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</tbody>
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<th>Section</th>
<th>Page</th>
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</thead>
<tbody>
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<td>A-1</td>
</tr>
<tr>
<td>A.2 Artistic License</td>
<td>A-5</td>
</tr>
</tbody>
</table>
A.3  Batik SVG Toolkit 1.11 License
A.4  CodeMirror 5.48.4 License
A.5  Commons Compress 1.19 License
A.6  DBD-Oracle 1.80 License
A.7  DOM (Dom Level 3 core specification, Version 1.0) License
A.8  EclipseLink 2.7.4 License
A.9  File::Slurp 9999.28 License
A.10  Freetype 2.7-1 License
A.11  FullCalendar 3.10.0 License
A.12  GeoNames Data 2018-08 License
A.13  Geospatial Data Abstraction Library/OpenGIS Simple Features Reference Implementation (GDAL/OGR) 2.4 License
A.14  Gson 2.8.5 License
A.15  Guava 27.1 License
A.16  Guava 28.1 License
A.17  Guice 4.2.2 License
A.18  HttpComponents HttpClient 4.5.9 License
A.19  HttpComponents HttpClient 4.5.10 License
A.20  Intel Integrated Performance Primitives Redistributables 2017.0.4 License
A.21  JSONP 1.1.6 License
A.22  JSch 0.1.55 License
A.23  JasPer 2.0.14 License
A.24  JavaScript Extension Toolkit (JET) 6.2.0 License
A.25  JavaScript Extension Toolkit (JET) 7.0.0 License
A.26  JavaScript Extension Toolkit (JET) 7.1.0 License
A.27  Jetty 9.4.24 License
A.28  Kerberos 1.16.2 License
A.29  Launch4j 3.12 License
A.30  Log4J 2.11.2 License
A.31  Lucene 7.7.2 License
A.32  Mina SSHD 2.2.0 License
A.33  NumPy 1.18.1 License
A.34  OpenJPEG 2.3.1 License
A.35  PCRE 10.23 License
A.36  Pandas 0.24.1 License
A.37  Pandas 0.25.3 License
A.38  Perl DBI 1.642 License
A.39  Protocol Buffers (aka Google protobuf) 3.6.1 License
A.40  Python 3.7.3 License
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| A.52 | librdkafka 0.11.5 License | A-271 |
| A.53 | mapbox-gl-js 0.49.0 License | A-274 |
| A.54 | python-dateutil 2.8.0 License | A-288 |
| A.55 | scikit-learn 0.20.3 License | A-291 |
Preface

This Preface contains these topics:

- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Audience

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

Documentation Accessibility

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

Access to Oracle Support

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

Related Documents

For more information, see these Oracle resources:

- Oracle Database New Features Guide for information on the features new to this release of Oracle Database

Conventions

The following text conventions are used in this document:
<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td>monospace</td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
1 Licensing Information

- Introduction
- Oracle Database Offerings
- Permitted Features, Options, and Management Packs by Oracle Database Offering
- Oracle Database Options and Their Permitted Features
- Oracle Management Packs and Their Permitted Features
- Checking for Feature, Option, and Management Pack Usage
- Special License Rights
- Restricted Use Licenses

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>
<thead>
<tr>
<th>Oracle Database Offering</th>
<th>Offering Type</th>
<th>Abbreviated Name Used in this Guide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database Offering</td>
<td>Offering Type</td>
<td>Abbreviated Name Used in this Guide</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------</td>
<td>-------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Oracle Database Enterprise Edition</td>
<td>On-Premise</td>
<td>EE</td>
<td>Oracle Database Enterprise Edition provides performance, availability, scalability, and security for developing applications such as high-volume online transaction processing (OLTP) applications, query-intensive data warehouses, and demanding Internet applications. Oracle Database Enterprise Edition can be enhanced with the purchase of Oracle Database options and Oracle management packs.</td>
</tr>
<tr>
<td>Oracle Database Enterprise Edition on Engineered Systems</td>
<td>On-Premise</td>
<td>EE-ES</td>
<td>Oracle Database Enterprise Edition software installed on an on-premise engineered system (Oracle Exadata Database Machine or Oracle Database Appliance). Includes all of the components of Oracle Database. You can further enhance this offering with the purchase of Oracle Database options and Oracle management packs. The licensing policies for EE-ES vary depending on whether it is installed on Oracle Exadata Database Machine or Oracle Database Appliance. Be sure to make note of these differences, which are documented in the subsequent sections of this guide.</td>
</tr>
<tr>
<td>Oracle Database Personal Edition</td>
<td>On-Premise</td>
<td>PE</td>
<td>Oracle Database Personal Edition supports single-user development and deployment environments that require full compatibility with Oracle Database Standard Edition 2 and Oracle Database Enterprise Edition. Includes all of the components that are included with Enterprise Edition, as well as all Oracle Database options, with the exception of the Oracle RAC One Node and Oracle Real Application Clusters options, which cannot be used with Personal Edition. Personal Edition is available on Linux and Windows platforms only. Oracle management packs cannot be used with Personal Edition.</td>
</tr>
</tbody>
</table>
Table 1-1  (Cont.) Oracle Database Offerings

<table>
<thead>
<tr>
<th>Oracle Database Offering</th>
<th>Offering Type</th>
<th>Abbreviated Name Used in this Guide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database Exadata Cloud Service</td>
<td>Cloud</td>
<td>ExaCS</td>
<td>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.</td>
</tr>
</tbody>
</table>

See Also:

- Oracle Database Options and Their Permitted Features
- Oracle Management Packs and Their Permitted Features

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

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

The tables are organized into the following functional categories:

- Autonomous - Table 1-2
- Consolidation - Table 1-3
- Development Platform - Table 1-4
- High Availability - Table 1-5
- Integration - Table 1-6
- Manageability - Table 1-7
- Networking - Table 1-8
- Performance - Table 1-9
- Scalability - Table 1-10
- Security - Table 1-11
- Snapshots and Cloning - Table 1-12
- Spatial and Graph Data - Table 1-13
- VLDB, Data Warehousing, and Business Intelligence - Table 1-14
### Table 1-2  Autonomous

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

### Table 1-3  Consolidation

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Multitenant - # of PDBs</td>
<td>3</td>
<td>252</td>
<td>4096</td>
<td>3</td>
<td>3</td>
<td>4096</td>
<td>4096</td>
<td>4096</td>
<td>The number value in each column indicates the maximum number of pluggable databases (PDBs) that can be created for each offering. • For all offerings, if you are not licensed for Oracle Multitenant, then you may have up to 3 user-created PDBs in a given container database at any time. • EE: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 252 PDBs. • EE-ES: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 4096 PDBs. • DBCS EE-HP, DBCS EE-EP, and ExaCS: Included option; you can create up to 4096 PDBs. Note: For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB.</td>
</tr>
<tr>
<td>CDB Fleet Management</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
### Table 1-3  (Cont.) Consolidation

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
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<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDB Snapshot Carousel</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
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<tr>
<td>Refreshable PDB switchover</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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### Table 1-4  Development Platform

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<th>Feature / Option / Pack</th>
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<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQLJ</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Requires Oracle Programmer</td>
</tr>
<tr>
<td>Oracle Developer Tools for Visual Studio .NET</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows only</td>
</tr>
<tr>
<td>Microsoft Distributed Transaction Coordinator support</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows only</td>
</tr>
<tr>
<td>Native .NET Data Provider—ODP.NET</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows only</td>
</tr>
<tr>
<td>.NET Stored Procedures</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows only</td>
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### Table 1-5  High Availability

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
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<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Continuity</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Active Data Guard option or the Oracle Real Application Clusters option</td>
</tr>
<tr>
<td>Feature / Option / Pack</td>
<td>SE2</td>
<td>EE</td>
<td>EE-ES</td>
<td>DBCS SE</td>
<td>DBCS EE</td>
<td>DBCS EE-HP</td>
<td>DBCS EE-EP</td>
<td>ExaCS</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----</td>
<td>----</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Oracle Sharding</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>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.</td>
</tr>
<tr>
<td>Oracle Fail Safe</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows only</td>
</tr>
<tr>
<td>Oracle RAC One Node</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Oracle Data Guard — Redo Apply</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Oracle Data Guard — Far Sync Standby</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Active Data Guard option</td>
</tr>
<tr>
<td>Oracle Data Guard — SQL Apply</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Oracle Data Guard — Snapshot Standby</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Oracle Data Guard — Real-Time Cascading Standbys</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Active Data Guard option</td>
</tr>
<tr>
<td>Oracle Data Guard — Automatic Correction of Non-logged Blocks at a Data Guard Standby Database</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
Table 1-5  (Cont.) High Availability

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Oracle Active Data Guard| N   | Y  | Y     | N       | N       | N          | Y          | Y     | EE and EE-ES: Extra cost option
|                         |     |    |       |         |         |            |            |       | Authorized Cloud Environments: Active Data Guard DML Redirection is not available |
| Rolling Upgrades—       | N   | Y  | Y     | N       | N       | N          | Y          | Y     | EE and EE-ES: Requires the Oracle Active Data Guard option |
| Patch Set, Database,    |     |    |       |         |         |            |            |       |       |
| and Operating System    |     |    |       |         |         |            |            |       |       |
| Rolling Upgrade         | N   | Y  | Y     | N       | N       | N          | Y          | Y     |       |
| Using Active Data Guard |     |    |       |         |         |            |            |       |       |
| Online index rebuild    | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| Online table organization|   |    |       |         |         |            |            |       | 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            | N   | Y  | Y     | N       | N       | N          | Y          | Y     |       |
| tracking for fast       |     |    |       |         |         |            |            |       |       |
| incremental backup      |     |    |       |         |         |            |            |       |       |
| Unused block            | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| compression in backups  |     |    |       |         |         |            |            |       |       |
| Block-level media       | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| recovery                |     |    |       |         |         |            |            |       |       |
| Lost Write Protection   | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| Automatic Block         | N   | Y  | Y     | N       | N       | N          | Y          | Y     | EE and EE-ES: Requires the Oracle Active Data Guard option |
| Repair                  |     |    |       |         |         |            |            |       |       |
| Parallel backup and     | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| recovery                |     |    |       |         |         |            |            |       |       |
| Tablespace point-in-time| N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| recovery                |     |    |       |         |         |            |            |       |       |
| Trial recovery          | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| Fast-start fault        | N   | Y  | Y     | N       | Y       | Y          | Y          | Y     |       |
| recovery                |     |    |       |         |         |            |            |       |       |
| 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     |       |
### Table 1-5  (Cont.) High Availability

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<tr>
<th>Feature / Option / Pack</th>
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<th>EE-ES</th>
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<th>DBCS EE</th>
<th>DBCS EE-HP</th>
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<td>Basic Flashback Data Archive is in all offerings</td>
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<td>EE and EE-ES: Optimization for Flashback Data Archive requires the Oracle Advanced Compression option</td>
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### Table 1-6  Integration

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<td>All other Database Gateway products are available for all offerings, but require a separate product license.</td>
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## Table 1-7 Manageability

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<th>DBCS EE</th>
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<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
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<tbody>
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<td>EE and EE-ES: Extra cost option</td>
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<td>EE and EE-ES: Extra cost option</td>
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<td>EE and EE-ES: Extra cost option</td>
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<td>EE and EE-ES: Extra cost option, also requires Oracle Diagnostics Pack</td>
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<td>(See Notes) (See Notes)</td>
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</table>

**SE2 and DBCS SE Summary:** Only one SQL plan baseline per SQL statement is allowed and SQL plan evolution is disabled.

**SE2 and DBCS SE Details:**

1. SQL plan baselines can be created or captured using the following methods:
   - Auto capture (OPTIMIZER_CAPTURE_SQL_PLAN_BASELINE=TRUE)
   - Manual loading from the cursor cache (DBMS_SPM.LOAD_PLANS_FROM_CURSOR_CACHE)
   - Migration from stored outlines (DBMS_SPM.MIGRATE_STORED_OUTLINE)
   - Import using DBMS_SPM.UNPACK_STGTAB_BASELINE

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

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

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

5. Alternative SQL execution plans for SQL statements are not...
Table 1-7  (Cont.) Manageability

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
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<td><strong>6.</strong> SQL plan baselines can be altered and dropped (DBMS_SPM.ALTER_SQL_PLAN_BASELINE and DBMS_SPM.DROP_SQL_PLAN_BASELINE).</td>
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<td><strong>7.</strong> 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.</td>
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<td>Automatic SQL Plan Management</td>
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<td>N</td>
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<td>N</td>
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<td><strong>EE-ES:</strong> Available on Exadata. Not available on Oracle Database Appliance.</td>
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</table>
Table 1-7  (Cont.) Manageability

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
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<td>Oracle Fleet Patching and Provisioning (formerly Rapid Home Provisioning)</td>
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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_REFERENC E, SELECT_CURSOR_CACHE, SELECT_SQLSET, SELECT_WORKLOAD_REPOSITORY, UNPACK_STGTAB_SQLSET, UPDATE_SQLSET.

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

EE and EE-ES: Requires the Oracle Advanced Compression option

Table 1-8  Networking

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
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EE and EE-ES: Requires the Oracle Advanced Compression option
Table 1-8  (Cont.) Networking

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<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Connection Manager</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Available via a custom install of the Oracle Database client, usually installed on a separate machine or compute instance</td>
</tr>
</tbody>
</table>

| Network Compression | N   | Y  | Y     | N       | N       | Y          | Y         | Y     | EE and EE-ES: Requires the Oracle Advanced Compression option |

Table 1-9  Performance

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Indexing</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE-ES: Available on Exadata. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>SQL Quarantine</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE-ES: Available on Exadata. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>Real-Time Statistics</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE-ES: Available on Exadata. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>High-Frequency Automatic Optimizer Statistics Collection</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE-ES: Available on Exadata. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>High-Frequency Automatic SPM Evolve Advisor Task</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>You can enable this feature by setting the AUTO_SPM_EVOLVE_TASK parameter of the DBMS_SPM.CONFIGURE procedure. EE-ES: Available on Exadata. Not available on Oracle Database Appliance.</td>
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<tr>
<td>Client Side Query Cache</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Query Results Cache</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>PL/SQL Function Result Cache</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Oracle TimesTen Application-Tier Database Cache</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
</tbody>
</table>
### Table 1-9 (Cont.) Performance

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Smart Flash Cache</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td><strong>EE</strong>: Solaris and Oracle Linux only</td>
</tr>
<tr>
<td>Support for Oracle Exadata Storage Server Software</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Oracle Database Appliance. Not available on Exadata</td>
</tr>
<tr>
<td>Concurrent Execution of UNION and UNION ALL Branches</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td><strong>EE</strong> and <strong>EE-ES</strong>: Requires the Oracle Database In-Memory option</td>
</tr>
<tr>
<td>Oracle Database In-Memory</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td><strong>EE</strong> and <strong>EE-ES</strong>: Extra cost option</td>
</tr>
<tr>
<td>In-Memory Column Store</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata. Not available on Oracle Database Appliance. Requires Exadata, Supercluster, or Exadata Cloud Service.</td>
</tr>
<tr>
<td>In-Memory Column Cache on Storage Servers</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata and requires the Oracle Database In-Memory option. Not available on Oracle Database Appliance. Requires Exadata, Supercluster, or Exadata Cloud Service.</td>
</tr>
<tr>
<td>In-Memory Column Store on Active Data Guard standby</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata and requires the Oracle Database In-Memory option and the Oracle Active Data Guard option. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>Fault Tolerant In-Memory Column Store</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata and Infiniband-based Oracle Database Appliance. Requires the Oracle Database In-Memory option and the Oracle Real Application Clusters option.</td>
</tr>
<tr>
<td>Automatic In-Memory Column Store</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata.</td>
</tr>
<tr>
<td>In-Memory Column Store support for External Tables</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td><strong>EE-ES</strong>: Available on Exadata. Not available on Oracle Database Appliance.</td>
</tr>
</tbody>
</table>
### Table 1-9  (Cont.) Performance

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

### Table 1-10  Scalability

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Real Application Clusters (Oracle RAC)</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Automatic Workload Management</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Real Application Clusters option</td>
</tr>
<tr>
<td>Quality of Service Management</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Real Application Clusters option</td>
</tr>
<tr>
<td>Oracle NoSQL Database Basic Edition</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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</tr>
</tbody>
</table>
Table 1-11  Security

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column-Level Encryption</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Advanced Security option</td>
</tr>
<tr>
<td>Tablespace Encryption</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Advanced Security option</td>
</tr>
<tr>
<td>Oracle Advanced Security</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Oracle Database Vault</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Oracle Label Security</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Centrally Managed Users</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>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.</td>
</tr>
<tr>
<td>Fine-grained Auditing</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Privilege Analysis</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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</tr>
<tr>
<td>Real Application Security</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Redaction</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Advanced Security option</td>
</tr>
<tr>
<td>Transparent Sensitive Data Protection</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
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</tr>
<tr>
<td>Virtual Private Database</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Keystore for Each Pluggable Database</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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</tr>
</tbody>
</table>
### Table 1-12  Snapshots and Cloning

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Snapshot Optimization</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>EE and EE-ES: Requires the Oracle Advanced Compression option</td>
</tr>
</tbody>
</table>

### Table 1-13  Spatial and Graph Data

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

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

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Partitioning</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Oracle On-Line Analytical Processing (OLAP)</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
<tr>
<td>Oracle Machine Learning (formerly Advanced Analytics)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Oracle Machine Learning no longer requires an extra cost license. See Oracle Database Insider blog post for more information.</td>
</tr>
<tr>
<td>Oracle Advanced Compression</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Extra cost option</td>
</tr>
</tbody>
</table>
### Table 1-14  (Cont.) VLDB, Data Warehousing, and Business Intelligence

<table>
<thead>
<tr>
<th>Feature / Option / Pack</th>
<th>SE2</th>
<th>EE</th>
<th>EE-ES</th>
<th>DBCS SE</th>
<th>DBCS EE</th>
<th>DBCS EE-HP</th>
<th>DBCS EE-EP</th>
<th>ExaCS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Index Compression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefix Compression (also called Key Compression)</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE: Requires ZFS, Axiom, or FS1 storage</td>
</tr>
<tr>
<td>Hybrid Columnar Compression</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Hybrid Columnar Compression Row-Level Locking</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>EE: Requires ZFS or FS1 storage, and the Oracle Advanced Compression option</td>
</tr>
<tr>
<td>Exadata Flash Cache Compression</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>EE-ES: Available on Exadata and requires the Oracle Advanced Compression option. Not available on Oracle Database Appliance.</td>
</tr>
<tr>
<td>Heat Map</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Advanced Compression option or the Oracle Database In-Memory option</td>
</tr>
<tr>
<td>Automatic Data Optimization</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>EE and EE-ES: Requires the Oracle Advanced Compression option or the Oracle Database In-Memory option</td>
</tr>
<tr>
<td>Basic Table Compression</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Deferred Segment Creation</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Bitmapped index, bitmapped join index, and bitmap plan conversions</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Parallel query/DML</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Parallel statistics gathering</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Parallel index build/scans</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Parallel Data Pump Export/Import</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
### Table 1-14  (Cont.) VLDB, Data Warehousing, and Business Intelligence

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

#### 1.4 Oracle Database Options and Their Permitted Features

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Active Data Guard</td>
<td>Extra cost option: EE, EE-ES Included option: PE, DBCS EE-EP, ExaCS</td>
<td>Oracle Active Data Guard includes the following features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Physical Standby with Real-time Query</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fast Incremental Backup on Physical Standby</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Automatic Block Repair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Active Data Guard Far Sync</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Global Data Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Real-Time Cascade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rolling Upgrade using Active Data Guard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Active Data Guard DML Redirection (not available in Authorized Cloud Environments)</td>
</tr>
</tbody>
</table>

In an Oracle Data Guard configuration:

• Oracle Active Data Guard must be licensed on any standby databases with any of the above features in use, as well as the primary database. If there are additional standby databases in the Oracle Data Guard configuration that are not using any of the Oracle Active Data Guard features, those standby databases do not require an Oracle Active Data Guard license.

Note: For customers who back up standby databases to Zero Data Loss Recovery Appliance (ZDLRA) and wish to use the Fast Incremental Backup on Physical Standby feature, an Oracle Active Data Guard license is not required. Oracle Active Data Guard must still be licensed on standby databases, if any other of the above features are in use.

• The container root (CDB$Root) of the standby database may be opened read-only without requiring an Oracle Active Data Guard license. An Oracle Active Data Guard license is only required if any of the pluggable databases in the standby is opened for read.
<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Advanced Compression</td>
<td>Extra option: EE, EE-ES</td>
<td>Oracle Advanced Compression includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>- Advanced Row Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Advanced LOB Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Advanced LOB Deduplication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RMAN Backup Compression (RMAN DEFAULT COMPRESS does not require the Oracle Advanced Compression option)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Data Pump Export Data Compression (COMPRESSION=METADATA ONLY does not require the Oracle Advanced Compression option)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Heat Map</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Automatic Data Optimization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Data Guard Redo Transport Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Advanced Network Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Optimization for Flashback Data Archive History Tables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Storage Snapshot Optimization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Online Move Partition (to any compressed format)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 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.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Advanced Index Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Hybrid Columnar Compression Row-Level Locking (Requires Exadata, Oracle Database Appliance, Supercluster, ZFS, or FS1 storage)</td>
</tr>
<tr>
<td>Oracle Advanced Security</td>
<td>Extra cost option: EE, EE-ES</td>
<td>Oracle Advanced Security includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>- Transparent Data Encryption (TDE) for tablespaces and columns (including Oracle SecureFiles)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- DataPump Export File encryption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RMAN backup encryption to disk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Encrypted Database File System (DBFS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Data Redaction of sensitive data returned to applications (Full, Partial, Regular Expression, and Random techniques)</td>
</tr>
<tr>
<td>Oracle Database In-Memory</td>
<td>Extra cost option: EE, EE-ES</td>
<td>Oracle Database In-Memory includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE-EP, ExaCS</td>
<td>- In-Memory Column Store</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- In-Memory Column Cache on Storage Servers (Requires Exadata, Supercluster, or Exadata Cloud Service)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Fault Tolerant In-Memory Column Store (Requires Exadata, Supercluster, Oracle Database Appliance, or Exadata Cloud Service)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- In-Memory Aggregation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Heat Map</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Automatic Data Optimization</td>
</tr>
</tbody>
</table>
### Oracle Database Options and Their Permitted Features

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oracle Database Vault</strong></td>
<td>Extra cost option: EE, EE-ES</td>
<td>Oracle Database Vault includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>• Separation of Duties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Realms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Command Rules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trusted Paths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Database Vault includes special license rights for Oracle Label Security. Refer to Oracle Database Vault in &quot;Special License Rights&quot; for more information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Database Vault includes a restricted use license for certain Oracle Enterprise Manager features. Refer to Oracle Database Vault in &quot;Restricted Use Licenses&quot; for more information.</td>
</tr>
<tr>
<td><strong>Oracle Label Security</strong></td>
<td>Extra cost option: EE, EE-ES</td>
<td>Oracle Label Security includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>• Label based access control (LBAC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multi-level security (MLS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Label factors for Oracle Database Vault (Confidential, Sensitive)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• User label authorizations (Confidential, Sensitive: PII)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data labels (Sensitive: PII)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Label Security includes a restricted use license for certain Oracle Enterprise Manager features. Refer to Oracle Label Security in &quot;Restricted Use Licenses&quot; for more information.</td>
</tr>
<tr>
<td><strong>Oracle Machine Learning (formerly Advanced Analytics)</strong></td>
<td>Included option: SE2, EE, EE-ES, DBCS SE, DBCS EE-HP, ExaCS</td>
<td>Oracle Machine Learning includes the following features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• In-database algorithms for Oracle Machine Learning for SQL (OML4SQL) (formerly Oracle Data Mining):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Model build (accessed via the DBMS_DATA_MINING package)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Data transformations (accessed via the DBMS_DATA_MINING_TRANSFORM package)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Model scoring (accessed via SQL Scoring functions)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Predictive Analytics (accessed via the DBMS_PREDICTIVEAnalytics package)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle Machine Learning for R (OML4R) (formerly Oracle R Enterprise) (integration with open-source R):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– OML4R Transparency Layer: Allows an R user to explore and prepare database-resident data using R language syntax and functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– OML4R interface to in-database machine learning algorithms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Embedded R Execution: Enables execution of user-defined R functions in database spawned and controlled R engines, also enabling data- and task-parallel execution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– All OML4R functionality is invoked using the ORE package</td>
</tr>
</tbody>
</table>
Table 1-15 (Cont.) Oracle Database Options and Their Permitted Features

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
</table>
| Oracle Multitenant              | Extra cost option: **EE**, **EE-ES**  
  Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS** | Oracle Multitenant includes the following features:  
  • For **EE** and **PE**, the ability to have up to 252 pluggable databases per multitenant container database  
  • For **EE-ES**, **DBCS EE-HP**, **DBCS EE-EP**, and **ExaCS**, the ability to have up to 4096 pluggable databases per multitenant container database  
  **Note:** For licensing purposes, one non-CDB instance is equivalent to one user-created PDB inside one CDB. |
| Oracle On-Line Analytical Processing (OLAP) | Extra cost option: **EE**, **EE-ES**  
  Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS** | Oracle On-Line Analytical Processing (OLAP) includes the following features:  
  • OLAP Cube Definition, Storage, and Querying  
  • OLAP API and Metadata  
  • OLAP Cube Materialized Views  
  • Analytic Workspaces  
  • SQL Access to OLAP Cubes |
| Oracle Partitioning             | Extra cost option: **EE**, **EE-ES**  
  Included option: **PE**, **DBCS EE-HP**, **DBCS EE-EP**, **ExaCS** | Oracle Partitioning includes the following features:  
  • Table Partitions and Subpartitions  
  • Global and Local Index Partitions and Subpartitions  
  • Sharded Queues  
  • Zone Maps and Automatic Zone Maps (Available only on EE-ES and ExaCS – require Exadata or Supercluster) |
| Oracle RAC One Node             | Extra cost option: **EE**, **EE-ES**  
  Included option: **ExaCS** | Oracle RAC One Node includes the following features:  
  • Database Cold Failover to another node in the cluster in case of server or instance failure  
  • Online migration of the database instance to another server  
  • Support for online rolling upgrades of the database, grid infrastructure, and OS homes  
  • Online upgrade to Oracle Real Application Clusters  
  • Policy-managed Server Pools  
  • Quality of Service Management  
  • Application Continuity  
  • Zero-Downtime Oracle Grid Infrastructure Patching |
| Oracle Real Application Clusters (Oracle RAC) | Extra cost option: **EE**, **EE-ES**  
  Included option: **DBCS EE-EP**, **ExaCS** | Oracle Real Application Clusters (Oracle RAC) includes the following features:  
  • All of the features included with Oracle RAC One Node  
  • Real Application Clusters scaling to multiple servers  
  • Connection Load Balancing  
  • Fast Connection Failover  
  • Hot Cluster Failover |
Table 1-15 (Cont.) Oracle Database Options and Their Permitted Features

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Real Application Testing</td>
<td>Extra cost option: EE, EE-ES</td>
<td>Oracle Real Application Testing includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included option: PE, DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>• Database Replay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SQL Performance Analyzer (SPA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database Consolidation Workbench</td>
</tr>
<tr>
<td><strong>Database Replay</strong></td>
<td></td>
<td><strong>Database Replay</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of Capture and Replay ASH Analytics Reports, Compare Period ADDM Reports, and Replay Compare Period Reports also requires an Oracle Diagnostics Pack license.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• An Oracle Real Application Testing license permits you to access Database Replay functionality through Oracle Enterprise Manager, as well as through the following database server command-line APIs: DBMS_WORKLOAD_CAPTURE package and DBMS_WORKLOAD_REPLAY package. The use of the DBMS_WORKLOAD_REPLAY.COMPARCE_PERIOD_REPORT() function also requires a license for Oracle Diagnostics Pack.</td>
</tr>
<tr>
<td><strong>SQL Performance Analyzer (SPA)</strong></td>
<td></td>
<td>An Oracle Real Application Testing license permits you to access SQL Performance Analyzer functionality through Oracle Enterprise Manager, as well as through the following database server command-line API: DBMS_SQLPA package, which is part of the Oracle Real Application Testing option.</td>
</tr>
<tr>
<td><strong>Database Consolidation Workbench</strong></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of the consolidation planning feature of Database Consolidation Workbench requires an Oracle Diagnostics Pack license.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of the database migration feature of Database Consolidation Workbench requires an Oracle Database Lifecycle Management Pack for Oracle Database license.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• An Oracle Real Application Testing license permits you to access the following links on the Database Consolidation Workbench page in Oracle Enterprise Manager:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– From the Enterprise menu, select Consolidation, then select Database Consolidation Workbench.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– On the database target home page, select the Administration menu, then select Database Consolidation Workbench.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– All features, functions, links, buttons, and drill-downs on this page are licensed as part of the Database Consolidation Workbench.</td>
</tr>
</tbody>
</table>
Table 1-15  (Cont.) Oracle Database Options and Their Permitted Features

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Spatial and Graph</td>
<td>Included option: PE, SE2, EE, EE-ES, DBCS SE, DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>Oracle Spatial and Graph includes the following features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Geospatial Data Features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Graph Database Features</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Geospatial Data Features</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SPATIAL_VECTOR_ACCELERATION to significantly improve 2D and 3D spatial vector query performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Classes in packages other than the oracle.spatial.geometry (sdoapi.jar) and oracle.spatial.util (sdoutil.jar) packages of the Spatial Java API</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Linear Referencing System (LRS) support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• GeoRaster Storage, Indexing, and Querying</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Network Data Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Topology Data Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spatial analysis and mining subprograms (SDO_SAM package)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spatial Routing Engine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Geocoding Engine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 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)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3-D Geometry, Surface, Triangulated irregular network (TIN), and Point Cloud Storage, Indexing, and Querying</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• GeoJSON</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Graph Database Features</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graph database features include the following models:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 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:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- A scalable graph database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- PGQL, a SQL-like declarative query language for the Property Graph data model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Data import from relational, CSV, GraphML, GraphSON, GML sources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Parallel bulk load and export of property graph data in Oracle-defined flat files format</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- A parallel, in-memory graph analytics engine with over 40 built-in analytics that include ranking, centrality, recommender, community detection, path finding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Developer-based APIs based upon Tinkerpop Blueprints, and Java graph APIs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Text search and query through integration with Oracle Text, Apache Lucene, and optionally, SolrCloud</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 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</td>
</tr>
</tbody>
</table>
Table 1-15  (Cont.) Oracle Database Options and Their Permitted Features

<table>
<thead>
<tr>
<th>Option</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– A storage model to represent graphs and networks in link and node tables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Java APIs to perform analysis in memory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Numerous graph analysis functions including shortest path, within cost, nearest neighbors, traveling salesman, spanning tree, and more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Explicit storage and connectivity of the graph with link- and node-level attributes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Support for directed and undirected graphs with or without cost</td>
</tr>
<tr>
<td>• An RDF Semantic Graph to model and analyze data represented as triples for social network, linked data, and other semantic applications. Its features include:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Graph relationships represented as triples in compressed, partitioned tables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Indexing, querying, and ontology management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– RDFS, OWL, and user-defined inferencing (parallel, batch, and incremental)</td>
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<tr>
<td></td>
<td></td>
<td>– Support for SPARQL 1.1 and mixed SPARQL and SQL queries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Enhanced Open Source Tools including Jena, Sesame, Joseki Web Services</td>
</tr>
</tbody>
</table>

Oracle Spatial and Graph includes a restricted use license for Oracle Partitioning. Refer to Oracle Spatial and Graph in "Restricted Use Licenses" for more information.

Oracle TimesTen Application-Tier Database Cache includes the following features:

- Data access using PL/SQL, JDBC, ODBC, ttClasses, OCI, and Pro*C/C++ interfaces
- Transaction Log API (XLA) for change notification
- Multi-node Cache Grid
- Automatic data synchronization with the Oracle database
- Transactional replication between the in-memory cache databases
- Automated failure detection and database failovers
- TimesTen Extension for Oracle SQL Developer
- TimesTen Plug-in for Oracle Enterprise Manager

1.5 Oracle Management Packs and Their Permitted Features

Table 1-16 lists Oracle management packs, the Oracle Database offerings for which each pack is available, and the features that are included with each pack. The features
in these packs are accessible through Oracle Enterprise Manager, Desktop Widgets, and APIs provided with Oracle Database software. You must be licensed for a management pack in order to use any of its features.
### Table 1-16 Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
</table>
| Oracle Cloud Management Pack for Oracle Database     | Extra cost pack: EE, EE-ES Included pack: DBCS EE-HP, DBCS EE-EP, ExaCS | **Features:** Oracle Cloud Management Pack for Oracle Database includes the following features:

- Database-as-a-Service comprising self-service database provisioning on physical or virtual infrastructure
- DBaaS Rapid Start Kit allowing users to set up and configure Enterprise Manager Cloud Control 12c in under a minute.
- Pluggable Database-as-a-Service (PDBaaS) providing self-service provisioning on a pool of multitenant container databases (CDBs).
- Support shared server, shared cluster, and shared database (Schema-as-a-Service) deployment models
- Virtual assembly provisioning. For example, if there is an assembly topology of three VMs (two WebLogic Server-managed servers and one database), you will need both packs to cover the respective tiers.
- Snap Clone, a fast, storage efficient way of cloning Oracle databases
- Full clones using RMAN backups
- Role based access and resource control through quotas and retirement policies
- Schedule- and performance-based resource management policies
- Metering and chargeback based on fixed cost, utilization metrics and configuration parameters of the database
- Programmatic access to the Self-Service Portal
- Blueprint driven orchestration of cloud operations

**Prerequisites:**
Oracle Cloud Management Pack for Oracle Database requires Oracle Database Lifecycle Management Pack for Oracle Database.

**Licensed Links:**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Cloud Management Pack for Oracle Database.

Starting on the Enterprise Summary home page, click the **Enterprise** menu. Select:

- **Cloud**, then **Infrastructure Home**
- **Cloud**, then **Infrastructure Request Dashboard**
- **Cloud**, then **Infrastructure Policies**
- **Cloud**, then **Middleware and Database Home**
- **Cloud**, then **Middleware and Database Request Dashboard**
- **Cloud**, then **Self Service Portal**
- **Cloud**, then **Service Instances**
- **Chargeback**
- **Provisioning and Patching**, then **Database Provisioning**. In the Database Provisioning page, in the Related Links section of the left menu pane, click **Provision Pluggable Databases**. Next, from the PDB Operations section, select **Create New Pluggable Databases**. Click **Launch**, and from Pluggable Database Creation Options, select **Clone an Existing PDB -> Snap Clone**.
Starting on the Enterprise Summary home page, click the Setup menu. Select:

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

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

**Licensed APIs:**

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

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

**Licensed Command Line Interface (CLI) Verbs:**

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

- `add_pool_members`
- `create_charge_item`
- `create_dbaas_quota`
- `create_dbprofile`
- `create_pool`
- `create_service_template`
- `delete_charge_item`
- `delete_dbaas_quota`
- `delete_pool`
- `delete_service_template`
- `get_dbaas_quota`
- `get_dbaas_request_settings`
- `get_metering_data`
- `get_pool_capacity_data`
- `get_pool_capacity_summary_data`
- `get_pool_constraints`
- `get_pool_criteria`
- `get_pool_detail`
- `get_pool_instance_data`
- `get_pool_target_type`
- `get_pools`
- `get_service_template`
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• list_charge_item_candidates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• remove_pool_members</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• update_dbaas_quota</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• update_dbaas_request_settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• update_pool</td>
</tr>
</tbody>
</table>

**Licensed Views and Tables:**
The following objects within the repository schema are licensed under Oracle Cloud Management Pack for Oracle Database:

- Tables starting with EMCT_CBA
- Views starting with EMCT$CBA
- The GP_EMCT_CBA_TARGET_CHARGE views
- The MGMT$EMCT_CBA_CHARGE_DAILY view
- The MGMT$EMCT_CBA_CHARGE_HOURLY view

**Licensed Chargeback Reports:**
The following BI Publisher reports are licensed under Oracle Cloud Management Pack for Oracle Database:

- Charge Trend Report
- Charge Summary Report
- Usage Trend Report
- Usage Summary Report

Also, any report created using the "create-like" feature of BI publisher referring the preceding reports, falls under this license.
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Data Masking and Subsetting Pack</td>
<td>Extra cost pack: EE, EE-ES Included pack: DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>Features: Oracle Data Masking and Subsetting Pack includes the following features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application Data Modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data Masking Formats Library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data Masking Definitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data Subsetting Definitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application Data Modeling, Data Masking and Subsetting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle Enterprise Manager Command Line Interface (CLI) verbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application Data Modeling accelerator for select versions of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle E-Business Suite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application Data Modeling accelerator for select versions of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle Fusion Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data Masking templates for select versions of Oracle Fusion Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data Masking templates for select versions of Oracle E-Business Suite</td>
</tr>
</tbody>
</table>

Oracle Data Masking and Subsetting Pack includes the following restricted use licenses:

- Database Gateway for APPC
- Database Gateway for DRDA
- Database Gateway for Informix
- Database Gateway for SQLServer
- Database Gateway for Sybase
- Database Gateway for Teradata

If you want to use the Oracle Database Gateways listed above not solely for the purposes of Oracle Data Masking and Subsetting Pack, then you must purchase full-use licenses for the Oracle Database Gateways. When using Oracle Data Masking and Subsetting Pack for non-Oracle databases, the Oracle Database Gateways stage the data in a separately licensed Oracle Database. Oracle Data Masking and Subsetting functionality cannot be executed directly against the non-Oracle database.

Oracle Data Masking and Subsetting Pack must be licensed only for the source database server, i.e., the databases from which the data originates.

There is no requirement to license the pack for the staging database server on which masking and subsetting operations are executed, or for copies made of the masked database.

Notes:


2. Application Data Modeling was previously called Data Discovery and Modeling.

Licensed Links:

All features, functions, links, buttons, and drill-downs on these Oracle Enterprise Manager menus are licensed as part of the Oracle Data Masking and Subsetting Pack.
<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Included Features</td>
</tr>
<tr>
<td></td>
<td>Starting on the Enterprise Summary home page, click the Enterprise menu, then Quality Management, then select:</td>
</tr>
<tr>
<td></td>
<td>• Application Data Modeling</td>
</tr>
<tr>
<td></td>
<td>• Data Masking Definitions</td>
</tr>
<tr>
<td></td>
<td>• Data Masking Formats</td>
</tr>
<tr>
<td></td>
<td>• Data Subset Definitions</td>
</tr>
<tr>
<td></td>
<td>From the Oracle database or cluster database target home page, click the Security menu, then select:</td>
</tr>
<tr>
<td></td>
<td>• Application Data Modeling</td>
</tr>
<tr>
<td></td>
<td>• Data Masking Definitions</td>
</tr>
<tr>
<td></td>
<td>• Data Subsetting</td>
</tr>
</tbody>
</table>
### Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database Lifecycle Management Pack for Oracle Database</td>
<td>Extra cost pack: EE, EE-ES</td>
<td>Features: Oracle Database Lifecycle Management Pack for Oracle Database includes the following features:</td>
</tr>
<tr>
<td></td>
<td>Included pack: DBCS EE-HP, DBCS EE-EP, ExaCS</td>
<td>• Change Activity Plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Client system analyzer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Compliance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Configuration Collection Extensibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Configuration Compare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Configuration History</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Configuration Instance Browser</td>
</tr>
<tr>
<td></td>
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<td>• Configuration Save</td>
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<td></td>
<td></td>
<td>• Configuration Search</td>
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<tr>
<td></td>
<td></td>
<td>• Configuration Topology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Copy Objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database Patching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database Provisioning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database Upgrade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Disaster Recovery via Site Guard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Enterprise Data Governance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• File Synchronization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Notifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pluggable Database (PDB) Clone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PDB Create/Plug/Unplug (Multiple target operations or performed using a customized deployment procedure.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PDB Migrate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RAC Scale Back</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RAC Scale Out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Real-time configuration change detection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Real-time schema change detection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Schema and Data Comparisons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Schema and Data Synchronization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Schema Change Plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Schema Comparisons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• User Defined Deployment Procedures (UDDP)</td>
</tr>
</tbody>
</table>

With the purchase of Oracle Database Lifecycle Management Pack for Oracle Database, you also are entitled to the features described in the following sections. These features are restricted to the Oracle Database targets in the Oracle Database Home and the Platform (hardware and operating system) for the CPUs you have licensed.

- Application Configuration Console
- The oplan Utility (The basic OPlan feature is free for everyone that has an Oracle Support contract. Use of OPlan metadata to drive orchestration logic from either Enterprise Manager or custom/third-party scripts is part of Oracle Database Lifecycle Management Pack for Oracle Database.)
- Migrate to ASM
- Self Update

**Licensed Parameters:**
The `init.ora` parameter ENABLE_DDL_LOGGING is licensed as part of Oracle Database Lifecycle Management Pack for Oracle.
### Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

**Licensed Links:**

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

**Licensed Links – Database Provisioning Procedures:**

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

- From the Enterprise Manager home page, click the **Enterprise menu**, **Provisioning and Patching**, then **Procedure Library**. All Procedures that Clone and Provision a Database are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.

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

- From the Oracle database or cluster database target home page, click the Oracle Database menu, then **Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

**Licensed Links – Database Upgrade:**

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

- From the Enterprise Manager home page, click the **Enterprise menu**, **Provisioning and Patching**, then **Procedure Library**. All Procedures that Upgrade a Database are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.

- From the Oracle database or cluster database target home page, click the Oracle Database menu, then **Provisioning**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

**Licensed Links – User Defined Deployment Procedures (UDDP)**

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

- From the Enterprise Manager home page, click the **Enterprise menu**, **Provisioning and Patching**, then **Procedure Library**. On the Provisioning Library page, from the list of actions, the Create New option is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Licensed Links – RAC Scale Out and Scale Back</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• From the Enterprise Manager home page, click the Enterprise menu, <strong>Provisioning and Patching</strong>, then <strong>Procedure Library</strong>. All Procedures that Scale a database or RAC are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• From the Enterprise Manager home page, click the Enterprise menu, <strong>Provisioning and Patching</strong>, then <strong>Database Provisioning</strong>. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• From the Oracle cluster database target home page, click the Oracle Database menu, then <strong>Provisioning</strong>. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Licensed Links – Database Patching</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</td>
</tr>
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<td>• From the Enterprise Manager home page, click the Enterprise menu, <strong>Provisioning and Patching</strong>, then <strong>Procedure Library</strong>. All Procedures that patch a database, Clusterware or Real Application Clusters are licensed with Oracle Database Lifecycle Management Pack for Oracle Database.</td>
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<td><strong>Licensed Links – Offline Patching</strong></td>
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<td>• From the Enterprise Manager home page, click the Setup menu, <strong>Provisioning and Patching</strong>, then <strong>Offline Patching</strong>. From the Online and Offline Setting tab, the <strong>Connection</strong>, Offline setting is licensed with Oracle Database Lifecycle Management Pack for Oracle Database.</td>
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<td>• From the Enterprise Manager home page, click on <strong>Targets</strong>, <strong>Databases</strong>, and select a Database. From the database home page, click on <strong>Oracle Database, Configuration</strong>. 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.</td>
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<td>– From the database home page, click on <strong>Oracle Database, Configuration</strong>. All features, functions, links, buttons, and drill-downs on this menu, excluding Topology, are licensed</td>
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Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

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**Licensed Links – Configuration Search**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

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

**Licensed Links – Configuration History**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

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

**Licensed Links – Configuration Compare**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

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

**Licensed Links – Configuration Save**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

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

**Licensed Links – Configuration Topology**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Target Home Page, click on Oracle Database, Configuration, Topology. In the View Dropdown, Used By is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- From the Target Home Page, click on Oracle Database, Configuration, Topology, Customization. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
- If the Target Home Page is accessed directly or by other paths:
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

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<td>From the Target Home Page, click on <strong>Oracle Database</strong>, <strong>Configuration, Topology</strong>. In the View drop-down, Used By is licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</td>
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**Licensed Links – Configuration Collection Extensibility**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

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

**Licensed Links – File Synchronization**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- When viewing comparison results differences as described in the Configuration Compare feature, select the configuration specification in the tree on the left. Select **Enable File Synchronization**. All features, functions, links, buttons, and drill-downs on this page are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

**Licensed Links – Schema Comparison:**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click on **Targets, Databases**, and then select a Database. From the database home page, click on **Schema, Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.

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

**Licensed Links – Schema and Data Comparisons:**
Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:

- From the Enterprise Manager home page, click on **Targets, Databases**, and then select a Database. From the database home page, click on **Schema, Change Management**. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

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<td><strong>Licensed Links – Schema and Data Synchronization:</strong> Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</td>
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<td>• From the Enterprise Manager home page, click on <strong>Targets, Databases</strong>, and then select a Database. From the database home page, click on <strong>Schema, Change Management</strong>. All features, functions, links, buttons, and drill-downs on this menu are licensed as part of Oracle Database Lifecycle Management Pack for Oracle Database.</td>
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<td><strong>Licensed Links – Real-Time Schema Change Detection:</strong> Use of the following Oracle Enterprise Manager pages and links requires a license for Oracle Database Lifecycle Management Pack for Oracle Database:</td>
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<td>• From the Enterprise Manager home page, click the <strong>Enterprise menu and Compliance</strong>. 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.</td>
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<td>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.</td>
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Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

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<td>• upgrade_database</td>
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**Licensed Repository Views – Compliance Views:**

The following compliance views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:

- MGMT$CCC_ALL_OBS_BUNDLES
- MGMT$CCC_ALL_OBSERVATIONS
- MGMT$CCC_DIAG_ANALYTICS
- MGMT$CCC_DIAG_QUEUEBACKLOG
- MGMT$COMPLIANCE_STANDARD
- MGMT$COMPLIANCE_STANDARD_GROUP
- MGMT$COMPLIANCE_STANDARD_RULE
- MGMT$COMPOSITE_CS_EVAL_SUMMARY
- MGMT$CS_ASM_DISKGRP_SETTINGS
- MGMT$CS_DB_CONTROL_FILE_COUNT
- MGMT$CS_DB_INIT_PARAMS
- MGMT$CS_DB_RBS_IN_SYSTEM
- MGMT$CS_DB_REC_SEG_SETTINGS
### Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

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**Licensed Repository Views – Provisioning and Patching Views:**

The following provisioning and patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:

- EM$PROV_APPTYPES
- EM$PROVAPP_METADATA
- EM$PROVAPP_METADATA_VERSION
- EM$PROVAPP_TAG_PROPERTIES
- EM$PROVAPP_TAGS
- MGMT$PA_RECOM_METRIC_SOURCE

**Licensed Repository Views – Patching Views:**

The following patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:

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

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<td>MGMT$ARU_FAMILY_PRODUCT_MAP</td>
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<td>MGMT$PA_AFFTED_HOST_GUID_OH</td>
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<tr>
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<tr>
<td>MGMT$RECOM_METRIC_SOURCE</td>
<td></td>
<td>• MGMT$RECOM_METRIC_SOURCE</td>
</tr>
</tbody>
</table>

**Licensed Repository Views – Configuration Views:**

The following configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:

- GC$ECM_COMP_PROPERTIES
- GC$ECM_CONFIG_SUMMARY
- GC$ECM_CURR_CONFIG
- GC$ECM_CURR_CONFIG_FLAT_MEMS
- GC$ECM_CURR_CONFIG_SNAPSHOTS
- GC$ECM_CURR_TARGET_SNAPSHOTS
- GC$ECM_DATA_RETENTION_TIME
- GC$ECM_GEN_SNAPSHOT
- GC$ECM_SAVED_CONFIG
- GC$ECM_SAVED_CONFIG_FLAT_MEMS
- GC$ECM_SAVED_CONFIG_SNAPSHOTS
- GC$ECM_SAVED_CONFIG_TARGETS
- GC$ECM_SAVED_TARGET_SNAPSHOTS
- MGMT$CCS_DATA
- MGMT$CCS_DATA_SOURCE
<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT$CCS_DATA_SOURCE_VISIBLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$CCS_DATA_VISIBLE</td>
<td></td>
<td></td>
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<tr>
<td>MGMT$DB_CONTROLFILES</td>
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<tr>
<td>MGMT$DB_DATAFILES</td>
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<td></td>
</tr>
<tr>
<td>MGMT$DB_DBNINSTANCEINFO</td>
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<tr>
<td>MGMT$DB_FEATUREUSAGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$DB_INIT_PARAMS</td>
<td></td>
<td></td>
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<tr>
<td>MGMT$DB_LICENSE</td>
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<td>MGMT$DB_OPTIONS</td>
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<td>MGMT$DB_REDLOGS</td>
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<td>MGMT$DB_ROLLBACK_SEGS</td>
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<td>MGMT$DB_TABLESPACES_ALL</td>
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<td></td>
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<tr>
<td>MGMT$ECM_CMP_JOB_LAST_RESULTS</td>
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<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_JOBS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_RPT_CCS_DS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_RPT_CCS_DS_DTLS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_RPT_CCS_PD_ALL</td>
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</tr>
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<td>MGMT$ECM_CMP_RPT_CCS_PD_DIFFS</td>
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<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_RPT_CI_DIFFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_CMP_VISIBLE_CONFIGS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_CURRENT_SNAPSHOTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$ECM_VISIBLE_SNAPSHOTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$SERVICETAG_INSTANCES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$SERVICETAG_REGISTRY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT$UNPATCHABLE_DB_TARGETS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Licensed Repository Views – Oracle Home Patching Views:**

The following Oracle home patching views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:

- MGMT$APPLIED_PATCHES
- MGMT$APPLIED_PATCHSETS
- MGMT$APPL_PATCH_AND_PATCHSET
- MGMT$CPF_ADVISORY_INFO
- MGMT$CPF_HOMES_INFO
- MGMT$CPF_PATCH_INFO
- MGMT$EM_HOMES_PLATFORM
- MGMT$HOMES_AFFECTED
- MGMT$OH_CLONE_PROPERTIES
- MGMT$OH_COMP_DEP_RULE
- MGMT$OH_COMP_INST_TYPE
- MGMT$OH_COMPONENT
- MGMT$OH_CRS_NODES
- MGMT$OH_DEP_HOMES
- MGMT$OH_FILE
- MGMT$OH_HOME_INFO
### Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_INSTALLED_TARGETS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_INV_SUMMARY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_PATCH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_PATCHED_COMPONENT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_PATCHED_FILE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_PATCH_FIXED_BUG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_PATCHSET</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$OH_VERSIONED_PATCHV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MGMT$PATCH_ADVISORIES</td>
</tr>
</tbody>
</table>

**Licensed Repository Views – Security Views:**
The following security views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
- MGMT$ESA_ALL_PRIVS_REPORT  
- MGMT$ESA_ANY_DICT_REPORT  
- MGMT$ESA_ANY_PRIV_REPORT  
- MGMT$ESA_AUDIT_SYSTEM_REPORT  
- MGMT$ESA_BECOME_USER_REPORT  
- MGMT$ESA_CATALOG_REPORT  
- MGMT$ESA_CONN_PRIV_REPORT  
- MGMT$ESA_CREATE_PRIV_REPORT  
- MGMT$ESA_DBA_GROUP_REPORT  
- MGMT$ESA_DBA_ROLE_REPORT  
- MGMT$ESA_DIRECT_PRIV_REPORT  
- MGMT$ESA_EXMPT_ACCESS_REPORT  
- MGMT$ESA_KEY_OBJECTS_REPORT  
- MGMT$ESA_OH_OWNERSHIP_REPORT  
- MGMT$ESA_OH_PERMISSION_REPORT  
- MGMT$ESA_POWER_PRIV_REPORT  
- MGMT$ESA_PUB_PRIV_REPORT  
- MGMT$ESA_SYS_PUB_PKG_REPORT  
- MGMT$ESA_TABSP_OWNERS_REPORT  
- MGMT$ESA_TRC_AUD_PERM_REPORT  
- MGMT$ESA_WITH_ADMIN_REPORT  
- MGMT$ESA_WITH_GRANT_REPORT  

**Licensed Repository Views – Client Configuration Views:**
The following client configuration views within the repository schema are licensed under Oracle Database Lifecycle Management Pack for Oracle Database:
- MGMT$CSA_COLLECTIONS  
- MGMT$CSA_FAILED  
- MGMT$CSA_HOST_COOKIES  
- MGMT$CSA_HOST_CPUS  
- MGMT$CSA_HOST_CUSTOM  
- MGMT$CSA_HOST_IOCARDS  
- MGMT$CSA_HOST_NICS  
- MGMT$CSA_HOST_OS_COMPONENTS
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• MGMT$CSA_HOST_OS_FILES YEMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MGMT$CSA_HOST_OS_PROPERTIES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MGMT$CSA_HOST_RULES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MGMT$CSA_HOST_SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MGMT$ECM_CONFIG_HISTORY</td>
</tr>
</tbody>
</table>
Table 1-16 (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Diagnostics Pack</td>
<td>Extra cost pack: EE, EE-ES</td>
<td>Features: Oracle Diagnostics Pack includes the following features:</td>
</tr>
</tbody>
</table>
|                  | Included pack: DBCS EE, DBCS EE-HP, DBCS EE-EP, ExaCS | - Performance monitoring and diagnostics (database and host)  
- Automatic Workload Repository (AWR)  
- AWR Warehouse  
- Automatic Database Diagnostic Monitor (ADDM)  
- Compare Period ADDM  
- Real Time ADDM  
- Active Session History (ASH)  
- ASH analytics  
- Performance Hub  
- Exadata Cell Grid Administration  
- Exadata Cell Grid Performance  
- Exadata Cell Group Health Overview page  
- Exadata Resource Utilization  
- Blackouts  
- Notifications  
- Metric and Alert/Event history  
- User-Defined Metrics and Metric Extensions  
- Management Connectors  
- Dynamic metric baselines and Adaptive metric thresholds  
- Monitoring templates and Template Collections  
- Replay Compare Period Report  
- Supporting functionality to perform per stream bottleneck detection and per component top wait event analysis |

In order to use the features listed above, you must purchase licenses for Oracle Diagnostics Pack. A new initialization parameter, `CONTROL_MANAGEMENT_PACK_ACCESS`, controls access to Oracle Diagnostics Pack and Oracle Tuning Pack. This parameter can be set to one of three values:

- **DIAGNOSTIC+TUNING**: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is enabled in the database server.
- **DIAGNOSTIC**: Only Oracle Diagnostics Pack functionality is enabled in the server.
- **NONE**: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is disabled in the database server.

Any and all methods of accessing Oracle Diagnostics Pack functionality, whether through Enterprise Manager Console, Desktop Widgets, command-line APIs, or direct access to the underlying data, requires an Oracle Diagnostics Pack license.

**Licensed Links:**

To determine which links in Enterprise Manager are part of Oracle Diagnostics Pack, click the **Setup** link on the top right-hand part of the Enterprise Manager Home page.

- When you click the **Setup** link, the navigation bar contains the **Management Pack Access** link. Click this link.
- This will take you to the **Management Pack Access** page, which allows you to grant and remove access from all the management packs.
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>– For Enterprise Manager Database Control, click the <strong>Remove Access</strong> radio button for the Diagnostics Pack and click <strong>Apply</strong>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– For Enterprise Manager Cloud Control, click the appropriate check box for the Diagnostics Pack and click <strong>Apply</strong>.</td>
</tr>
</tbody>
</table>

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

**Licensed Command-Line APIs:**

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

- The `DBMS_ADDM`, `DBMS_PERF`, `DBMS_UMF`, and `DBMS_WORKLOAD_REPOSITORY` packages are part of this pack.
- The `DBMS_ADVISOR` package is part of this pack if you specify ADDM as the value of the `advisor_name` parameter, or if you specify for the value of the `task_name` parameter any value starting with the ADDM prefix.
- The `DBMS_WORKLOAD_REPLAY.COMpare_PERIOD_REPORT` function is part of this pack.
- The `V$ACTIVE_SESSION_HISTORY` dynamic performance view and its underlying table, `X$ASH`, are part of this pack.
- The `DBA_STREAMS_TP_PATH_BOTTLENECK` view is part of this pack.
- All views beginning with `DBA_ADDM_` are part of this pack.
- Some data in `DBA_STREAMS_TP_COMPONENT_STAT` requires Oracle Diagnostics Pack. The following filter clause to any query on `DBA_STREAMS_TP_COMPONENT_STAT` shows Diagnostics-Pack-dependent data:

  ```sql
  WHERE STATISTIC_UNIT = 'PERCENT'
  ```

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

  ```sql
  SELECT * FROM DBA_STREAMS_TP_COMPONENT_STAT
  WHERE STATISTIC_UNIT = 'PERCENT';
  ```

- All data dictionary views beginning with the prefix `DBA_HIST_` are part of this pack, along with their underlying tables. The only exception are the views: `DBA_HIST_SNAPSHOT`, `DBA_HIST_DATABASE_INSTANCE`, `DBA_HIST SNAP_ERROR`, `DBA_HIST_SEG_STAT`, `DBA_HIST_SEG_STAT_OBJ`, and `DBA_HIST_UNDOSTAT`. They can be used without the Oracle Diagnostics Pack license.
- All data dictionary views with the prefix `DBA_ADVISOR_` are part of this pack if queries to these views return rows with the value ADDM in the `ADVISOR_NAME` column or a value of ADDM* in the `TASK_NAME` column or the corresponding `TASK_ID`.
- The following reports found in the `/rdbs/admin/` directory of the Oracle home directory are part of this pack: `awrpt.sql`, `awrrpti.sql`, `awrgrpt.sql`, `awrgrpti.sql`, `awrgdrpt.sql`, `awrgdrpt.sql`. 
### Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>awrgdrpi.sql, addmrpt.sql, addmrpti.sql, ashrpt.sql, ashrpti.sql, awrdrpt.sql, awrdrrpi.sql, awrsqrp.sql, awrsqrp.sql, awrexr.sql, awrload.sql, awrinfor.sql, spawrio.sql, and spawrrac.sql.</td>
</tr>
</tbody>
</table>

**Licensed Repository Views – Monitoring Views:**
The following monitoring views are licensed under Oracle Diagnostics Pack:

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

**Licensed Repository Views – Template Views:**
The following template views are licensed under Oracle Diagnostics Pack:

- MGMT$TEMPLATES
- MGMT$TEMPLATE_METRIC_COLLECTION
- MGMT$TEMPLATE_METRIC_SETTINGS
- MGMT$TEMPLATE_POLICY_SETTINGS
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Tuning Pack</td>
<td>Extra cost pack: EE,</td>
<td>Features:</td>
</tr>
<tr>
<td></td>
<td>EE-ES</td>
<td>• SQL Access Advisor</td>
</tr>
<tr>
<td></td>
<td>Included pack: DBCS</td>
<td>• SQL Tuning Advisor</td>
</tr>
<tr>
<td></td>
<td>EE, DBCS EE-HP,</td>
<td>• Oracle Database In-Memory Advisor</td>
</tr>
<tr>
<td></td>
<td>DBCS EE-EP,</td>
<td>• Automatic SQL Tuning</td>
</tr>
<tr>
<td></td>
<td>ExaCS</td>
<td>• SQL Profiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Real-time SQL and PL/SQL Monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Real-time Database Operations Monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reorganize objects</td>
</tr>
</tbody>
</table>

A new initialization parameter, CONTROL_MANAGEMENT_PACK_ACCESS, is introduced to control access to Oracle Diagnostics Pack and Oracle Tuning Pack in the database server. This parameter can be set to one of three values:

- **DIAGNOSTIC+TUNING**: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is enabled in the database server.
- **DIAGNOSTIC**: Only Oracle Diagnostics Pack functionality is enabled in the server.
- **NONE**: Oracle Diagnostics Pack and Oracle Tuning Pack functionally is disabled in the database server.

Any and all methods of accessing Oracle Tuning Pack functionality, whether through Enterprise Manager Console, Desktop Widgets, command-line APIs, or direct access to the underlying data, requires an Oracle Tuning Pack license.

**Prerequisites:**
Oracle Tuning Pack requires Oracle Diagnostics Pack.

**Licensed Links:**
To determine which links in Enterprise Manager are part of Oracle Tuning Pack, click the **Setup** link on the top right-hand part of the Enterprise Manager Home page.

- When you click the **Setup** link, the navigation bar contains the **Management Pack Access** link. Click this link.
- This will take you to the Management Pack Access page, which allows you to grant and remove access from all the management packs.
  - For Enterprise Manager Database Control, click the **Remove Access** radio button for the Tuning Pack and click **Apply**.
  - For Enterprise Manager Cloud Control, click the appropriate check box for the Tuning Pack and click **Apply**.

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

**Licensed Command Line APIs:**
Oracle Tuning Pack features can also be accessed by way of database server APIs and command-line interfaces:
Table 1-16  (Cont.) Oracle Management Packs and Their Permitted Features

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Availability</th>
<th>Included Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• DBMS_ADVISOR, when the value of the advisor_name parameter is either SQL Tuning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advisor or SQL Access Advisor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DBMS_AUTO_SQLTUNE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DBMS_PERF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DBMS_SQL_MONITOR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DBMS_SQLTUNE (See Note)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• V$SQL_MONITOR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• V$SQL_PLAN_MONITOR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The following report found in the /rdbms/admin/ directory of the Oracle home</td>
</tr>
<tr>
<td></td>
<td></td>
<td>directory is part of this pack: sqltrpt.sql.</td>
</tr>
</tbody>
</table>

Note: If you are licensed for the on-premise Oracle Database Enterprise Edition, then you can use certain subprograms of the DBMS_SQLTUNE package even if you do not have an Oracle Tuning Pack license. See the SQL Tuning Sets entry in Table 1-7 for more information.

1.6 Checking for Feature, Option, and Management Pack Usage

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

• Oracle Database option and Oracle management pack usage
• Features used by each option and management pack

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

1. Use a Web browser to view the My Oracle Support Web site:
   https://support.oracle.com

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

3. Search for Document ID 1317265.1, or access it directly with the following URL:
   https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1317265.1

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

Table 1-17 Special License Rights

<table>
<thead>
<tr>
<th>Feature / Option</th>
<th>Licensing Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Guard Far Sync</td>
<td>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.</td>
</tr>
<tr>
<td>Global Data Services</td>
<td>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.</td>
</tr>
<tr>
<td>Infrastructure repository databases</td>
<td>A separate single instance Oracle Database can be installed and used as an infrastructure repository for RMAN, Oracle Enterprise Manager Cloud Control, Automatic Workload Repository (AWR) Warehouse, Global Data Services Catalog, Sharding Catalog, and Grid Infrastructure Management Repository without additional license requirements, provided that all the targets are correctly licensed. It may not be used or deployed for other uses. The infrastructure repositories for RMAN, Oracle Enterprise Manager Cloud Control, AWR Warehouse, Global Data Services Catalog, and Sharding Catalog can be shared in one database, or deployed in separate databases. Enterprise Edition must be used for the infrastructure repository database(s). If Oracle RAC is used for the infrastructure database, then Oracle RAC licenses for all servers, and Enterprise Edition licenses for all but the first server, are required. If Data Guard is used for the infrastructure database for RMAN, Oracle Enterprise Manager Cloud Control, AWR Warehouse, Global Data Services, and Grid infrastructure management Repository, then an Enterprise Edition license for the standby server is required. The Infrastructure Database for the Sharding Catalog can be protected with Data Guard without a second Enterprise Edition license.</td>
</tr>
<tr>
<td>Feature / Option</td>
<td>Licensing Information</td>
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<tr>
<td>------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Oracle ASM Cluster File System**       | When used with non-Oracle Database files, all Oracle ACFS features are free. When used with Oracle Database files, all Oracle ACFS features are free, with the following exceptions:  
  • ACFS Auditing - Not available (use Oracle Audit Vault*)  
  • ACFS Compression - Not available (use Oracle Advanced Compression*)  
  • ACFS Encryption - Not available (use Oracle Transparent Data Encryption, part of the Oracle Advanced Security option*)  
  • ACFS Security - Not available (use Oracle Database Vault*)  
  * Requires appropriate full-use licenses to these products or components.  
  Oracle will provide support services for Oracle ACFS only if the server it operates on also operates an Oracle product, which may include Oracle Linux or Oracle Solaris, which is under an Oracle support contract. |
| Oracle Automatic Storage Management (Oracle ASM) | Oracle ASM is free to use with all Oracle databases and Oracle ACFS file systems.                                                             |
| Oracle Clusterware                        | Oracle Clusterware provides cluster membership and high availability monitoring and failover. Oracle Clusterware may be used to protect any application (restarting or failing over the application in the event of a failure) on any server, free of charge. Oracle will provide support for Clusterware only if the server is running an Oracle product, which may include Oracle Linux or Oracle Solaris, that is also under Oracle support. |
| Oracle Connection Manager                 | Oracle Connection Manager can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Connection Manager. |
| Oracle Data Guard broker                  | You can install the broker command line interface DGMGRL and run the observer software on computer systems that are separate from the Oracle Data Guard primary and standby systems. It is not necessary to obtain a separate license for a system hosting the observer. |
| Oracle Database Backup Cloud Service      | Oracle Database Backup Cloud Service includes use of the following two features from the Oracle Advanced Security option or the Oracle Advanced Compression option at no additional cost:  
  • RMAN backup encryption  
  • All RMAN backup compression algorithms  
  To use additional features of the Oracle Advanced Security option or the Oracle Advanced Compression option, you must license those options separately. In addition, the Oracle Advanced Security option must be separately licensed when performing RMAN encrypted backups directly to disk. |
| Oracle Database Gateway for ODBC          | Oracle Database Gateway for ODBC can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Gateway for ODBC. |
| Oracle Database Provider for DRDA         | Oracle Database Provider for DRDA can be installed and used on a machine different from the machine where the Oracle Database is installed and used. It is not necessary to obtain a separate license for the machine running Oracle Database Provider for DRDA. |
### Table 1-17  (Cont.) Special License Rights

<table>
<thead>
<tr>
<th>Feature / Option</th>
<th>Licensing Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database Vault</td>
<td>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.</td>
</tr>
<tr>
<td>Oracle Real Application Testing</td>
<td>The full functionality of Oracle Real Application Testing is available only on Oracle Database 11g Release 1 or higher. Partial functionality of Oracle Real Application Testing is available to customers wishing to upgrade from Oracle9i Database Release 2 or Oracle Database 10g. The functionality available on Oracle9i Database Release 2 is as follows:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Database Replay:</strong> Only the Workload Capture feature is supported, and the captured workload may only be replayed only on Oracle Database 11g. This feature can be used only to facilitate upgrades from Oracle 9i Database Release 2 to Oracle Database 11g or higher. The functionality available on Oracle Database 10g Release 2 is as follows:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Database Replay:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td>• <strong>SQL Performance Analyzer:</strong> 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.</td>
</tr>
<tr>
<td>Oracle Secure Backup</td>
<td>For backup of Oracle Database Enterprise Edition, Oracle Secure Backup includes restricted use licenses for:</td>
</tr>
<tr>
<td>Oracle Secure Backup Cloud Module</td>
<td>• RMAN backup encryption to tape or Amazon S3</td>
</tr>
<tr>
<td></td>
<td>• RMAN backup compression leveraging LOW, MEDIUM, BASIC or HIGH algorithms</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Oracle Secure Backup Express</td>
<td>Oracle Secure Backup Express is bundled with the Oracle Database. Support for Oracle Secure Backup Express is provided exclusively through a free Oracle Discussion Forum monitored by Oracle employees as well as community experts. Oracle Secure Backup Express can back up an Oracle database as well as Oracle home files and other file system data requiring tape protection. For more information, refer to Oracle Secure Backup Licensing Information.</td>
</tr>
</tbody>
</table>
### Table 1-17  (Cont.) Special License Rights

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

### Table 1-18 Restricted Use Licenses

<table>
<thead>
<tr>
<th>Feature / Option</th>
<th>Licensing Information</th>
</tr>
</thead>
</table>
| Oracle Advanced Security      | Any Oracle Advanced Security licenses purchased on or before January 31, 2004, have restricted use of the Oracle Internet Directory (OID) component of Oracle Directory Services Plus to support Enterprise User Security. Oracle Advanced Security includes a restricted use license for the following Oracle Enterprise Manager features:  
  - Application Data Models (previously called Data Discovery and Modeling)  
  - Sensitive Column Types and Sensitive Data Discovery  
  - Application Accelerators  
  If you want to use the Oracle Enterprise Manager features listed above not solely for the purposes of Oracle Advanced Security, then you must purchase a full-use license for Oracle Data Masking and Subsetting Pack. |
| Oracle Application Server     | A restricted use license for Oracle Application Server Containers for J2EE (OC4J) is included with all editions (except for Oracle Database Express Edition). This embedded version is provided solely to support Oracle Enterprise Manager (Database and Cloud Control), Advanced Queuing Servlet, Ultra Search, and Application Express, and may not be used or deployed for other purposes. |
| Oracle Applications Unlimited | An Oracle Database Cloud Service Enterprise Edition (DBCS-EE) instance being used to support an Oracle Cloud deployment of an Oracle Applications Unlimited application has restricted use of the following options: Oracle On-Line Analytical Processing (OLAP) and Oracle Partitioning. These options may be used only to support Oracle Applications Unlimited and may not be used or deployed for any other purpose. |
| Oracle Big Data SQL            | Oracle Big Data SQL includes a Query Server that is used to query data sources including HDFS, Kafka, and NoSQL stores. Oracle Big Data SQL includes a restricted use license of Oracle Database for storing metadata (i.e. external tables and views) maintained by the Query Server. No other objects may be created in this Oracle Database. |
| Oracle Database Mobile Server  | Oracle Database Mobile Server is a powerful tool for controlling networks of mobile or embedded devices from a centralized management console. It provides a secure, scalable method for connecting applications running locally on mobile or embedded devices to an Oracle enterprise backend. The synchronization system is robust and fault tolerant. It is able to successfully synchronize over unreliable or intermittently available networks. Oracle Database Mobile Server provides management for applications, users, and devices. It runs on a variety of application server platforms, including Oracle WebLogic, Oracle Glassfish, and Apache TomEE.  
  On the client device side, it is designed to work with Oracle Berkeley DB as a data store, providing efficient, reliable, and secure data management running locally on mobile and embedded devices. It is also compatible with SQLite, a widely used open source data store. Database Mobile Server supports many popular device platforms including Oracle Java, Linux, Windows (laptop as well as mobile/CE), and Android. |
### Table 1-18  (Cont.) Restricted Use Licenses

<table>
<thead>
<tr>
<th>Feature / Option</th>
<th>Licensing Information</th>
</tr>
</thead>
</table>
| Oracle Database Vault | Oracle Database Vault includes a restricted use license for the following Oracle Enterprise Management features:  
  • Application Data Modeling (previously called Data Discovery and Modeling)  
  • Application Data Modeling accelerator for select versions of Oracle E-Business Suite  
  • Application Data Modeling accelerator for select versions of Oracle Fusion Applications |
| Oracle HTTP Server | A restricted use license for Oracle HTTP Server is included with all editions (except for Oracle Database Express Edition) when the HTTP Server is running on the same server as the database. Running Oracle HTTP server on a different server requires that other server be licensed to use the HTTP server, either through an Oracle Database license or an Oracle Application Server license |
| Oracle Internet Directory | A restricted use license for Oracle Identity Management Directory Services Plus component Oracle Internet Directory (OID) is included with all editions (except for Oracle Database Express Edition) if users use the Directory Naming feature to configure Oracle Net Services. OID may not be used or deployed for other uses. |
| Oracle Label Security | Oracle Label Security includes a restricted use license for the following Oracle Enterprise Manager features:  
  • Application Data Models (previously called Data Discovery and Modeling)  
  • Sensitive Column Types and Sensitive Data Discovery  
  • Application Accelerators  
If you want to use the Oracle Enterprise Manager features listed above not solely for the purposes of Oracle Label Security, then you must purchase a full-use license for Oracle Data Masking and Subsetting Pack. |
| Oracle Programmer | Oracle Programmer provides application programmers with a programmatic interface to any edition of Oracle Database. However, in order to use Oracle Programmer, you must purchase a separate Oracle Programmer license.  
Oracle Programmer includes the following products:  
  • Embedded SQL-style interfaces: Pro*C/C++, Pro*COBOL, Pro*Fortran, SQL*Module for Ada, SQLJ  
  • Utilities to generate host-language bindings from database schemas: Object Type Translator and JPub |
| Oracle Real Application Testing | Restricted use licenses of Load Testing Accelerator for Oracle Database, Oracle Load Testing, and Oracle Load Testing Controller are included with Oracle Real Application Testing for use for Oracle Database testing and may not be used for application testing. |
| Oracle Secure Backup Express | Oracle Secure Backup Express is a centralized tape backup management solution that provides data protection for single-server Oracle Database environments. A restricted use license for Oracle Secure Backup Express is included with all Oracle Database editions. Oracle Secure Backup Express is limited to a single host with one direct-attached tape drive and has some restrictions on advanced feature usage. Refer to the Oracle Secure Backup Licensing Information for additional information. |
| Oracle Sharding | Oracle Sharding includes a restricted use license for Global Data Services.  
If you want to use Global Data Services not solely for the purposes of Oracle Sharding, then you must be licensed for the Oracle Active Data Guard option. |
Table 1-18  (Cont.) Restricted Use Licenses

<table>
<thead>
<tr>
<th>Feature / Option</th>
<th>Licensing Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Spatial and Graph</td>
<td>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.</td>
</tr>
</tbody>
</table>
Third-Party Notices and/or Licenses

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

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

2.1.1 Commercial Software Included in Oracle Database

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

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

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

Required notices for open source or other separately licensed software products or components distributed in Oracle Database 20c are identified in the following table along with the applicable licensing information. Additional notices and/or licenses may be found in the included documentation or readme files of the individual third party software.
<table>
<thead>
<tr>
<th>Provider</th>
<th>Component(s)</th>
<th>Licensing Information</th>
</tr>
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<td>ANTLR 3 License</td>
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<tr>
<td></td>
<td></td>
<td>[The BSD License]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copyright (c) 2003-2007, Terence Parr</td>
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</tr>
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<td>Batik SVG Toolkit 1.11</td>
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</tr>
<tr>
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<tr>
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<td>Apache Commons CSV</td>
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### Table 2-2  (Cont.) Open Source or Other Separately Licensed Software Included in Oracle Database

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<td>Commons Codec 1.13</td>
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</tr>
<tr>
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<td>For a copy of the license, see Commons Compress 1.19 License.</td>
</tr>
<tr>
<td>Apache</td>
<td>Commons FileUpload 1.4</td>
<td>Apache Commons FileUpload Copyright 2002-2017 The Apache Software Foundation This product includes software developed at The Apache Software Foundation (<a href="http://www.apache.org/">http://www.apache.org/</a>). This product is licensed under the Apache 2.0 license agreement. See The Apache Software License, Version 2.0.</td>
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</table>
### Table 2-2    (Cont.) Open Source or Other Separately Licensed Software Included in Oracle Database

<table>
<thead>
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<th>Provider</th>
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<table>
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<th>Provider</th>
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<td>For a copy of the license, see <a href="#">HttpComponents HttpClient 4.5.10 License</a>.</td>
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| Apache       | HttpComponents Core   | Apache HttpComponents Core  
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The Linux Name Service Switch code, contributed by National ICT Australia Ltd (NICTA) is licensed under the terms of the NICTA Public Software Licence (which is substantially similar to the "Three-Clause BSD License", with some additional language pertaining to Australian law).  
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<p>| CPAN         | DBD-Oracle 1.80       | For a copy of the license, see <a href="#">DBD-Oracle 1.80 License</a>.                                                                                       |</p>
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</tr>
</thead>
</table>
| Contributors        | xgboost 0.82 | Copyright (c) 2016 by Contributors
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  ## Documentation  
  The full editor documentation is available online at the following address: http://docs.ckeditor.com  
  ## Installation  
  Installing CKEditor is an easy task. Just follow these simple steps:  
  1. **Download** the latest version from the CKEditor website: http://ckeditor.com. You should have already completed this step, but be sure you have the very latest version.  
  2. **Extract** (decompress) the downloaded file into the root of your website.  
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  The editor comes with a few sample pages that can be used to verify that installation proceeded properly. Take a look at the `samples` directory.  
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<td># Jackson JSON processor</td>
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<td>Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (<a href="mailto:tatu.soloranta@iki.fi">tatu.soloranta@iki.fi</a>), and has been in development since 2007. It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.</td>
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gdal/ogr/ogrsf_frmts/dxf/intronurbs.cpp

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

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google guava v27.1 (APACHE)

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- guava-gwt
- guava-testlib
- guava-tests
- guava
- refactorings
- util

4P Dependencies:
- com.google.code.findbugs » jsr305 3.0.2

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

/*
 * An empty artifact that Guava depends on to signal that it is providing
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 * contains com.google.common.util.concurrent.ListenableFuture class, without
 * any other Guava classes. The idea is:
*- If users want only ListenableFuture, they depend on listenablefuture-1.0.

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

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com.google.j2objc » j2objc-annotations 1.1

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org.checkerframework » checker-qual 2.5.2

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A-86

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

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/* zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.11, January 15th, 2017

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Jean-loup Gailly    Mark Adler
jloup@gzip.org      madler@alumni.caltech.edu
The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files http://tools.ietf.org/html/rfc1950 (zlib format), rfc1951 (deflate format) and rfc1952 (gzip format).

/* adler32.c -- compute the Adler-32 checksum of a data stream
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 */

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

/* deflate.c -- compress data using the deflation algorithm
 * Copyright (C) 1995-2017 Jean-loup Gailly and Mark Adler
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 */

/* inflate.c -- zlib decompression
 * Copyright (C) 1995-2016 Mark Adler
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 */

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<tr>
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<tr>
<td>js/libs/oj/v6.0.0/min/ojtree.js (jsTree.js)</td>
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7. The following files (originally from https://github.com/marianobarrios/tls-channel):

AsynchronousTlsChannel.java
AsynchronousTlsChannelGroup.java
ExtendedAsynchronousByteChannel.java
BufferHolder.java
ByteBufferSet.java
ByteBufferUtil.java
TlsChannelImpl.java
TlsChannelCallbackException.java
Util.java
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   com.hazelcast.client.impl.protocol.util.BufferBuilder
contain code originating from the Agrona project (https://github.com/real-logic/Agrona).
The class com.hazelcast.util.HashUtil contains code originating from the Koloboke
The class classloading.ThreadLocalLeakTestUtils contains code originating from the
Tomcat project (https://github.com/apache/tomcat).
com.hazelcast.internal.cluster.fd.PhiAccrualFailureDetector contains code originating
from the Akka project (https://github.com/akka/akka).
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• Lucene Core (org.apache.lucene:lucene-core:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-core)
• Lucene Facets (org.apache.lucene:lucene-facet:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-facet)
• Lucene Miscellaneous (org.apache.lucene:lucene-misc:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-misc)
• Lucene Queries (org.apache.lucene:lucene-queries:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-queries)
• Lucene QueryParsers (org.apache.lucene:lucene-queryparser:5.5.5 - http://lucene.apache.org/lucene-parent/lucene-queryparser)
• EL 2.2 plugin (org.apache.openwebbeans:openwebbeans-el22:2.0.11 - openwebbeans.apache.org/openwebbeans-el22)
• OpenWebBeans Core (org.apache.openwebbeans:openwebbeans-impl:2.0.11 - openwebbeans.apache.org/openwebbeans-impl)
• Jetty 9 plugin (org.apache.openwebbeans:openwebbeans-jetty9:2.0.11 - openwebbeans.apache.org/openwebbeans-jetty9)
• SPI definition (org.apache.openwebbeans:openwebbeans-spi:2.0.11 - openwebbeans.apache.org/openwebbeans-spi)
• Web plugin (org.apache.openwebbeans:openwebbeans-web:2.0.11 - openwebbeans.apache.org/openwebbeans-web)
• org.apiguardian:apiguardian-api (org.apiguardian:apiguardian-api:1.1.0 - https://github.com/apiguardian-team/apiguardian)
• Jackson (org.codehaus.jackson:jackson-core-asl:1.9.11 - http://jackson.codehaus.org)
• Plexus Classworlds (org.codehaus.plexus:plexus-classworlds:2.5.2 - http://plexus.codehaus.org/plexus-classworlds)
• Plexus :: Component Annotations (org.codehaus.plexus:plexus-component-annotations:1.5.5 - http://plexus.codehaus.org/plexus-containers/plexus-component-annotations)


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


Appendix A

Jetty 9.4.24 License

A-163


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

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

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


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

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


• classfilewriter (org.jboss.classfilewriter:jboss-classfilewriter:1.2.4.Final - https://github.com/jbossas/jboss-classfilewriter)
• JBoss Logging 3 (org.jboss.logging:jboss-logging:3.3.2.Final - http://www.jboss.org)
• Weld APIs (org.jboss.weld:weld-api:3.1.SP1 - http://weld.cdi-spec.org)
• Weld Implementation (Core) (org.jboss.weld:weld-core-impl:3.1.2.Final - http://weld.cdi-spec.org)
• Weld SPIs for container integration (org.jboss.weld:weld-spi:3.1.SP1 - http://weld.cdi-spec.org)
• Weld JSF (org.jboss.weld.module:weld-jsf:3.1.2.Final - http://weld.cdi-spec.org)
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• JGroups (org.jgroups:jgroups:4.0.18.Final - http://www.jgroups.org)
• MongoDB Java Driver (org.mongodb:mongo-java-driver:2.13.2 - http://www.mongodb.org)
• MortBay :: Apache EL :: API and Implementation (org.mortbay.jasper:apache-el:8.5.40 - https://github.com/jetty-project/jasper-jsp/apache-el)
• MortBay :: Apache Jasper :: JSP Implementation (org.mortbay.jasper:apache-jsp:8.5.40 - https://github.com/jetty-project/jasper-jsp/apache-jsp)
• org.opentest4j:opentest4j (org.opentest4j:opentest4j:1.2.0 - https://github.com/ota4j-team/opentest4j)
• Sisu - Guice (org.sonatype.sisu:sisu-guice:2.1.7 - http://forge.sonatype.com/sisu-guice/)
• Sisu - Inject (JSR330 bean support) (org.sonatype.sisu:sisu-inject-bean:1.4.2 - http://sisu.sonatype.org/sisu-inject/guice-bean/sisu-inject-bean/)
• Spring Beans (org.springframework:spring-beans:3.2.8.RELEASE - https://github.com/SpringSource/spring-framework)
• Spring Core (org.springframework:spring-core:3.2.8.RELEASE - https://github.com/SpringSource/spring-framework)
• Google Cloud Core (com.google.cloud:google-cloud-core:1.0.0 - https://github.com/GoogleCloudPlatform/google-cloud-java/tree/master/google-cloud-core)


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

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

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    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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THE BASIC LIBRARY FUNCTIONS

--------------------------

Written by: Philip Hazel
Email local part: ph10
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Version 2.8.0

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Version 2018.9

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Version 1.12.0

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File: atomicops_internals_power.h

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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

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UUencode and UUdecode functions

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Modified by Jack Jansen, CWI, July 1995:

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

- Arguments more compliant with Python standard

XML Remote Procedure Calls

-------------------------------

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test_epoll

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---------

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

Solution inspired by code from:
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Jean-Philippe Aumasson (https://131002.net/siphash/siphash24.c)

strtod and dtoa
----------

The file :file:`Python/dtoa.c`, which supplies C functions dtoa and strtod for conversion of C doubles to and from strings, is derived from the file of the same name by David M. Gay, currently available from http://www.netlib.org/fp/. The original file, as retrieved on March 16, 2009, contains the following copyright and licensing notice::

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BLAKE2 reference source code package - optimized C implementations

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Clark Cooper <coopercc@netheaven.com> picked up support, changed the API for
this version (2.x), provided documentation, and added some standard package
features.
Matt Sergeant <matt@sergeant.org> is now maintaining XML::Parser

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point-geometry

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vector-tile

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vt-pbf

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feature-filter

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https://github.com/mapbox/shelf-pack/blob/8e9b32cd2a5415e62baedd8991a0d05ffa129b/ LICENSE.md

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Pngjs

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Unitbezier

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

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Quickselect

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

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Webworkify

https://github.com/substack/webworkify/blob/465b3a217468564b0d851912a3cd5d396ee8bd41/LICENSE

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Unflowify

https://github.com/leebyron/unflowify/commit/e684276059f9242a9637ab31cb7088910ebe0e4d

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

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Bubbleify

https://github.com/garthenweb/bubbleify/commit/57cb9ca96096352c54d7942e8ec6361864d4c1cb

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Tinyqueue

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

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"author": "",
"license": "ISC",
"bugs": {
  "url": https://github.com/mourner/tinyqueue/issues
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dateutil - Extensions to the standard Python datetime module.

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