

Oracle® Database

Database Licensing Information User Manual



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ORACLE®

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Preface

This Preface contains these topics:

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Audience

This book is intended for all purchasers of Oracle Database 18c.

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>.

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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
- Oracle Global Pricing and Licensing, 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.
<i>italic</i>	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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Licensing Information

- [Introduction](#)
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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	<p>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.</p> <p>Oracle Database Enterprise Edition can be enhanced with the purchase of Oracle Database options and Oracle management packs.</p>
Oracle Database Enterprise Edition on Engineered Systems	On-Premise	EE-ES	<p>Oracle Database Enterprise Edition software installed on an on-premise engineered system (Oracle Exadata Database Machine or Oracle Database Appliance).</p> <p>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.</p> <p>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.</p>
Oracle Database Personal Edition	On-Premise	PE	<p>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.</p> <p>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.</p>
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:

- Consolidation - [Table 1-2](#)
- Development Platform - [Table 1-3](#)
- High Availability - [Table 1-4](#)
- Integration - [Table 1-5](#)
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- Scalability - [Table 1-9](#)
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- Snapshots and Cloning - [Table 1-11](#)
- Spatial and Graph Data - [Table 1-12](#)
- VLDB, Data Warehousing, and Business Intelligence - [Table 1-13](#)

Table 1-2 Consolidation

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Multitenant - # of PDBs	1	252	4096	1	1	4096	4096	4096	<p>The number value in each column indicates the maximum number of pluggable databases (PDBs) that can be created for each offering.</p> <ul style="list-style-type: none"> For all offerings, if you are not licensed for Oracle Multitenant, then the container database architecture is available in single-tenant mode, that is, with one user-created PDB, one user-created application root, and one user-created proxy PDB. 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. <p>Note: For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB.</p>
CDB Fleet Management	N	N	Y	N	Y	Y	Y	Y	
PDB Snapshot Carousel	N	N	Y	N	Y	Y	Y	Y	
Refreshable PDB switchover	N	N	Y	Y	Y	Y	Y	Y	

Table 1-3 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 1-4 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
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	Y	Y	Y	N	N	N	N	Y	EE and EE-ES : Extra cost option

Table 1-4 (Cont.) High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
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	N	N	Y	Y	EE-ES : Requires the Oracle Active Data Guard option
Oracle Active Data Guard	N	Y	Y	N	N	N	Y	Y	EE and EE-ES : Extra cost option
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	

Table 1-4 (Cont.) High Availability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
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	
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 1-5 Integration

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Streams	Y	Y	Y	Y	Y	Y	Y	Y	SE2 and DBCS SE : no capture from redo

Table 1-5 (Cont.) 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 1-6 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 1-6 (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	<p>SQL Plan Management does not require a license for Oracle Diagnostics Pack or Oracle Tuning Pack</p> <p>SE2 and DBCS SE Summary: Only one SQL plan baseline per SQL statement is allowed and SQL plan evolution is disabled.</p> <p>SE2 and DBCS SE Details:</p> <ol style="list-style-type: none"> SQL plan baselines can be created or captured using the following methods: <ul style="list-style-type: none"> 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 All capture and creation methods store only one SQL plan baseline per SQL statement. 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. Unused SQL plan baselines are not auto-purged.

Table 1-6 (Cont.) Manageability

Feature / Option / Pack	SE2	EE	EE- ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
									<ul style="list-style-type: none"> 5. Alternative SQL execution plans for SQL statements are not 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.

Table 1-6 (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

Table 1-7 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 1-7 (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 1-8 Performance

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
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
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 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.

Table 1-8 (Cont.) Performance

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
In-Memory Column Store on Active Data Guard standby	N	N	Y	N	N	N	N	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	N	N	Y	N	N	N	Y	Y	EE-ES: Requires the Oracle Database In-Memory option
In-Memory Column Store support for External Tables	N	N	Y	N	N	N	N	Y	EE-ES: Available on Exadata. Not available on Oracle Database Appliance.
In-Memory Aggregation	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	N	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.

Table 1-9 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)	Y	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

Table 1-9 (Cont.) Scalability

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle NoSQL Database Enterprise Edition	N	Y	Y	N/A	N/A	N/A	N/A	N/A	

Table 1-10 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

Table 1-10 (Cont.) Security

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
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 1-11 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 1-12 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 1-13 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
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	

Table 1-13 (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
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	
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 1-14](#) 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 1-14 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	<p>Oracle Active Data Guard includes the following features:</p> <ul style="list-style-type: none"> • 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 <p>In an Oracle Data Guard configuration:</p> <ul style="list-style-type: none"> • 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. <p>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 or Real-Time Cascade 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.</p> <ul style="list-style-type: none"> • The container root (<code>CDB\$Root</code>) 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 1-14 (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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Transparent Data Encryption (TDE) for tablespaces and columns (including Oracle SecureFiles) • DataPump Export File encryption • RMAN backup encryption to disk • Encrypted Database File System (DBFS) • 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. <p>Note: Network encryption (native network encryption, network data integrity, 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.</p>

Table 1-14 (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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Separation of Duties • Realms • Command Rules • Trusted Paths <p>Oracle Database Vault includes special license rights for Oracle Label Security. Refer to Oracle Database Vault in "Special License Rights" for more information.</p> <p>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.</p>
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: <ul style="list-style-type: none"> • 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) <p>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.</p>

Table 1-14 (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	<p>Oracle Machine Learning includes the following features:</p> <ul style="list-style-type: none"> In-database algorithms for Oracle Machine Learning for SQL (OML4SQL) (formerly Oracle Data Mining): <ul style="list-style-type: none"> 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): <ul style="list-style-type: none"> 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	<p>Oracle Multitenant includes the following features:</p> <ul style="list-style-type: none"> 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 <p>A restricted use license for Oracle Multitenant is included with all Oracle Database offerings. Refer to Oracle Multitenant in "Restricted Use Licenses" for more information.</p> <p>Note: For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB.</p>
Oracle On-Line Analytical Processing (OLAP)	Extra cost option: EE, EE-ES Included option: PE, DBCS EE-HP, DBCS EE-EP, ExaCS	<p>Oracle On-Line Analytical Processing (OLAP) includes the following features:</p> <ul style="list-style-type: none"> 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	<p>Oracle Partitioning includes the following features:</p> <ul style="list-style-type: none"> Table Partitions and Subpartitions Global and Local Index Partitions and Subpartitions Sharded Queues Zone Maps (Available only on EE-ES and ExaCS – requires Exadata or Supercluster)

Table 1-14 (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
Oracle RAC One Node	Extra cost option: EE , EE-ES Included option: SE2 , ExaCS	Oracle RAC One Node includes the following features: <ul style="list-style-type: none"> • 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: SE2, DBCS EE-EP , ExaCS	Oracle Real Application Clusters (Oracle RAC) includes the following features: <ul style="list-style-type: none"> • 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 1-14 (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	<p>Oracle Real Application Testing includes the following features:</p> <ul style="list-style-type: none"> • Database Replay • SQL Performance Analyzer (SPA) • Database Consolidation Workbench <p>Database Replay</p> <ul style="list-style-type: none"> • 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: <code>DBMS_WORKLOAD_CAPTURE</code> package and <code>DBMS_WORKLOAD_REPLAY</code> package. The use of the <code>DBMS_WORKLOAD_REPLAY.COMPARE_PERIOD_REPORT()</code> function also requires a license for Oracle Diagnostics Pack. <p>SQL Performance Analyzer (SPA)</p> <p>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: <code>DBMS_SQLPA</code> package, which is part of the Oracle Real Application Testing option.</p> <p>Database Consolidation Workbench</p> <ul style="list-style-type: none"> • Database Consolidation Workbench, introduced in Oracle Enterprise Manager Cloud Control 13c, 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: <ul style="list-style-type: none"> – 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 1-14 (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	<p>Oracle Spatial and Graph includes the following features:</p> <ul style="list-style-type: none"> • Geospatial Data Features • Graph Database Features <p>Geospatial Data Features</p> <ul style="list-style-type: none"> • 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 <p>Graph Database Features</p> <p>Graph database features include the following models:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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 1-14 (Cont.) Oracle Database Options and Their Permitted Features

Option	Availability	Included Features
		<ul style="list-style-type: none"> – 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: <ul style="list-style-type: none"> – 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: <ul style="list-style-type: none"> – 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 <p>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.</p>
Oracle TimesTen Application-Tier Database Cache	Extra cost option: EE , EE-ES Included option: PE	<p>Oracle TimesTen Application-Tier Database Cache includes the following features:</p> <ul style="list-style-type: none"> • 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 1-15](#) 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 1-15 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	<p>Features:</p> <p>Oracle Cloud Management Pack for Oracle Database includes the following features:</p> <ul style="list-style-type: none"> • 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 <p>Prerequisites:</p> <p>Oracle Cloud Management Pack for Oracle Database requires Oracle Database Lifecycle Management Pack for Oracle Database.</p> <p>Licensed Links:</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Cloud Management Pack for Oracle Database.</p> <p>Starting on the Enterprise Summary home page, click the Enterprise menu. Select:</p> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>Starting on the Enterprise Summary home page, click the Setup menu. Select:</p> <ul style="list-style-type: none"> • Cloud. Select Infrastructure • Cloud. Select Database • Provisioning and Patching, then Storage Registration <p>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.</p> <p>Licensed APIs:</p> <p>Use of the following APIs requires a license for Oracle Cloud Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Command Line Interface (CLI) Verbs:</p> <p>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.</p> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • list_charge_item_candidates • remove_pool_members • update_dbaas_quota • update_dbaas_request_settings • update_pool <p>Licensed Views and Tables:</p> <p>The following objects within the repository schema are licensed under Oracle Cloud Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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 <p>Licensed Chargeback Reports:</p> <p>The following BI Publisher reports are licensed under Oracle Cloud Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • Charge Trend Report • Charge Summary Report • Usage Trend Report • Usage Summary Report <p>Also, any report created using the "create-like" feature of BI publisher referring the preceding reports, falls under this license.</p>

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Data Masking and Subsetting Pack	<p>Extra cost pack: EE, EE-ES</p> <p>Included pack: DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS</p>	<p>Features:</p> <p>Oracle Data Masking and Subsetting Pack includes the following features:</p> <ul style="list-style-type: none"> • 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 <p>Oracle Data Masking and Subsetting Pack includes the following restricted use licenses:</p> <ul style="list-style-type: none"> • Database Gateway for APPC • Database Gateway for DRDA • Database Gateway for Informix • Database Gateway for SQLServer • Database Gateway for Sybase • Database Gateway for Teradata <p>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.</p> <p>Oracle Data Masking and Subsetting Pack must be licensed only for the source database server, i.e., the databases from which the data originates.</p> <p>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.</p> <p>Notes:</p> <ol style="list-style-type: none"> 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. <p>Licensed Links:</p> <p>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.</p>

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>Starting on the Enterprise Summary home page, click the Enterprise menu, then Quality Management, then select:</p> <ul style="list-style-type: none"> • Application Data Modeling • Data Masking Definitions • Data Masking Formats • Data Subset Definitions <p>From the Oracle database or cluster database target home page, click the Security menu, then select:</p> <ul style="list-style-type: none"> • Application Data Modeling • Data Masking Definitions • Data Subsetting

Table 1-15 (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	<p>Features:</p> <p>Oracle Database Lifecycle Management Pack for Oracle Database includes the following features:</p> <ul style="list-style-type: none"> • 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) <p>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.</p> <ul style="list-style-type: none"> • Application Configuration Console • The <code>oplan</code> 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 <p>Licensed Parameters:</p> <p>The <code>init.ora</code> parameter <code>ENABLE_DDL_LOGGING</code> is licensed as part of Oracle Database Lifecycle Management Pack for Oracle</p>

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>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.</p> <p>Licensed Links:</p> <p>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.</p> <p>Licensed Links – Database Provisioning Procedures:</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – Database Upgrade:</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – User Defined Deployment Procedures (UDDP)</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – RAC Scale Out and Scale Back</p>

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – Database Patching</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – Offline Patching</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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. <p>Licensed Links – Configuration Instance Browser</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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.

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>Licensed Links – Configuration Search</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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. <p>Licensed Links – Configuration History</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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. <p>Licensed Links – Configuration Compare</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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. <p>Licensed Links – Configuration Save</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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. <p>Licensed Links – Configuration Topology</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> From the Target Home Page, click on Oracle Database, Configuration, Topology. In the View drop-down, Used

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>By is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</p> <ul style="list-style-type: none"> – 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. <p>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:</p> <ul style="list-style-type: none"> • 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. <p>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:</p> <ul style="list-style-type: none"> • 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. <p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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. <p>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:</p> <ul style="list-style-type: none"> • 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.

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • If the Target Home Page is accessed directly or by other paths: <ul style="list-style-type: none"> – 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. <p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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. <p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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. <p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – From the database home page, click on Schema, Change Management. All features, functions, links, buttons,

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</p> <p>Licensed Links – Real-time Configuration Change Detection and Compliance:</p> <p>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> 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. <p>Licensed Reports:</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> Compliance Deployment and Configuration Sample Host reports, Configuration Reports Security <p>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:</p> <ul style="list-style-type: none"> Compliance Deployment and Configuration Sample Host reports, Configuration Reports Security <p>Licensed Command Line Interface (CLI) Verbs:</p> <p>The following Enterprise Manager Command Line Interface (CLI) verbs are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</p> <ul style="list-style-type: none"> 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • 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
		<p>Licensed Repository Views – Compliance Views:</p> <p>The following compliance views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • 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 <p>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:</p> <ul style="list-style-type: none"> • EM\$PROV_APPTYPES • EM\$PROVAPP_METADATA • EM\$PROVAPP_METADATA_VERSION • EM\$PROVAPP_TAG_PROPERTIES • EM\$PROVAPP_TAGS • MGMT\$PA_RECOM_METRIC_SOURCE <p>Licensed Repository Views – Patching Views: The following patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • GC\$EM_PC_PLAN_PATCHES

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • 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 <p>Licensed Repository Views – Configuration Views: The following configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • 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 <p>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:</p> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • 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 <p>Licensed Repository Views – Security Views:</p> <p>The following security views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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 <p>Licensed Repository Views – Client Configuration Views:</p> <p>The following client configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:</p> <ul style="list-style-type: none"> • 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

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none">• MGMT\$CSA_HOST_OS_FILESYSTEMS• MGMT\$CSA_HOST_OS_PROPERTIES• MGMT\$CSA_HOST_RULES• MGMT\$CSA_HOST_SW• MGMT\$ECM_CONFIG_HISTORY

Table 1-15 (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	<p>Features:</p> <p>Oracle Diagnostics Pack includes the following features:</p> <ul style="list-style-type: none"> • 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 <p>In order to use the features listed above, you must purchase licenses for Oracle Diagnostics Pack. A new initialization parameter, <code>CONTROL_MANAGEMENT_PACK_ACCESS</code>, controls access to Oracle Diagnostics Pack and Oracle Tuning Pack. This parameter can be set to one of three values:</p> <ul style="list-style-type: none"> • DIAGNOSTIC+TUNING: Oracle Diagnostics Pack and Oracle Tuning Pack functionality 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 functionality is disabled in the database server. <p>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.</p> <p>Licensed Links:</p> <p>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.</p> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> – 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. <p>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.</p> <p>Licensed Command-Line APIs:</p> <p>Oracle Diagnostics Pack features can also be accessed by way of database server APIs and command-line interfaces:</p> <ul style="list-style-type: none"> • 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: <pre>where STATISTIC_UNIT = 'PERCENT'</pre> <p>For example, the following query shows Diagnostics-Pack-dependent data only:</p> <pre>SELECT * FROM DBA_STREAMS_TP_COMPONENT_STAT where STATISTIC_UNIT = 'PERCENT';</pre> <ul style="list-style-type: none"> • 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 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<p>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.</p> <p>Licensed Repository Views – Monitoring Views: The following monitoring views are licensed under Oracle Diagnostics Pack:</p> <ul style="list-style-type: none"> • 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 <p>Licensed Repository Views – Template Views: The following template views are licensed under Oracle Diagnostics Pack:</p> <ul style="list-style-type: none"> • MGMT\$TEMPLATES • MGMT\$TEMPLATE_METRIC_COLLECTION • MGMT\$TEMPLATE_METRIC_SETTINGS • MGMT\$TEMPLATE_POLICY_SETTINGS

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
Oracle Tuning Pack	<p>Extra cost pack: EE, EE-ES</p> <p>Included pack: DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS</p>	<p>Features:</p> <p>Oracle Tuning Pack includes the following features:</p> <ul style="list-style-type: none"> • 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 <p>A new initialization parameter, <code>CONTROL_MANAGEMENT_PACK_ACCESS</code>, 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:</p> <ul style="list-style-type: none"> • <code>DIAGNOSTIC+TUNING</code>: Oracle Diagnostics Pack and Oracle Tuning Pack functionality is enabled in the database server. • <code>DIAGNOSTIC</code>: Only Oracle Diagnostics Pack functionality is enabled in the server. • <code>NONE</code>: Oracle Diagnostics Pack and Oracle Tuning Pack functionality is disabled in the database server. <p>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.</p> <p>Prerequisites:</p> <p>Oracle Tuning Pack requires Oracle Diagnostics Pack.</p> <p>Licensed Links:</p> <p>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.</p> <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> – 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. <p>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.</p> <p>Licensed Command Line APIs:</p> <p>Oracle Tuning Pack features can also be accessed by way of database server APIs and command-line interfaces:</p> <ul style="list-style-type: none"> • <code>DBMS_ADVISOR</code>, when the value of the <code>advisor_name</code> parameter is either SQL Tuning Advisor or SQL Access Advisor. • <code>DBMS_AUTO_SQLTUNE</code>

Table 1-15 (Cont.) Oracle Management Packs and Their Permitted Features

Management Pack	Availability	Included Features
		<ul style="list-style-type: none"> • DBMS_PERF • DBMS_SQL_MONITOR • DBMS_SQLTUNE (See Note) • V\$SQL_MONITOR • V\$SQL_PLAN_MONITOR • The following report found in the <code>/rdbms/admin/</code> directory of the Oracle home directory is part of this pack: <code>sqltrpt.sql</code>. <p>Note: If you are licensed for the on-premise Oracle Database Enterprise Edition, then you can use certain subprograms of the <code>DBMS_SQLTUNE</code> package even if you do not have an Oracle Tuning Pack license. See the SQL Tuning Sets entry in Table 1-6 for more information.</p>

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 1-16 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	<p>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.</p> <p>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).</p> <p>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.</p> <p>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.</p>

Table 1-16 (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle ASM Cluster File System (Oracle ACFS)	<p>When used with non-Oracle Database files, all Oracle ACFS features are free.</p> <p>When used with Oracle Database files, all Oracle ACFS features are free, with the following exceptions:</p> <ul style="list-style-type: none"> • 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*) <p>* Requires appropriate full-use licenses to these products or components.</p> <p>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.</p>
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	<p>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:</p> <ul style="list-style-type: none"> • RMAN backup encryption • All RMAN backup compression algorithms <p>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.</p>
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 1-16 (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 Clusters (RAC) and Real Application Clusters One Node	<p>The following licensing information applies when using Oracle Real Application Clusters or Real Application Clusters One Node in a clustered server environment with Oracle Database Standard Edition 2:</p> <ul style="list-style-type: none">• You must use Oracle Clusterware. Third-party clusterware management solutions are not supported.• Oracle Automatic Storage Management (Oracle ASM) or Oracle ASM Cluster File System (Oracle ACFS) is required for creating and managing all Oracle database file types. Raw volumes, partitions, or third-party cluster file systems are not supported for storing Oracle database files with Oracle Database Standard Edition 2, and Oracle RAC or RAC One Node. Refer to <i>Oracle Automatic Storage Management Administrator's Guide</i> for a comprehensive list of all database file types.• Oracle ACFS or a local OS file system must be used to store all non-database files. No Oracle-maintained copies of any non-database files can exist in any other locations, with the following exceptions:<ul style="list-style-type: none">– Customers who want to manually script maintenance of a standby database can create a second copy of their archive logs outside of Oracle ASM on a local file system only, designated by the <code>LOG_ARCHIVE_DEST_n</code> parameter.– RMAN backups of files can reside on either a local or network mounted file system.• No other cluster software can be installed on the system, including OCFS, OCFS2, third-party clusterware, third-party cluster volume managers, and third-party cluster file systems.

Table 1-16 (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle Real Application Testing	<p>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.</p> <p>The functionality available on Oracle9i Database Release 2 is as follows:</p> <ul style="list-style-type: none"> • 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. <p>The functionality available on Oracle Database 10g Release 2 is as follows:</p> <ul style="list-style-type: none"> • 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	<p>For backup of Oracle Database Enterprise Edition, Oracle Secure Backup includes restricted use licenses for:</p> <ul style="list-style-type: none"> • RMAN backup encryption to tape or Amazon S3 • RMAN backup compression leveraging LOW, MEDIUM, BASIC or HIGH algorithms <p>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.</p>
Oracle Secure Backup Express	<p>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.</p> <p>Oracle Secure Backup Express can back up an Oracle database as well as Oracle home files and other file system data requiring tape protection.</p> <p>For more information, refer to <i>Oracle Secure Backup Licensing Information</i>.</p>

Table 1-16 (Cont.) Special License Rights

Feature / Option	Licensing Information
Oracle Spatial and Graph	<p>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:</p> <ul style="list-style-type: none">• Spatial Geocoder• Spatial Routing engine• Spatial Web Services• Property Graph client• In-memory analyst (PGX)• Spatial Visualization component• Spatial Studio <p>For more information, see <i>Oracle Spatial and Graph Developer's Guide</i> and <i>Oracle Spatial and Graph Property Graph Developer's Guide</i>.</p>
Oracle Wallet	<p>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. Network encryption (native network encryption, network data integrity, 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.</p>
Shard Director	<p>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.</p>
XStream	<p>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.</p>

1.8 Restricted Use Licenses

Table 1-17 Restricted Use Licenses

Feature / Option	Licensing Information
Oracle Advanced Security	<p>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.</p> <p>Oracle Advanced Security includes a restricted use license for the following Oracle Enterprise Manager features:</p> <ul style="list-style-type: none"> • Application Data Models (previously called Data Discovery and Modeling) • Sensitive Column Types and Sensitive Data Discovery • Application Accelerators <p>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.</p>
Oracle Application Server Containers for J2EE	<p>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</p>
Oracle Applications Unlimited	<p>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.</p>
Oracle Big Data SQL	<p>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.</p>
Oracle Database Mobile Server	<p>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.</p> <p>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.</p>

Table 1-17 (Cont.) Restricted Use Licenses

Feature / Option	Licensing Information
Oracle Database Vault	<p>Oracle Database Vault includes a restricted use license for the following Oracle Enterprise Management features:</p> <ul style="list-style-type: none"> • 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	<p>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</p>
Oracle Internet Directory	<p>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.</p>
Oracle Label Security	<p>Oracle Label Security includes a restricted use license for the following Oracle Enterprise Manager features:</p> <ul style="list-style-type: none"> • Application Data Models (previously called Data Discovery and Modeling) • Sensitive Column Types and Sensitive Data Discovery • Application Accelerators <p>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.</p>
Oracle Multitenant	<p>A restricted use license is included with all Oracle Database offerings that permits you to use the container database architecture in single-tenant mode without the Oracle Multitenant option license. Single-tenant mode is defined as one user-created pluggable database, and, optionally, one user-created application root, and one user-created proxy pluggable database.</p>
Oracle Programmer	<p>Oracle Programmer provides application programmers with a programmatic interface to any edition of Oracle Database. However, in order to use Oracle Programmer, you must purchase a separate Oracle Programmer license.</p> <p>Oracle Programmer includes the following products:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Oracle Secure Backup Express	<p>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 <i>Oracle Secure Backup Licensing Information</i> for additional information.</p>

Table 1-17 (Cont.) Restricted Use Licenses

Feature / Option	Licensing 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.
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

2.1 Commercial Software

Commercial software products or components distributed in Oracle Database 18c are identified in the following table along with the applicable licensing information.

Table 2-1 Commercial Software

Provider	Component(s)	Licensing Information
DataDirect	DataDirect Technology	The DataDirect component provided with this Oracle Program is distributed only for use with Oracle Program.
Frederico Caldera Knabben (FredCK.com)	CKEditor 4.5.11	© 2003 - 2010 CKSource - Frederico Knabben. All rights reserved. This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0 .
MapInfo Corp.	Projections Code 1.0	Portions of this software Copyright 1992-2000, MapInfo Corporation, ALL RIGHTS RESERVED.
Microsoft	Microsoft Visual Studio 2013 Redistributables	Must include Oracle copyright notice in Oracle applications containing the Distributable Code. Oracle must not use Microsoft's trademarks in Oracle program names or in a way that suggests Oracle programs come from or are endorsed by Microsoft.
Microsoft	Microsoft Visual Studio 2015 Redistributables	Must include Oracle copyright notice in Oracle applications containing the Distributable Code. Oracle must not use Microsoft's trademarks in Oracle program names or in a way that suggests Oracle programs come from or are endorsed by Microsoft.
RSA	Micro Edition Suite (MES)	This product includes code licensed from RSA Data Security. See Figure 2-1 .
Sibental, Inc.	AnyChart 6.0 AnyGantt 4.3 AnyMap 6.0	AnyChart Flash chart support in Oracle Application Express is based on the Anychart Flash Chart Component. Anychart is a flexible Macromedia Flash-based solution that enables developers to create animated, compact, interactive flash charts. Flash charts are rendered by a browser and require Flash player 8 or later. Flash charts used in interactive reports require Flash Player 9 or later. For more information about Anychart, go to: http://www.anychart.com Any attempt to unbundle the AnyChart Flash Chart Component from an Oracle product, or to use the AnyChart Flash Chart Component outside of the Oracle product will be in violation of this license and will result in the immediate termination of this license.

Figure 2-1 RSA Secure Logo



2.2 Open Source or Other Separately Licensed Software

Required notices for open source or other separately licensed software products or components distributed in Oracle Database 18c 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

Provider	Component(s)	Licensing Information
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```
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```

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org.mozilla.javascript.tools.debugger.downloaded.AbstractCellEditor.java

org.mozilla.javascript.tools.debugger.downloaded.JTreeTable.java

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- `javaee_web_services_1_3.xsd`
- `javaee_web_services_client_1_3.xsd`
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- javaee_web_services_client_1_4.xsd
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- web-app_3_0.xsd

- web-common_3_0.xsd
- web-fragment_3_0.xsd
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- javaee_web_services_1_4.xsd
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- web-app_3_1.xsd
- web-common_3_1.xsd
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- javaee_web_services_1_2.xsd
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- javaee_web_services_1_3.xsd
- javaee_web_services_client_1_3.xsd
- jsp_2_2.xsd
- web-app_3_0.xsd
- web-common_3_0.xsd
- web-fragment_3_0.xsd
- javaee_7.xsd
- javaee_web_services_1_4.xsd
- javaee_web_services_client_1_4.xsd
- jsp_2_3.xsd
- web-app_3_1.xsd
- web-common_3_1.xsd
- web-fragment_3_1.xsd
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Version 1.1 - 26 February 2007

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gdal/frmts/gtiff/tif_float.c

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gdal/frmts/pcraster/libcsf

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gdal/ogr/ogrsf_frmts/dxf/intronurbs.cpp

This code is derived from the code associated with the book "An Introduction to NURBS" by David F. Rogers. More information on the book and the code is available at: <http://www.nar-associates.com/nurbs/>

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=== Knockout.js 3.4.0 ===

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=== knockout-amd-helpers 0.7.3 ===

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=== jsTree 1.0-rc3 ===

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=== jQuery UI - v1.11.4 ===

Includes: core.js, widget.js, mouse.js, position.js, draggable.js, sortable.js

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```
/*! Hammer.JS - v2.0.4 - 2014-09-28
 * http://hammerjs.github.io/
 *
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=== Knockout.js 3.4.0 ===

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=== knockout-amd-helpers 0.7.3 ===

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=== Normalize.css ===

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=== jsTree 1.0-rc3 ===

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=== Normalize.css ===

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=== RequireJS i18n 2.0.2 ===

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=== jsTree 1.0-rc3 ===

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=== ES6-Promise v1.0.0 ===

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=== jQuery UI - v1.11.4 ===

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=== jQuery JavaScript Library v2.1.3 ===

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=== RequireJS text 2.0.12 ===

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== RequireJS 2.1.16 ==

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```
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 * http://hammerjs.github.io/
 *
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 */
```

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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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Mersenne Twister

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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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Sockets

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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MD5 message digest algorithm

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L. Peter Deutsch

ghost@aladdin.com

Independent implementation of MD5 (RFC 1321).

This code implements the MD5 Algorithm defined in RFC 1321, whose text is available at

<http://www.ietf.org/rfc/rfc1321.txt>

The code is derived from the text of the RFC, including the test suite (section A.5) but excluding the rest of Appendix

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The original and principal author of md5.h is L. Peter Deutsch <ghost@aladdin.com>. Other authors are noted in the change history that follows (in reverse chronological order):

2002-04-13 lpd Removed support for non-ANSI compilers; removed references to Ghostscript; clarified derivation from RFC 1321; now handles byte order either statically or dynamically.

1999-11-04 lpd Edited comments slightly for automatic TOC extraction.

1999-10-18 lpd Fixed typo in header comment (ansi2knr rather than md5); added conditionalization for C++ compilation from Martin Purschke <purschke@bnl.gov>.

1999-05-03 lpd Original version.

Asynchronous socket services

The :mod:'asynchat' and :mod:'asyncore' modules contain the following notice::

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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

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::::::::::::::::::
# Original version written by Greg Stein (gstein@lyra.org)
#                               and Bill Tutt (rassilon@lima.mudlib.org)
# February 1997.
#
# Modifications and improvements for Python 2.0 by Jeremy Hylton and
# Mark Hammond
#
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.....:
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Lib/platform.py

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Mersenne Twister

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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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Sockets

The :mod:'socket' module uses the functions, :func:'getaddrinfo',
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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

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SipHash24

The file `:file:'Python/pyhash.c'` contains Marek Majkowski' implementation of

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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@alummi.caltech.edu

cfuhash

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

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Lib/compiler/transformer.py
:::::::::::::
# Original version written by Greg Stein (gstein@lyra.org)
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# February 1997.
#
# Modifications and improvements for Python 2.0 by Jeremy Hylton and
# Mark Hammond
#
# Some fixes to try to have correct line number on almost all nodes
# (except Module, Discard and Stmt) added by Sylvain Thenault
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#
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normalize

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