log4j-api
log4j-appserver
log4j-bom
log4j-cassandra
log4j-core-its
```

```
log4j-core-java9
log4j-core
log4j-couchdb
log4j-distribution
log4j-flume-ng
log4j-iostreams
log4j-jcl
log4j-jdbc-dbcp2
log4j-jmx-gui
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Name: lapack-lite

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Version 2.8.0

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==========

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The language is intended to be practical (easy to use, efficient, complete) rather than beautiful (tiny, elegant, minimal). Its major features are that it's easy to use, supports both procedural and object-oriented (OO) programming, has powerful built-in support for text processing, and has one of the world's most impressive collections of third-party modules.

For an introduction to the language's features, see pod/perlintro.pod.

For a discussion of the important changes in this release, see pod/perldelta.pod.

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A C-program for MT19937, with initialization improved 2002/1/26. Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using init_genrand(seed) or init_by_array(init_key, key_length).

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http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/emt.html

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The :mod:'socket' module uses the functions, :func:'getaddrinfo', and :func:'getnameinfo', which are coded in separate source files from the WIDE Project, http://www.wide.ad.jp/. ::

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.

- Arguments more compliant with Python standard

XML Remote Procedure Calls

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Select kqueue

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SipHash24

The file :file:'Python/pyhash.c' contains Marek Majkowski' implementation of Dan Bernstein's SipHash24 algorithm. The contains the following note::

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Original location:

https://github.com/majek/csiphash/

Solution inspired by code from:

Samuel Neves (supercop/crypto_auth/siphash24/little)

djb (supercop/crypto_auth/siphash24/little2)

Jean-Philippe Aumasson (https://131002.net/siphash/siphash24.c)

strtod and dtoa

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```
Jean-loup Gailly        Mark Adler
jloup@gzip.org          madler@alumni.caltech.edu
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cfuhash

The implementation of the hash table used by the :mod:'tracemalloc' is based on the cfuhash project::

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Lib/turtle.py

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Lib/logging/__init__.py

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Lib/multiprocessing/__init__.py

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Lib/profile.py

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Lib/tarfile.py

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Lib/unittest/__init__.py

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Modules/_localemodule.c

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Python/getopt.c

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install-sh

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Python/dynamic_annotations.c

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Modules/_blake2/*

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Name: Six

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- R. H. Byrd, P. Lu and J. Nocedal. A Limited Memory Algorithm for Bound Constrained Optimization, (1995), SIAM Journal on Scientific and Statistical Computing, 16, 5, pp. 1190-1208.

- C. Zhu, R. H. Byrd and J. Nocedal. L-BFGS-B: Algorithm 778: L-BFGS-B, FORTRAN routines for large scale bound constrained optimization (1997), ACM Transactions on Mathematical Software, 23, 4, pp. 550 - 560.

- J.L. Morales and J. Nocedal. L-BFGS-B: Remark on Algorithm 778: L-BFGS-B, FORTRAN routines for large scale bound constrained optimization (2011), ACM Transactions on Mathematical Software, 38, 1.

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This code may require the following fourth party dependencies:

XML::Simple requires either XML::Parser or XML::SAX.

To generate documents with namespaces, XML::NamespaceSupport is required.

The optional caching functions require Storable.

- - - - - -- - - - -

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AUTHORS

Larry Wall <larry@wall.org> wrote version 1.0.

Clark Cooper <coopercc@netheaven.com> picked up support, changed the API for this version (2.x), provided documentation, and added some standard package features.

Matt Sergeant <matt@sergeant.org> is now maintaining XML::Parser

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AUTHOR

Current maintainer: Grant McLean, grantm@cpan.org

Originally written by:

Matt Sergeant, matt@sergeant.org

Kip Hampton, khampton@totalcinema.com

Robin Berjon, robin@knowscape.com

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Robin Berjon <robin@knowscape.com>

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Storable was written by Raphael Manfredi <Raphael_Manfredi@pobox.com> Maintenance is now done by cperl http://perl11.org/cperl

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Additional Dependencies:

geojson-rewind

https://github.com/mapbox/geojson-rewind/blob/
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geojson-vt

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point-geometry

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vector-tile

https://github.com/mapbox/vector-tile-js/blob/
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vt-pbf

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whoots-js

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gl-matrix

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Csscolorparser

https://github.com/deanm/css-color-parser-js/blob/master/README

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feature-filter

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grid-index

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shelf-pack

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Unitbezier

http://svn.webkit.org/repository/webkit/trunk/Source/WebCore/platform/graphics/ UnitBezier.h

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Quickselect

https://www.npmjs.com/package/quickselect

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"name": "unflowify",
+  "version": "1.0.0",
+  "description": "Browserify transform for removing Flow type
annotations.",
+  "author": "Lee Byron lee@leebyron.com> (http://leebyron.com/)",
+  "license": "BSD-3-Clause",
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Request

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3153436404fca865a65649d46eb22d9797128c9d/LICENSE

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Tinyqueue

https://github.com/mourner/tinyqueue/blob/
4506f90a4d5a0521677e47dd97a379486de72c95/package.json

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```
"author": "",
"license": "ISC",
"bugs": {
  "url": https://github.com/mourner/tinyqueue/issues
```

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dateutil - Extensions to the standard Python datetime module.

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