These release notes contain important information about Release 1.5 of Oracle R Enterprise.

New Features in Oracle R Enterprise 1.5
Oracle R Enterprise 1.5 has new R functions and SQL procedures, new transparency layer methods, and enhancements to some functions.

Oracle R Enterprise 1.5 Platform and Configuration Requirements
This topic lists the platform and configuration requirements for Oracle R Enterprise Release 1.5.

Bugs Fixed in Oracle R Enterprise 1.5
Oracle R Enterprise 1.5 fixes the problems listed in this topic.

About Upgrading to Oracle R Enterprise 1.5
This topic describes upgrading to Oracle R Enterprise 1.5 from an earlier version.

Documentation Accessibility

New Features in Oracle R Enterprise 1.5
Oracle R Enterprise 1.5 has new R functions and SQL procedures, new transparency layer methods, and enhancements to some functions.

Oracle R Enterprise 1.5 has new R functions and SQL procedures for managing Oracle R Enterprise datastores and the Oracle R Enterprise R script repository. Users can now share with other users access to datastores and registered R scripts. This release also has a new modeling function, ore.randomForest, new svd and prcomp statistical function methods that take ore.frame objects and can use parallel processing, and other enhancements.

The following topics briefly describe the new features.

R for Datastore and Script Repository Management
Oracle R Enterprise 1.5 provides new R functions for managing Oracle R Enterprise datastores and the R script repository.

PL/SQL and Data Dictionary Views for Datastore and Script Repository Management
Oracle R Enterprise 1.5 provides new PL/SQL procedures for managing Oracle R Enterprise datastores and the R script repository.
ore.groupApply Function Changes
Function ore.groupApply now supports partitioning on multiple columns.

ore.randomForest Modeling Function
The ore.randomForest function builds a random forest model on data in an ore.frame object.

ore.summary Function Changes
Function ore.summary has improved performance. It also has a different signature and the data types for some arguments have changed.

Statistical Function Method Changes
Oracle R Enterprise 1.5 provides transparency layer methods for the stats package functions prcomp and svd.

Support for BLOB and CLOB Data Types
Some Oracle R Enterprise functions now support the Oracle Database data types BLOB and CLOB.

R for Datastore and Script Repository Management
Oracle R Enterprise 1.5 provides new R functions for managing Oracle R Enterprise datastores and the R script repository.

The owner of a datastore or registered R script can now share with other users read privilege access to the datastore or script. This release also has new arguments to functions that create datastores and scripts and that give information about them. This datastore and script management functionality has both R and SQL interfaces.

The R functions for managing datastores are the following:

• ore.delete, which deletes a datastore, is unchanged.

• ore.grant is a new function that grants read privilege access to a datastore or script.

• ore.load, which loads objects from a datastore into an R environment, has the new argument owner that specifies the datastore owner.

• ore.revoke is a new function that revokes read privilege access to a datastore or script.

• ore.save, which creates a datastore, has the new argument grantable that specifies whether read access can be granted to the datastore.

• ore.datastore, which lists information about a datastore, has the new argument type that specifies the type of datastore. The values of type are the character strings user (the default), grant, granted, and all.

• ore.datastoreSummary, which provides detailed information about datastores, has the new argument owner that specifies a datastore owner.

The R functions for managing scripts are the following:
ore.grant is a new function that grants read privilege access to a datastore or script.

ore.revoke is a new function that revokes read privilege access to a datastore or script.

ore.scriptCreate, which adds an R function to the script repository, has the new arguments global and overwrite. The argument global specifies whether the script is global or private. A global script is a public script that is available to all users. If global = FALSE, then access to the script must be granted by the owner to other users. The argument overwrite specifies whether the content of a script can be replaced.

ore.scriptDrop, which deletes a script, has the new arguments global, which specifies whether the script to drop is global or not, and silent, which specifies whether to report an error if the script cannot be dropped.

ore.scriptList, which lists information about scripts, has the new argument type that specifies the type of script. The values of type are the character strings user (the default), global, grant, granted, and all.

ore.scriptLoad is a new function that loads a script into the R environment.

PL/SQL and Data Dictionary Views for Datastore and Script Repository Management

Oracle R Enterprise 1.5 provides new PL/SQL procedures for managing Oracle R Enterprise datastores and the R script repository.

The owner of a datastore or registered R script can now share with other users read privilege access to the datastore or script. This release also has new arguments to procedures that create datastores and scripts and that give information about them. This functionality has both R and SQL interfaces. Oracle Database data dictionary views provide information about datastores and scripts.

The SQL procedures for controlling access to Oracle R Enterprise datastores and registered R scripts are described in the following sections:

- PL/SQL Procedures for Managing Datastores
- PL/SQL Procedures for Managing Scripts
- Data Dictionary Views for Datastores
- Data Dictionary Views for Scripts

PL/SQL Procedures for Managing Datastores

The PL/SQL procedures for managing datastores are the following:

- rqDropDataStore, which deletes a datastore, is unchanged.
- rqGrant is a new procedure that grants read privilege access to a datastore or script.
- rqRevoke is a new procedure that revokes read privilege access to a datastore or script.
PL/SQL Procedures for Managing Scripts

The PL/SQL procedures for managing scripts are the following:

• **rqGrant** is a new procedure that grants read privilege access to a datastore or script.

• **rqRevoke** is a new procedure that revokes read privilege access to a datastore or script.

• **rqScriptCreate** has the new arguments `global` and `overwrite`. The argument `global` specifies whether the script is global or private. A global script is a public script that is available to all users. If `global = FALSE`, then access to the script must be granted by the owner to other users. The argument `overwrite` specifies whether the content of a script can be replaced.

• **rqScriptDrop** has the new arguments `global`, which specifies whether the script to drop is global or not, and `silent`, which specifies whether to report an error if a script cannot be dropped.

Data Dictionary Views for Datastores

The Oracle Database dictionary views related to datastores are the following:

• **ALL_RQ_DATASTORES**

• **RQUSER_DATASTORECONTENTS**

• **USER_RQ_DATASTORES**

• **USER_RQ_DATASTORE_PRIVS**

Data Dictionary Views for Scripts

The Oracle Database dictionary views related to scripts are the following:

• **ALL_RQ_SCRIPTS**

• **USER_RQ_SCRIPTS**

• **USER_RQ_SCRIPT_PRIVS**

ore.groupApply Function Changes

Function `ore.groupApply` now supports partitioning on multiple columns.

The `INDEX` argument can now take an `ore.vector` or `ore.frame` object that contains `ore.factor` objects or columns, each of which is the same length as argument `X`. Function `ore.groupApply` uses the `INDEX` object to partition the data in `X` before sending it to function `FUN`.

For an example of the use of the `INDEX` object to partition the data, see “Partitioning on Multiple Columns” in Oracle R Enterprise User’s Guide.

ore.randomForest Modeling Function

The `ore.randomforest` function builds a random forest model on data in an `ore.frame` object.
It uses embedded R execution to grow random forest trees in parallel in R sessions on the database server. It returns an \texttt{ore.randomforest} object. In Oracle R Enterprise 1.5, function \texttt{ore.randomForest} supports classification but not regression.

The \texttt{ore.randomforest} function uses the same algorithm as that adopted by the CRAN R \texttt{randomForest} package but it has better runtime memory usage as well as ensemble tree size.

The scoring method \texttt{predict} on an \texttt{ore.randomforest} model also runs in parallel. Oracle recommends that you set the \texttt{cache.model} argument to \texttt{TRUE} when sufficient memory is available. Otherwise, you should set \texttt{cache.model} to \texttt{FALSE} to prevent memory overuse.

To use \texttt{ore.randomforest}, you must install either Oracle R Distribution (ORD) 3.2 or the CRAN R \texttt{randomForest} package. Oracle recommends that you use the function \texttt{ore.randomforest} in ORD 3.2, which offers better performance and scalability than the CRAN R \texttt{randomForest}. If you only install the R \texttt{randomForest} package, \texttt{ore.randomForest} issues a warning message at run time. The CRAN R \texttt{randomForest} package is one of the supporting packages in Oracle R Enterprise 1.5.

The global option \texttt{ore.parallel} determines the degree of parallelism to use in the Oracle R Enterprise server. The argument \texttt{groups} controls the granularity of the \texttt{ore.randomForest} model.

For an example of using \texttt{ore.randomForest}, see "Building a Random Forest Model" in \textit{Oracle R Enterprise User's Guide}.

\textbf{ore.summary Function Changes}

Function \texttt{ore.summary} has improved performance. It also has a different signature and the data types for some arguments have changed.

The function’s syntax is now the following:

```r
ore.summary(data, var, stats = c("n", "mean", "min", "max"),
            class = NULL, types = NULL, ways = NULL, weight = NULL,
            order = NULL, maxid = NULL, minid = NULL, mu = 0,
            no.type = FALSE, no.freq = FALSE)
```

The differences between the \texttt{ore.summary} in Oracle R Enterprise Release 1.5 and previous releases are the following:

- The performance of \texttt{ore.summary} has improved; it now returns over an order of magnitude faster.
- The arguments \texttt{var}, \texttt{stats}, and \texttt{class} now take a vector of character strings; previously, they took a concatenated string using a comma as the separator.
- Argument \texttt{types} is now a list of character string vectors that specifies combinations of columns in the \texttt{class} argument.
- Arguments \texttt{maxid} and \texttt{minid} are named vectors of character strings.
- Arguments \texttt{group.by} and \texttt{no.level} are not supported.
- Argument \texttt{mu} in previous releases was named \texttt{mu0}.

For details of the arguments to \texttt{ore.summary}, invoke \texttt{help("ore.summary").}
For examples of using `ore.summary`, see "Summarizing Data with ore.summary" in *Oracle R Enterprise User’s Guide*.

**Statistical Function Method Changes**

Oracle R Enterprise 1.5 provides transparency layer methods for the `stats` package functions `prcomp` and `svd`.

The `prcomp` function performs principal components analysis and the `svd` function performs singular-value decomposition. Those functions now accept `ore.frame` objects and can use parallel execution in the database, which can improve scalability and performance.

**Support for BLOB and CLOB Data Types**

Some Oracle R Enterprise functions now support the Oracle Database data types BLOB and CLOB.

Functions `ore.push` and `ore.pull` now support the database data types BLOB and CLOB.

Embedded R execution R functions now support the database data types BLOB and CLOB for input and output objects.

For examples of using BLOB and CLOB data types, see the “Using the ora.type Attribute” example in "Using the ore.doEval Function" in *Oracle R Enterprise User’s Guide*.

**Oracle R Enterprise 1.5 Platform and Configuration Requirements**

This topic lists the platform and configuration requirements for Oracle R Enterprise Release 1.5.

Oracle R Enterprise runs on 64-bit platforms only. Both client and server components are supported on each of the platforms described in this topic.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware Platform</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux x86-64</td>
<td>Intel and AMD</td>
<td>• 64-bit Oracle Linux Releases 6 and 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Linux may be running on Oracle Exadata Database Machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 64-bit Red Hat Enterprise Linux Releases 6 and 7</td>
</tr>
<tr>
<td>Oracle Solaris on x86-64 (64-Bit)</td>
<td>Intel and SPARC</td>
<td>• 64-bit Oracle Solaris 10 update 10 through Oracle Solaris 11 for both SPARC and x86-64 (Intel) platforms</td>
</tr>
<tr>
<td>Oracle Solaris on SPARC-64 (64-Bit)</td>
<td></td>
<td>Oracle Solaris may be running on Oracle Exadata Database Machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle SPARC SuperCluster</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oracle Solaris Studio (formerly Sun Studio) 12u3 or later</td>
</tr>
</tbody>
</table>
### Table 1-1  (Cont.) Oracle R Enterprise Platform Requirements

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware Platform</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM AIX on POWER Systems (64-Bit)</td>
<td>IBM</td>
<td>64-bit IBM AIX 5.3 or higher</td>
</tr>
<tr>
<td>Microsoft Windows x64 (64-Bit)</td>
<td>Intel</td>
<td>64-bit Microsoft Windows</td>
</tr>
</tbody>
</table>

### Table 1-2  Oracle R Enterprise Configuration Requirements and Server Support Matrix

Oracle R Enterprise Configuration Requirements and Server Support Matrix

<table>
<thead>
<tr>
<th>Oracle R Enterprise Version</th>
<th>Open Source R or Oracle R Distribution</th>
<th>Oracle Database Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>3.2.x</td>
<td>11.2.0.4, 12.1.0.1, 12.1.0.2</td>
</tr>
<tr>
<td>1.4.1</td>
<td>3.0.1, 3.1.1</td>
<td>11.2.0.3, 12.1.0.1, 12.1.0.2</td>
</tr>
<tr>
<td>1.4</td>
<td>2.15.2, 2.15.3, 3.0.1</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
<tr>
<td>1.3.1</td>
<td>2.15.1, 2.15.2, 2.15.3</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
<tr>
<td>1.3</td>
<td>2.15.1</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
<tr>
<td>1.2</td>
<td>2.15.1</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
<tr>
<td>1.1</td>
<td>2.13.2</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
<tr>
<td>1.0</td>
<td>2.13.2</td>
<td>11.2.0.3, 12.1.0.1</td>
</tr>
</tbody>
</table>

**Note:** In Oracle Database Release 12.1.0.2, for some embedded R operations to be successful, both Oracle R Enterprise releases 1.4.1 and 1.5 require the database patch -- 20173897 WRONG RESULT OF GROUP BY FROM A TABLE RETURNED BY EXTPROC (Patch).

### Bugs Fixed in Oracle R Enterprise 1.5

Oracle R Enterprise 1.5 fixes the problems listed in this topic.

### Table 1-3  Bugs Fixed in Oracle R Enterprise 1.5

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14401602</td>
<td>RQ*EVAL FUNCTIONS LACK SUPPORT FOR CLOB COLUMNS</td>
</tr>
<tr>
<td>14530778</td>
<td>R:ORE:ORE.CORR GIVING ERROR WHEN R=TRUE</td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>16219642</td>
<td>ORE.SUMMARY VAR ARGUMENT DOES NOT SUPPORT CASE SENSITIVE NAMES IN DERIVED COLUMN</td>
</tr>
<tr>
<td>16710525</td>
<td>ADD ABILITY TO SEE PUBLISHED ORE SCRIPTS FROM ORE R CLIENT</td>
</tr>
<tr>
<td>17018411</td>
<td>ORE.SUMMARY WEIGHT ARG DOES NOT SUPPORT CASE SENSITIVE NAMES IN DERIVED COLUMN</td>
</tr>
<tr>
<td>17715960</td>
<td>EMBEDDED R DOES NOT KEEP THE ALL EXT REFS WHEN R CLOSURE RETURNS AN ORE OBJECT</td>
</tr>
<tr>
<td>17858846</td>
<td>ORE MERGE DOES NOT SUPPORT CROSS JOIN</td>
</tr>
<tr>
<td>18131028</td>
<td>ORE.GROUPAPPLY INDEX TO SUPPORT MULTIPLE COLUMNS</td>
</tr>
<tr>
<td>18132739</td>
<td>ADD A PRCOMP METHOD TO THE TRANSPARENCY LAYER</td>
</tr>
<tr>
<td>18253852</td>
<td>TRUNC(ORE.DATETIME) RETURNS WRONG RESULTS DUE TO THE TZ DIFF BETWEEN R AND DB</td>
</tr>
<tr>
<td>18371538</td>
<td>ORE.SUMMARY CAN PRODUCE NEGATIVE VALUES FOR SIGN_P (A P-VALUE) ON SPARC64</td>
</tr>
<tr>
<td>18539336</td>
<td>RORACLE: WRITE R'S DATETIME INTO DATABASE WITH INCORRECT VALUES</td>
</tr>
<tr>
<td>18601345</td>
<td>ORE.UNIVARIATE FUNCTION DOES NOT WORK WITH STATS ARGUMENT</td>
</tr>
<tr>
<td>18951854</td>
<td>ORE.SAVE WITH OVERWRITE=TRUE HAS RACE CONDITION</td>
</tr>
<tr>
<td>19364981</td>
<td>HARD ERROR OUT WHEN DELETING OREDM MODEL OBJECT FROM DATASTORE</td>
</tr>
<tr>
<td>19646251</td>
<td>ORE.CONNECT FAILS USING R-3.1.1 IF SYS.TIMEZONE() RETURNS NA</td>
</tr>
<tr>
<td>19663828</td>
<td>ORE.GLM AND ORE.LM SUPPORT FOR SUPPLEMENTAL COLUMNS IN PREDICT()</td>
</tr>
<tr>
<td>19792107</td>
<td>R:ORE: OREGRAPHICS PACKAGE CHECK GIVING GENERIC/METHOD CONSISTENCY WARNING</td>
</tr>
<tr>
<td>20052194</td>
<td>ORE.SAVE TAKES LONG TIME TO SAVE ORE.FRAME OF A DATA FLOW FROM ORE.GROUPAPPLY</td>
</tr>
<tr>
<td>20188845</td>
<td>R:ORE: ORE WINDOWS INSTALLER REQUIRES TO BE CONSISTENT WITH LINUX INSTALLER</td>
</tr>
<tr>
<td>20191627</td>
<td>ORE.CORR RETURNS ERROR WITH 12.1.0.2</td>
</tr>
<tr>
<td>20312266</td>
<td>ORE.CORR() RETURNS WRONG PEARSON'S P-VALUE</td>
</tr>
<tr>
<td>20346201</td>
<td>MISMATCHED SCHEMA BETWEEN ORE.SAVE AND RQEVAL TABLE FUNCTION THROUGH A VIEW</td>
</tr>
<tr>
<td>20601967</td>
<td>CLOB SUPPORT ON TRANSPARENCY LAYER ORE.PULL/PUSH</td>
</tr>
<tr>
<td>20679972</td>
<td>R: ORE: EXPLICITLY REFERENCE CAIRO FOR BASE CODE</td>
</tr>
<tr>
<td>20770076</td>
<td>DEMO RESULTS ORDER DIFFERS FOR DEMO: ODM_OC AND ODM_AR FOR DIFFERENT DB VERSION</td>
</tr>
</tbody>
</table>
Table 1-3  (Cont.) Bugs Fixed in Oracle R Enterprise 1.5

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21197772</td>
<td>ORE.DATASTORE IS SHOWING UP VALUES EVEN WHEN ORE.SAVE STATEMENT FAILED</td>
</tr>
<tr>
<td>21767217</td>
<td>CHECK FOR COMPLEX TYPE INDEX IS MISSING IN GROUPAPPLY</td>
</tr>
<tr>
<td>21809287</td>
<td>PROPER ERROR HANDLING MISSING FOR UNSUPPORTED TYPES IN GROUPAPPLY</td>
</tr>
<tr>
<td>22113046</td>
<td>ORE.SUMMARY FAILS ON ORE.FRAME WITH LONG COLUMN NAME</td>
</tr>
<tr>
<td>22113066</td>
<td>ORE.SUMMARY FAILS ON FREQ AND MODE STATS</td>
</tr>
</tbody>
</table>

**About Upgrading to Oracle R Enterprise 1.5**

This topic describes upgrading to Oracle R Enterprise 1.5 from an earlier version.

Prior to Oracle R Enterprise 1.5, datastores created by a user were private and accessible only by that user. Scripts in the R script repository were public and globally accessible. In Oracle R Enterprise 1.5, you can make a datastore or script private or you can share it with one or more other users.

When you create a datastore, you can specify that the datastore is private or that you can grant read access to the datastore to other users. When you create a script, you can specify that the script is a private or a global script. A global script is available to all users. You can grant read access to a private script to other users.

If you upgrade to Oracle R Enterprise 1.5 from a previous version of Oracle R Enterprise, any datastore in that previous version remains a private one Any script remains a global script.

**Related Topics:**

- [R for Datastore and Script Repository Management](#)
- [PL/SQL and Data Dictionary Views for Datastore and Script Repository Management](#)

**Documentation Accessibility**


**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](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info) or visit [http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs) if you are hearing impaired.
This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

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

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

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

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

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

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.