

Oracle® Machine Learning for R

Release Notes

Release 1.5.1

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Oracle Machine Learning for R 1.5.1 Release Notes

These release notes contain important information about Release 1.5.1 of OML4R.

Oracle is rebranding the suite of products and components that support machine learning with Oracle Database and Big Data. This technology is now known as Oracle Machine Learning (OML).

The OML application programming interface for R, previously under the name Oracle R Enterprise, is now named Oracle Machine Learning for R (OML4R). The package, class, and function names are not rebranded. They remain `ORE`, `OREbase`, `ore.frame`, `ore.connect`, and so on.

The OML application programming interfaces for SQL include PL/SQL packages, SQL functions, and data dictionary views. Using these APIs is described in publications, previously under the name Oracle Data Mining, that are now named Oracle Machine Learning for SQL (OML4SQL). The PL/SQL package and database view names are not rebranded. They remain `DBMS_DATA_MINING`, `ALL_MINING_MODELS`, and so on.

- [New Features in Oracle Machine Learning for R 1.5.1](#)
OML4R 1.5.1 has some new features that are compatible with Oracle Database Release 18c and later, some that are compatible with Oracle Database Release 12.2.0.1 and later, and others that compatible with Oracle Database Release 12.1.0.2 and earlier.
- [Oracle Machine Learning for R 1.5.1 Platform and Configuration Requirements](#)
OML4R runs on 64-bit platforms only.
- [Bugs Fixed in Oracle Machine Learning for R 1.5.1](#)
OML4R 1.5.1 fixes the problems listed in this topic.
- [Documentation Accessibility](#)

New Features in Oracle Machine Learning for R 1.5.1

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12.2.0.1 and later, and others that compatible with Oracle Database Release 12.1.0.2 and earlier.

Support for R-3.6.1

R-3.6.1 is compatible with any of the supported Oracle Database releases.

OML4R 1.5.1 requires R-3.3.0 or R-3.6.1. As with earlier releases of OML4R, Oracle recommends that you use Oracle R Distribution.

Note:

R-3.6.1 has an OML4R 1.5.1 binary built under R-3.6.1 and is not compatible with the OML4R 1.5.1 built under R-3.3.0.

- [New Features for Oracle Database Release 18c and Later](#)
Describes the new features in Oracle Machine Learning for R for Oracle Database Release 18c and later releases.
- [New Features for Oracle Database Release 12.2.0.1](#)
Oracle Machine Learning for R 1.5.1 has new functions in the OML4R package `OREdm` and has new arguments for some other functions.
- [New Features for Oracle Database Release 12.1.0.2](#)
Oracle Machine Learning for R 1.5.1 has the new `OREdplyr` package, improved performance of row ordering in `ore.frame` objects, and faster loading of the OML4R packages.
- [Other Changes](#)
Oracle Machine Learning for R Release 1.5.1 has the following other changes, which are in effect for Oracle Database 12c Release 12.2.0.1 and earlier releases.

New Features for Oracle Database Release 18c and Later

Describes the new features in Oracle Machine Learning for R for Oracle Database Release 18c and later releases.

The new features in OML4R are the following:

- The `rqcfg.sql` Oracle Machine Learning for R Server installation script. Beginning with Oracle Database 18c, the OML4R Server installation script `rqcfg.sql` replaces the `server` installation script. The `rqcfg.sql` script is part of Oracle Database.
- Compatibility with Oracle Database Release 21c.
- Linux 8 support.
- Updated supporting packages. The supporting packages contain newer versions of some of the packages. Linux 8 requires a different bundle of supporting packages than that used by earlier Linux releases.

New Features for Oracle Database Release 12.2.0.1

Oracle Machine Learning for R 1.5.1 has new functions in the OML4R package `OREdm` and has new arguments for some other functions.

New Functions in the OREdm Package

New functions in the `OREdm` OML4SQL package that use in-database algorithms are the following:

- `ore.odmEM`, Expectation Maximization models
- `ore.odmESA`, Explicit Semantic Analysis models
- `ore.odmRAlg`, Extensible R Algorithm models
- `ore.odmSVD`, Singular Value Decomposition models

The `ore.odmRAlg` enables users to use registered R scripts to create models that use the OML4SQL in-database model framework.

Other new functions are the following:

- `partitions`, which returns partition names from a partitioned model
- `settings`, which returns the OML4SQL parameter settings used to build the model.

New Arguments to Some Functions for OML4SQL Model Build Configuration and Text Processing

The new arguments for some of the machine learning model functions are:

- `odm.setting`
- `ctx.setting`

`odm.setting`

The `odm.setting` value is a list that specifies OML4SQL parameter settings. Both OML4SQL global and algorithm-specific parameters can be specified to configure the model build. Some new features are enabled through the parameter settings. For example, you can use this argument to specify the creation of a partitioned model, which is an ensemble model that consists of multiple sub-models. When you specify the parameter `ODMS_PARTITION_COLUMNS` and the names of the columns by which to partition the input data, the function returns a model with a sub-model for each partition. The partitions are based on the unique values found in the columns.

Partitioned models can automate scoring by allowing you to reference the top-level model only, which causes the proper sub-model to be chosen based on the values of the partitioned column or columns for each row of data to be scored.

`ctx.setting`

With this argument, you can specify Oracle Text attribute-specific settings. You specify the columns that should be treated as text and the type of text transformation to apply.

This argument applies to the following functions:

- `ore.odmESA`, Explicit Semantic Analysis
- `ore.odmGLM`, Generalized Linear Models
- `ore.odmKMeans`, *k*-Means
- `ore.odmNMF`, Non-Negative Matrix Factorization
- `ore.odmSVD`, Singular Value Decomposition
- `ore.odmSVM`, Support Vector Machines

 **Note:**

To create an Oracle Text policy, the user must have the `CTXSYS.CTX_DDL` privilege.

New Features for Oracle Database Release 12.1.0.2

Oracle Machine Learning for R 1.5.1 has the new `OREdplyr` package, improved performance of row ordering in `ore.frame` objects, and faster loading of the OML4R packages.

OREdplyr Package for Data Manipulation

The `dplyr` package provides a grammar of data manipulation functions for `data.frame` objects and `numeric` objects. The new `OREdplyr` package implements much of this functionality for `ore.frame` and `ore.numeric` objects. This enables in-database execution of `dplyr` functionality such as selecting, filtering, ordering, and grouping columns and rows, and joining, summarizing, sampling, and ranking rows.

Related Topics

- Data Manipulation Using OREdplyr

Other Changes

Oracle Machine Learning for R Release 1.5.1 has the following other changes, which are in effect for Oracle Database 12c Release 12.2.0.1 and earlier releases.

- Updated supporting packages `DBI` and `ROracle`
- Requirement for R 3.3.0; as with earlier releases of OML4R, Oracle recommends that you use Oracle R Distribution
- A new RPM for Oracle R Distribution, `R-core-extra-3.3.0-1.el6.x86_64.rpm`

R-3.3.0 depends on newer versions of several third party compression libraries and no longer contains bundled copies of them. This means that R 3.3.0 won't build against

Linux 6 as is, because the native versions of these libraries are older than those that R-3.3.0 requires.

The R-core-extra RPM contains the required versions of these libraries and is provided as a convenience for users of Oracle Linux 6. Adding the location of the libraries in R-core-extra to `LD_LIBRARY_PATH` removes the need to build these libraries separately. Oracle Linux 7 introduces the required versions of these libraries, but the R-core-extra RPM is provided as a convenience if needed.

 **See Also:**

For information on installing Oracle R Distribution using RPMs, see *Installing Oracle R Distribution on Linux* in *Oracle Machine Learning for R Installation and Administration Guide*

Oracle Machine Learning for R 1.5.1 Platform and Configuration Requirements

OML4R 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 Machine Learning for R Platform Requirements

Operating System	Hardware Platform	Description
Linux x86-64	Intel and AMD	<ul style="list-style-type: none">64-bit Oracle Linux Releases 6, 7, and 864-bit Red Hat Enterprise Linux Releases 6 and 7

 **Note:**

Starting with R-3.6.1, Linux 6 is no longer supported.

Oracle Linux may be running on Oracle Exadata Database Machine.

Table 1-1 (Cont.) Oracle Machine Learning for R Platform Requirements

Operating System	Hardware Platform	Description
Oracle Solaris on x86-64 (64-Bit) Oracle Solaris on SPARC-64 (64-Bit)	Intel and SPARC	<ul style="list-style-type: none"> 64-bit Oracle Solaris 10 update 11 through Oracle Solaris 11 for both SPARC and x86-64 (Intel) platforms Oracle SPARC SuperCluster Oracle Solaris Studio (formerly Sun Studio) 12u3 or later Oracle Solaris may be running on Oracle Exadata Database Machine.
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 Professional

Table 1-2 Oracle Machine Learning for R Configuration Requirements and Server Support Matrix

OML4R Version	Open Source R or Oracle R Distribution	Oracle Database Release
1.5.1	3.3.0, 3.6.1	11.2.0.4, 12.1.0.1, 12.1.0.2, 12.2.0.1, 18c, 19c, 21c
1.5	3.2.0	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, Oracle R Enterprise releases 1.4.1 and later require the database patch -- 20173897 WRONG RESULT OF GROUP BY FROM A TABLE RETURNED BY EXTPROC (Patch).

Bugs Fixed in Oracle Machine Learning for R 1.5.1

OML4R 1.5.1 fixes the problems listed in this topic.

Table 1-3 Bugs Fixed in OML4R 1.5.1

Number	Description
18561846	ORE.PUSH: MIXING R AND ORE OBJECT NAMES CAN RESULT IN REMOVAL OF TEMP TABLE
21901178	VIEW CREATED BY ORE.CREATE ON ORE.FRAME DOES NOT PRESERVE IN MULTIPLE SESSION
22198902	ORE.STEPWISE RETURNS RESIDUALS AS 0 AND NO P-VALUES
22283078	ORE.DROP INCORRECTLY HANDLES VIEWS
22607954	DB TABLES WITH SPECIAL CHARACTER IS NOT ACCESSIBLE IN ORE
23512913	ORE.RANDOMFOREST DOES NOT ACCEPT SINGLE INDEPENDENT VARIABLE
25417402	STEPWISE DEMO FAILS INTERMITTENTLY

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