Oracle® R Enterprise

Release Notes

Release 1.5

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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.

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

The `ore.randomforest` function builds a random forest model on data in an `ore.frame` object.

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

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

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 `ore.randomforest` object. In Oracle R Enterprise 1.5, function `ore.randomForest` supports classification but not regression.

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

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

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

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

For an example of using `ore.randomForest`, see "Building a Random Forest Model" in *Oracle R Enterprise User's Guide*.

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.

The function's syntax is now the following:

```
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 `ore.summary` in Oracle R Enterprise Release 1.5 and previous releases are the following:

- The performance of `ore.summary` has improved; it now returns over an order of magnitude faster.

- The arguments `var`, `stats`, and `class` now take a vector of character strings; previously, they took a concatenated string using a comma as the separator.

- Argument `types` is now a list of character string vectors that specifies combinations of columns in the `class` argument.

- Arguments `maxid` and `minid` are named vectors of character strings.

- Arguments `group.by` and `no.level` are not supported.

- Argument `mu` in previous releases was named `mu0`.

For details of the arguments to `ore.summary`, invoke `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 1-1   Oracle R Enterprise Platform Requirements

Oracle R Enterprise Platform Requirements		
Operating System	**Hardware Platform**	**Description**
Linux x86-64	Intel and AMD	• 64-bit Oracle Linux Releases 6 and 7 Oracle Linux may be running on Oracle Exadata Database Machine • 64-bit Red Hat Enterprise Linux Releases 6 and 7
Oracle Solaris on x86-64 (64-Bit) Oracle Solaris on SPARC-64 (64-Bit)	Intel and SPARC	• 64-bit Oracle Solaris 10 update 10 through Oracle Solaris 11 for both SPARC and x86-64 (Intel) platforms Oracle Solaris may be running on Oracle Exadata Database Machine • Oracle SPARC SuperCluster • Oracle Solaris Studio (formerly Sun Studio) 12u3 or later

Table 1-1   (Cont.) Oracle R Enterprise Platform Requirements

Operating System	Hardware Platform	Description
IBM AIX on POWER Systems (64-Bit)	IBM	64-bit IBM AIX 5.3 or higher
Microsoft Windows x64 (64-Bit)	Intel	64-bit Microsoft Windows

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

Oracle R Enterprise Configuration Requirements and Server Support Matrix		
Oracle R Enterprise Version	Open Source R or Oracle R Distribution	Oracle Database Release
1.5	3.2.x	11.2.0.4, 12.1.0.1, 12.1.0.2
1.4.1	3.0.1, 3.1.1	11.2.0.3, 11.2.0.4, 12.1.0.1, 12.1.0.2
1.4	2.15.2, 2.15.3, 3.0.1	11.2.0.3, 11.2.0.4, 12.1.0.1
1.3.1	2.15.1, 2.15.2, 2.15.3	11.2.0.3, 11.2.0.4, 12.1.0.1
1.3	2.15.1	11.2.0.3, 11.2.0.4, 12.1.0.1
1.2	2.15.1	11.2.0.3, 11.2.0.4, 12.1.0.1
1.1	2.13.2	11.2.0.3, 11.2.0.4, 12.1.0.1
1.0	2.13.2	11.2.0.3, 11.2.0.4, 12.1.0.1

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

Bugs Fixed in Oracle R Enterprise 1.5	
Number	Description
14401602	RQ*EVAL FUNCTIONS LACK SUPPORT FOR CLOB COLUMNS
14530778	R:ORE:ORE.CORR GIVING ERROR WHEN R=TRUE

Table 1-3 (Cont.) Bugs Fixed in Oracle R Enterprise 1.5

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

Table 1-3   (Cont.) Bugs Fixed in Oracle R Enterprise 1.5

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

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

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