

Oracle® Retail Demand Forecasting

Release Notes

Release 14.1

December 2014

Oracle Retail Demand Forecasting (RDF) is a statistical and promotional forecasting solution. It uses state-of-the-art modeling techniques to produce high quality forecasts with minimal human intervention. Forecasts produced by the Demand Forecasting system enhance the retailer's supply chain planning, allocation, and replenishment processes, enabling a profitable and customer-oriented approach to predicting and meeting product demand.

All Oracle Retail Grade and Oracle Retail Curve documentation is included with the RDF documentation. The packaging and delivery of Curve and Grade remains the same.

Note: Because RDF, Curve, and Grade use the Oracle Retail Predictive Application Server (RPAS) platform, Oracle Retail recommends that you review the *Oracle Retail Predictive Application Server Release Notes* for fixed and known issues that may affect RDF.

In addition, RPAS 13.3 and later releases have significant technical enhancements related to hierarchy management (such as integer indexing) that have an effect on the configuration and maintenance of RDF, Curve, and Grade. You must upgrade to key RPAS versions and complete the upgrade process as described in the chapter, "Patch Installation" in the *Oracle Retail Demand Forecasting Installation Guide* before upgrading to a 14.1 RDF domain.

Grade Overview

Grade is a clustering tool that provides insight into how various parts of a retailer's operations can be grouped together. Typically, a retailer may cluster stores over item sales to create logical groupings of stores based upon sales of particular products. This provides increased visibility to where products are selling, and it allows the retailer to make more accurate decisions in merchandising. Beyond this traditional use of clusters, Grade is flexible enough to cluster any business measure based on products, locations, time, promotions, customers, or any hierarchy configured in the solution.

Key Grade functionality includes:

- Two methods of creating Grades/Clusters:
- Breakpoints: the sorting of data points into groups based on user-defined indexes
- Clustering, or the BaNG Algorithm: the optimization of data points into clusters based on the user-defined number of clusters

- Group By capabilities: support the segmentation of clusters for more detailed and focused cluster generation
- Clustering statistics: provide insight into the relationship of members within a cluster and how all clusters relate to one another
- Cluster What-if: allows user changes to members assigned to clusters and the review of recalculated clustering statistics

Regardless of the method employed to create clusters, Grade is designed to support the decision-making process necessary to create effective and actionable groupings of data.

Curve Overview

Curve is an optional automated predictive solution that can generate ratio arrays from historical data at user-specified intersections. The profiles generated by Curve can be used for various purposes; for example, they can be used to convert the organization level assortment plans into base level weekly sales forecasts and to generate seasonal forecasts, daily forecasts, or new product forecasts using lifecycle profiles.

Important Steps to Address RMS/RPAS/RDF Integration

This section describes important steps to address the RMS/RPAS/RDF integration.

Change of Class and Subclass Naming

Oracle Retail Merchandising System (RMS) sends hierarchy files to Oracle Retail Demand Forecasting (RDF). RMS ensures that a class is unique to only its department and a subclass is unique to only its own class. In other words, Dept10 and Dept. 20 both can contain Class 100. However, within RPAS, unless class names are unique across the domain, it results in a multi-parent problem. Prior to Release 13.1.2, RDF tried to ensure uniqueness by concatenation of positions as follows:

- RDF Class = RMS Dept + RMS Class
- RDF Subclass = RMS Dept + RMS Class + RMS Subclass

However, this can result in a multi-parent problem. For example:

RMS Department	RMS Class	RPAS/RDF Class
10	110	10110
101	10	10110

In this scenario, Clss10110 rolls into both Dept10 and Dept101. This is not acceptable in any RPAS application.

Resolution

Position names are made unique by adding an underscore. In the previous example, the classes would be named Clss10_110 and Clss101_10. However, when these position names are corrected and new hierarchy files are created, the existing class/subclass name no longer exists. Therefore, if the upgrade process is not specifically followed, any data that was stored at the class or subclass level (such as Clss10110) is erased.

The following upgrade process needs to be followed only by the customers who:

- Use standard integration between RMS and RPAS based applications (other than AIP).
- Have stored data at class or subclass levels.
- Upgrade from a version prior to 13.0.4.18 to 13.0.4.18 or later. Those customers must apply the [Upgrade Process for Class and Subclass Naming](#). In the future, customers already on 13.0.4.18 or later do not need to use this process again.

Upgrade Process for Class and Subclass Naming

1. Point the environment variable RPAS_HOME to the new RPAS_HOME.
2. Run the script `$RPAS_HOME/rfx/src/rmse_rpas_merchhier.ksh` to generate the `rmse_rpas_merchhier.dat` file. This is how the new position names are generated.
3. Run `repos.ksh` with the `-a n` flag to produce the position rename file and run **renamePositions** without applying the changes. Examine the log file `PRODrename.log` for errors.
4. When ready, run the `repos.ksh` script without the `-a y` flag to apply the changes.

Change of Position Label Widths

Fields lengths for RDF hierarchies were increased to accept wider labels from RMS. These new field lengths are currently not patchable directly in any RPAS domain. Therefore, the following upgrade process must be followed:

Upgrade Process for Field Lengths

All customers using 13.0.4.18 and earlier should perform the following steps every time a new hot fix is applied.

1. Export the following environment variables in the environment before running the upgrade scripts.
 - **UPGRADE_HOME**: This variable should point to the path of upgrade scripts where `environment.ksh`, `updateschemafiles.ksh`, `updatetoolsconfiguration.ksh`, and other configuration files are present.
 - **RDF_DOMAIN_PATH**: The path of RDF domain which you are going to patch. The dimension field length of this RDF domain is taken and applied to the configuration and schema files.
 - **RDF_SCHEMA_DIR**: The RETL RDF schema files directory. This must be the latest release directory, which you use for patching. It points to the SCHEMA files location in the release, which you use for patching the RDF domain.
 - **TOOLS_CONFIG_DIR**: The Configuration Tools XML files directory. It points to the directory where the `hierarchy.xml` file is present. It must be the latest release directory which you use for patching.
 - **UPGRADE_BACKUP_DIR**: A backup of SCHEMA and `hierarchy.xml` files is kept in this directory.

2. Set up the following upgrade scripts:
 - The `updateschemafiles.ksh` script updates the dimension field length of schema files to the length as available in the domain.
 - The `updatetoolsconfiguration.ksh` script updates the dimension field length of configuration files to the length as available in the domain.
3. Change the directory to UpgradeScripts directory.

```
$ cd UpgradeScripts
```
4. Run `updatetoolsconfiguration.ksh`. This updates the `hierarchy.xml` file.

```
$ ./ updatetoolsconfiguration.ksh
```
5. Run `updateschemafiles.ksh`. This updates the RETL RDF schema files.

```
$ ./ updateschemafiles.ksh
```

Note: For added visibility for retailers, these instructions are included in both the *Oracle Retail Demand Forecasting Release Notes* and the *Oracle Retail Demand Forecasting Installation Guide*. For more information, see the *Oracle Retail Demand Forecasting Installation Guide*.

Upgrade Note

While not directly related to RDF, the 13.3 Release of Oracle Retail Predictive Application Server (RPAS) has undergone a major change to simplify hierarchy administration. Full details of these changes are outlined in the 13.3 *Oracle Retail Predictive Application Server Release Notes*. Due to these changes, configuration updates have been made to RDF, and you will need to perform additional steps to upgrade your RDF domain, such as setting dimension sizes. The upgrade to RPAS 13.3 or later for this application includes a conversion process in addition to the normal upgrade process. Details are provided in the chapter, “Patch Installation”, in the *Oracle Retail Demand Forecasting Installation Guide*.

Hardware and Software Requirements

See the Oracle Retail Demand Forecasting Installation Guide for information about the following:

- Hardware and software requirements
- Oracle Retail application software compatibility information

Functional Enhancements

RDF 14.1 includes the following functional enhancements.

Causal Forecasting with External Baseline

Starting with this release, RDF causal is not supporting an internal baseline anymore. The only option remains providing the promotional forecasting process a baseline generated outside of the process.

For instance, this could be a measure that is loaded from another system. However, more frequently, it is a measure populated in RDF as well. An external baseline

generated in RDF is generally superior compared to a baseline created internally to the causal forecasting process. The reasons are the very robust data source, and the source level technique used to generate it.

Besides being more accurate, managing purely an external baseline means managing less causal parameters.

The parameters related to an internal baseline required a deep understanding of the Math underlying the causal forecasting process. Getting some of them wrong would have a huge negative impact on the forecast

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Cross Promo Effects Application in RDF

The Cross Promotion Effects Module (CPEM) is the tool that estimates cross promotion effects and exports them to RDF to be incorporated in the forecast. Previously the effects were applied based on the cross promo elasticities. To make the calculations more robust, the elasticities are now the source for a profile that in turn spreads the cross promo lifts.

To avoid overstating cross effects, RDF also imports from CPEM a maximum allowed percentage drop or increase in demand due to cross effects.

There is integration between CPEM and RDF for these measures.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Exception Management

Due to the huge volume of data points created during the forecast generation process it is impossible for a user to do a thorough review of all the forecast values. Moreover, a review of all forecasts is not even needed, as only a small subset of data points actually needs to be reviewed.

The decision on which values need to be reviewed is made by designing business rules, and checking the forecasts against them.

The forecasts that violate the rules, are flagged as exceptions. It does not automatically mean that they are poor forecasts, just that a user should review them.

Most RDF implementations have alerts configured, to check for exceptions.

For this release, RDF configures the most popular alerts, and packages the parameters and thresholds in a template.

By providing the template, implementation time and cost is reduced. Additionally, the template provides information on the alerting capabilities in RPAS and RDF.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Forecasting Returns

Each week, a certain amount of previously sold items are returned to store. Therefore, with forecasting demand it is important to include the returns' impact, especially for online retailers.

Instead of ignoring returns, RDF can estimate the impact of returned items and send the information to the replenishment system or optimization solutions.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Handling Annual Events and Holidays

This functionality supports demand shifts due to annual events, such as Easter, that occur at a slightly offset week of the year from year to year.

RDF handles the impact of such events, which usually show an increase in demand for a short period of time with its causal functionality. However, this may be a large overhead, if all that is needed is support for events occurring once a year. Causal is designed to handle much more complex promotions.

The new approach to solve this problem is to use historical data; past demand and information on when the events were active, and calculate the demand generated by the events. If the demand generated by the events is subtracted from the initial demand, we obtain the baseline demand that can be used to generate the baseline forecast.

Once the baseline forecast is available, the extra demand is applied to the correct future time periods which are provided by the retailer.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Preprocessing Workbook

Preprocessing is an important step in creating future demand. During this step, raw sales are corrected for out-of-stocks, outliers, unusual events, to create unconstrained demand. The demand is then used to generate the unconstrained forecast that is driving supply chain or optimization solutions. Most RDF environments have some form of pre-processing workbook to maintain the configurable parameters related to preprocessing.

Because there was no template for such a workbook, during implementation the workbook had to be created, adding to the implementation timeline and cost.

By providing the template, implementation time and cost is reduced. Additionally, the template provides information on the optimal use of the RDF preprocessing capabilities.

The workbook is designed to allow the generation of the data sources for baseline, as well as promotional forecasting.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Removing the Tie Between Curve and RDF

Historically, RDF always used profiles created in Curve for various purposes. The heaviest use of profiles in RDF happens when the source level forecast is spread down to the final level, to create the final forecast.

The profiles used for spreading the source level forecast are typically created dynamically, using the interim forecast. All necessary information to create the profiles resides in RDF.

Previously, the information was accessed in Curve. The profiles were generated and then used in RDF, and there was configuration work necessary to configure the profiles, too.

This dependency on Curve, meant duplication of data, run time, and implementation overhead.

For this release, the permanent tie between RDF and Curve is removed. The dynamically created profiles are generated in RDF, thus cutting the overhead mentioned before.

RDF and Curve can still live in the same environment, but Curve is now used to create more specialized profiles, like lifecycle or store contribution profiles.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Support for 53 Weeks Calendar

Retailers manage their business using a calendar that periodically includes an extra 53rd week, so the year end stays in about the same time of the year.

There is need to have some control over how this 53rd week is managed within the forecasting system's time dimension.

The problem described above has two implications. The first case is when two years with 52 weeks of historical sales are available, and the retailer needs to forecast for the following year, which has 53 weeks. In this case, the retailer needs to have a forecast for that period, but also preserving the seasonality for the other periods.

The second case is when one of the years of historical sales has 52 weeks, and the other has 53 weeks. In this case, the retailer needs to have a forecast where the 53 week history is mapped to 52 seasonality indices.

There is a trivial third case, when the 53rd week is outside the dates considered for the forecast generation. If this is the case, nothing needs to be done.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Workflow and Usability Improvements

The fusion taskflow has been reworked to improve usability. Related forecasting steps and tasks were grouped under the same activities.

For more information, see the *Oracle Retail Demand Forecasting User Guide*.

Noteworthy Defect Fixes

The following table contains issues that have been fixed for the current release.

Affected Component	Fixed Issue/Defect	Defect Number
Workbook	Custom hidden measures are lost after regenerating the configuration. This issue has been resolved.	12791553
Functionality	Lack of support for a calendar with 53 weeks. This issue has been resolved by adding the desired functionality as base.	15891517
Calculation	The Clone special expression returns errors instead of warnings. This issue has been resolved.	17897247
Forecast	In some instances, the seasonal methods generate large spikes in forecast. This issue has been resolved by changing how the level is calculated.	18154603

Affected Component	Fixed Issue/Defect	Defect Number
Workbook	When building the Forecast Approval workbook with one period of the forecast horizon, the adjusted forecast is not copied in the approved forecast measure. This issue has been resolved.	18403776
Forecast	Causal forecasts some unexplainable uplifts due to some intermediate effects. This issue has been resolved	19057235
Performance	Fixed several performance issues.	18510867 18768882

Known Issues

The following table contains issues that have been identified for the current release.

Known Issue/Defect	Defect Number
Currently, in Halo batch, the promotion variable (paggxlcirc) that calculates the system forecast is from the previous batch. If users change the promotion indicator between the previous batch and Halo batch, then the change does not occur.	17799032
When building the Promo Maintenance workbook and selecting promotions, if the base intersection contains dimensions that are not on the main branch of the respective hierarchies, the build fails. Additionally, subsequent builds of the workbook fail. The work-around solution is to manually delete the selection file for the workbook.	18308110
In an RDF domain using the RPAS Classic Client built using the Generally Available configuration, the Promotion Parameters worksheet is hidden after building a Promotion Maintenance workbook and selecting any level other than level 1. Follow this work-around to resolve the issue: <ol style="list-style-type: none"> 1. Click the Window menu and select the unhide option. 2. Click OK to display the worksheet. 	18712982
When logging is on and the verbose setting is used for the new 3rd party approved version of Java Secure Channel (JSch), the following message displays, " <i>Caught an exception, leaving main loop due to Socket closed</i> ". This message has no impact on the installer and should be ignored.	20020194
Several of the translation files have the incorrect line endings. After uploading the language files to input folder of respective RPAS solutions, use the following command from the input folder before loading any language files in a domain: <code>find . -type f -exec dos2unix {} \;</code>	20131255
When upgrading to version 14.1, if the current version is older than 14.0 and a lifecycle profile was configured in Curve, then the domains need to be rebuilt. Patching will not work.	Not applicable

Related Documentation

For more information, see the following documents in the Oracle Retail Demand Forecasting Release 14.1 documentation set:

- *Oracle Retail Demand Forecasting Configuration Guide*
- *Oracle Retail Demand Forecasting Implementation Guide*
- *Oracle Retail Demand Forecasting Installation Guide*
- *Oracle Retail Demand Forecasting Release Notes*
- *Oracle Retail Demand Forecasting User Guide for the RPAS Classic Client*
- *Oracle Retail Demand Forecasting User Guide for the RPAS Fusion Client*
- Oracle Retail Predictive Application Server documentation

The following documentation may also be needed when implementing RDF:

- *Oracle Retail Planning Batch Script Architecture Implementation Guide*

Supplemental Documentation

The following document is available through My Oracle Support at the following URL:

<https://support.oracle.com>

Oracle Retail Demand Forecasting 14.1 Cumulative Fixed Issues (Note ID 1672842.1)

This document details the fixed issues and defects for all RDF, Curve, and Grade patch releases prior to and including the current release.

Supplemental Training on My Oracle Support

The following document is available on the My Oracle Support Web site. Access My Oracle Support at the following URL:

<https://support.oracle.com>

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Value-Added Reseller (VAR) Language

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