

**Oracle® Retail Data Warehouse**  
Installation Guide  
Release 13.1.3

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Primary Author: Wade Schwarz

Contributors: Nathan Young

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Oracle Retail Data Warehouse, Installation Guide, Release 13.1.3

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Your feedback is important, and helps us to best meet your needs as a user of our products. For example:

- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
- Did you find any errors in the information?
- Does the structure of the information help you with your tasks?
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- Are the examples correct? Do you need more examples?

If you find any errors or have any other suggestions for improvement, then please tell us your name, the name of the company who has licensed our products, the title and part number of the documentation and the chapter, section, and page number (if available).

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**Note:** Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the new Applications Release Online Documentation CD available on My Oracle Support and [www.oracle.com](http://www.oracle.com). It contains the most current Documentation Library plus all documents revised or released recently.

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# Preface

Oracle Retail Installation Guides contain the requirements and procedures that are necessary for the retailer to install Oracle Retail products.

There are two ways a customer can be on RDW13.1.3 Version.

New RDW customers, who are installing RDW13.1.3 for the first time, should follow the content of the RDW 13.1 Installation Guide.

If a customer is already on RDW13.0.1, implementing the following two tasks will upgrade the product to RDW 13.1.3

1. Upgrade to RDW13.0.2 patch by following RDW 13.0.2 Installation guide.
2. Refer to chapter 7 “Upgrade RDW 13.0.2 to 13.1” of the *13.1 RDW Installation Guide* for instructions on upgrading from 13.0.2 to 13.1.

If a customer is already on RDW13.0.2, applying step 2 above upgrades the product to RDW 13.1.

## Audience

This Installation Guide is written for the following audiences:

- Database administrators (DBA)
- System analysts and designers
- Integrators and implementation staff

## Related Documents

You can find more information about this product in these resources:

- *Oracle Retail Data Warehouse Release Notes*
- *Oracle Retail Merchandising Batch Schedule*
- Oracle Retail Extract, Transform, and Load documentation

## Customer Support

To contact Oracle Customer Support, access My Oracle Support at the following URL:

<https://support.oracle.com>

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

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## Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 13.1) or a later patch release (for example, 13.1.2). If you are installing the base release and additional patch and bundled hot fix releases, read the documentation for all releases that have occurred since the base release before you begin installation.

Documentation for patch and bundled hot fix releases can contain critical information related to the base release, as well as information about code changes since the base release.

## Oracle Retail Documentation on the Oracle Technology Network

Documentation is packaged with each Oracle Retail product release. Oracle Retail product documentation is also available on the following Web site:

[http://www.oracle.com/technology/documentation/oracle\\_retail.html](http://www.oracle.com/technology/documentation/oracle_retail.html)

(Data Model documents are not available through Oracle Technology Network. These documents are packaged with released code, or you can obtain them through My Oracle Support.)

Documentation should be available on this Web site within a month after a product release.

## Conventions

**Navigate:** This is a navigate statement. It tells you how to get to the start of the procedure and ends with a screen shot of the starting point and the statement “the Window Name window opens.”

This is a code sample

It is used to display examples of code

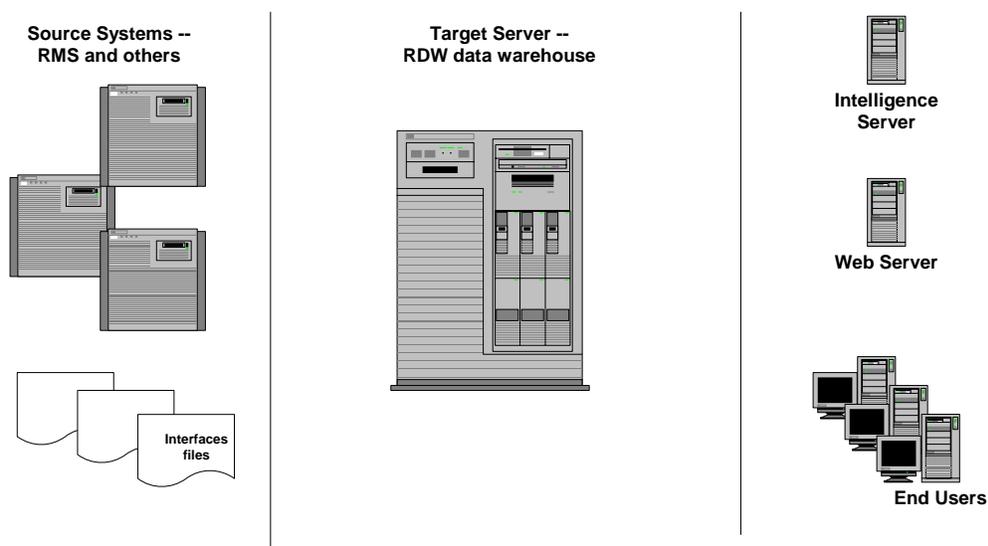
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## Preinstallation Tasks

This release of RDW incorporates optional interfaces with these Oracle Retail products which can be sources for the data warehouse: Oracle Retail Merchandising System (RMS), Oracle Retail Invoice Matching (ReIM), and Oracle Retail Price Management (RPM). Additionally, the data warehouse can also operate as a standalone product and be fed from other legacy systems. If Oracle Retail applications are used as the source systems, follow the requirements in the installation guides for each of these applications. It is recommended that the source systems be on a separate server from the data warehouse which is considered the target server. Refer to Appendix A for more detailed information on RDW and database setup.

### RDW Architecture on Oracle



### Implementation Capacity Planning

There is significant complexity involved in the deployment of Oracle Retail applications, and capacity planning is site specific. Oracle Retail strongly suggests that before installation or implementation you engage your integrator (such as the Oracle Retail Consulting team) and hardware vendor to request a disk sizing and capacity planning effort.

Sizing estimates are based on a number of factors, including the following:

- Workload and peak concurrent users and batch transactions
- Hardware configuration and parameters
- Data sparcity
- Application features utilized
- Length of time history is retained

Additional considerations during this process include your high availability needs as well as your backup and recovery methods.

## Check Database Server Hardware Requirements

Hardware requirements for the data warehouse database server or target server include:

General Hardware Requirements	Minimum	Recommended
Memory	8GB	12GB+
Multi-processors	4 – highest MHz	8+ – highest MHz
CD-ROM drive (either local or network)		
Disk Space	300 GB	Site specific (refer to your RDW sizing information)
Swap Space	Equal to physical RAM	2.5 times the physical RAM

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**Note:** This reflects the amount of space needed to install the database software, RETL software, as well as the RDW software, and still maintain an acceptable amount of usage on the UNIX file system. This may reflect external storage as well as internal, such as 50GB of internal space and a 250+ GB external RAID storage array.

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Sizing Factors and other suggestions to factor into the selection of a data warehouse server include:

- Concurrent front-end user base. More concurrent users will require more database processing power from the server.
- DASD connectivity. Typically, it is better if the fiber channel connectivity to provide the maximum throughput to disk.
- Backup/Recovery requirements. Extra disks may be required for backup and recovery procedures.
- Server backplane speeds. Depending on the architecture of the server backplane (or comparable links), memory access and/or CPU utilization may be a factor in performance.
- Overall database size for the RDW. A capacity plan should be done for the database server and DASD requirements in general to assess how large the environment will need to be.

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**Note:** These data warehouse server requirements should only be used as guidelines because they reflect the hardware used to run a small environment (approximately 200 gigabytes of data). Actual requirements can be somewhat smaller, or typically much larger, depending on the intended size of the RDW environment upon full implementation. Oracle can assist with making these determinations by providing information on database size estimates, server architecture, and so on.

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## Check Database Server Requirements

General Requirements for a database server running RDW include:

Supported on:	Versions Supported:
Database Server OS	<p>OS certified with Oracle Database 11gR1 and 11gR2 Enterprise Edition. Options are:</p> <ul style="list-style-type: none"> <li>▪ Oracle Enterprise Linux 5 Update 2 (OEL 5.2) for x86-64</li> <li>▪ Oracle Enterprise Linux 5 Update 3 (OEL5.3) for x86-64</li> <li>▪ Red Hat Enterprise Linux 5 Update 2 (RHEL 5.2) for x86-64</li> <li>▪ Red Hat Enterprise Linux 5 Update 3 (RHEL 5.3) for x86-64</li> <li>▪ AIX 6.1, minimum TL1</li> <li>▪ Solaris 10 Sparc (Actual hardware or Logical Domains)</li> <li>▪ HP-UX 11.31 Integrity (Actual hardware or HPVM)</li> </ul>
Database Server 11gR1	<p>Oracle Database Enterprise Edition 11gR1 (minimum patchset 11.1.0.7) with the following additional oneff patches:</p> <ul style="list-style-type: none"> <li>▪ 7036284 (LOADJAVA RUN IN A DV ENVIRONMENT CANNOT LOAD CLASSES WITH A NAME LONGER THAN 128)</li> <li>▪ 7378322 (ORA-00600: internal error code, arguments: [6704], [1], [532241], [532237])</li> <li>▪ 6800649 – (AIX only) when non-oracle user uses client utilities sqlldr/sqlplus/impdp/expdp, core dump is generated. Need to “relink all” after applying the patch</li> <li>▪ 7697360 (RAC only) ORA-00600: internal error code, arguments: [k2vcbk_6], Database crashed during transaction recovery.</li> <li>▪ 9582272 - ORA-600 [KKDLREADONDISKDEFVAL: ERROR] OCCURS WHEN ALTER TRIGGER IS EXECUTED.</li> </ul> <p>Components:</p> <ul style="list-style-type: none"> <li>▪ Oracle Database 11g</li> <li>▪ Oracle Partitioning</li> <li>▪ Oracle Net Services</li> <li>▪ Oracle Call Interface (OCI)</li> <li>▪ Oracle Programmer</li> <li>▪ Oracle XML Development Kit</li> <li>▪ Examples CD (Formerly the companion CD)</li> </ul> <p>Other components:</p> <ul style="list-style-type: none"> <li>▪ Perl compiler 5.0 or later</li> <li>▪ X-Windows interface</li> <li>▪ ANSI compliant C-compiler (certified with OS and database version).</li> </ul>

<b>Supported on:</b>	<b>Versions Supported:</b>
Database Server 11gR2	<p>Oracle Database 11g Release 2 (11.2.0.1) Enterprise Edition with the following components:</p> <ul style="list-style-type: none"><li>▪ Oracle Partitioning</li><li>▪ Example CD</li></ul> <p>Patches:</p> <ul style="list-style-type: none"><li>▪ 9582272 - ORA-600 [KKDLREADONDISKDEFVAL: ERROR] OCCURS WHEN ALTER TRIGGER IS EXECUTED.</li></ul> <p>The following 2 patches need to be applied together in order to correct the JDBC bug:</p> <ul style="list-style-type: none"><li>▪ 9367425 -- PROCESS CRASHED WHEN USING 11GR2 JDBC/OCI</li><li>▪ 9495959 -- HANG WHEN TWO THREADS TRY TO CREATE THE ENV HANDLE AT THE SAME</li></ul> <p>Other components:</p> <ul style="list-style-type: none"><li>▪ Perl compiler 5.0 or later</li><li>▪ X-Windows interface</li><li>▪ ANSI compliant C-compiler (certified with OS and database version).</li></ul>

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## Verify Single Sign-On

If a Single Sign-On is to be used, verify the Oracle Infrastructure Server 10g has been installed. Verify the Mid-Tier server hosting Oracle FoRDW is registered with the Infrastructure Oracle Internet Directory.

## Check Web Browser and Client Requirements

General requirements for client running RDW include:

<b>Requirement</b>	<b>Version</b>
Operating system	Windows 2000 or XP
Display resolution	1024x768
Processor	Pentium processor (minimum 450 MHz)
Memory	minimum of 256 MB RAM
Sun JRE Plug-in	1.4.2+
Browser	Microsoft Internet Explorer version 6.x or 7.x

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## Supported Oracle Retail Products

Requirement	Version
Oracle Retail Merchandising System (RMS)/Oracle Retail Oracle Retail Sales Audit (ReSA)	13.1.3
Oracle Retail Invoice Matching (ReIM)	13.1.3
Oracle Retail Price Management (RPM)	13.1.3

## Supported Oracle Retail Integration Technologies

Integration Technology	Version
Oracle Retail Extract, Transform and Load (RETL)	13.1
Oracle Retail Integration Bus (RIB)	13.1
Oracle Retail Service Layer (RSL)	13.1

## Additional Oracle Technologies

Integration Technology	Version
Oracle Business Intelligence Standard EditionOne	10.1.3.4.0
Oracle Business Intelligence Enterprise Edition	10.1.3.4.0

## Create a UNIX User Account to Install the Software

The following user should be created on the database server.

1. Create a UNIX group named "dev".
2. Create UNIX user named "oretail" and assign it to the "dev" group. This user will install the RDW software.

## Create Staging Directory for RDW Database Files

1. Log into the database server as oretail.
2. Create a staging directory for the RDW database schema installation software. There should be a minimum of 285 MB disk space available in this location.
3. Copy the rdw\_1313.zip file from the RDW 13.1.3 release to the staging directory. This is referred to as INSTALL\_DIR when installing database schema software.
4. Change directories to INSTALL\_DIR and extract the rdw\_1313.zip file. This creates an rdw/rdw/ subdirectory under INSTALL\_DIR.



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## Database Schema Installation Tasks

It is assumed that Oracle 11g, with appropriate patches, has already been installed. If not, refer to Check Database Server Software Requirements in Chapter 1, Preinstallation Tasks before proceeding.

### Compile Time Modules

1. Change directories to STAGING\_DIR and extract the rdw13.1.0-code.zip. This creates install/ and rfx/ subdirectories under STAGING\_DIR.
2. Change directories to <STAGING\_DIR> /install and copy the sample\*. \* files to <INSTALL\_DIR>/rdw/rdw/product/base\_dir/dev/sample.
3. Copy the cr\_time\_13.c and cr\_time\_454.c files in <STAGING\_DIR> /install to <INSTALL\_DIR>/rdw/rdw/product/base\_dir/dev/install.
4. Verify the C compiler is in the path of your UNIX session and the C compiler is in your UNIX library path. At the UNIX prompt, enter:  
which cc
5. Compile the module cr\_time\_454, cr\_time\_13 and cr\_time\_g with a standard ANSI C compiler. At the UNIX prompt, enter:  
cc -g -I. -o cr\_time\_454 c\_utils.c cr\_time\_454.c  
cc -g -I. -o cr\_time\_13 c\_utils.c cr\_time\_13.c

### Install New Language if needed

The following is a listing of the additional languages that are being supported with the RDW 13.1.3 patch.

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**Note:** The following is a listing of the additional languages that RDW 13.1.3 supports. If more than one language is installed, only the data for the last language installed will be present in the database (for source data tables). For localization\_dm, all languages would be present in the table.

el: Greek  
hr: Croatian  
hu: Hungarian  
nl: Dutch  
pl: Polish  
sv: Swedish  
tr: Turkish

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## Overwrite Existing Calendar Data

To overwrite existing calendar data with one of the newly supported languages, update the LANGUAGE parameter in the rdw\_config.env which will be found in INSTALL\_DIR/rdw/base\_dir/dev/rfx/etc to one of the languages noted above. For example:

```
export LANGUAGE="sv"
```

1. Change directories to STAGING\_DIR/rfx/include.
2. Copy rdw\_<lang>.rsc file to the INSTALL\_DIR/rdw/base\_dir/dev/rfx/include.
3. Run cr\_time.ksh located in INSTALL\_DIR/rdw/base\_dir/dev/install.

## Populate Datamart Default Data for New Language

In order to access the new language supported by RDW 13.1.3, implement the following steps:

1. Log into the database server as oretail.
2. Change directories to STAGING\_DIR/install.
3. Copy the \*.sql files to the INSTALL\_DIR/rdw/base\_dir/dev/install
4. Set NLS\_LANG environment variable to NLS\_LANG = AMERICAN\_AMERICA.UTF8.
5. Log in to SQL\*Plus as RDW13DM and run the following SQL scripts for the required language, substituting <lang> for one of the following (e.g. el, hr, hu, nl,pl, sv, tr):

el: Greek  
hr: Croatian  
hu: Hungarian  
nl: Dutch  
pl: Polish  
sv: Swedish  
tr: Turkish

```
SQL> alter session set NLS_DATE_FORMAT='RRRR-MM-DD';  
@ load_wf_cust_type_dm_<lang>.sql  
@ load_prod_diff_type_dm_<lang>.sql  
@ load_dummyrows_<lang>.sql  
@ load_cde_dtl_dm_<lang>.sql  
@ load_cde_dtl_com_dm_<lang>.sql  
@ load_tsf_type_dm_<lang>.sql  
@ load_rtl_type_dm_<lang>.sql  
@ RDW1302_LOCALIZATION_DM_<lang>.SQL
```

## Internationalization setup for New Language

1. Log into the Oracle Business Intelligence Enterprise Edition (BI EE) server as oretail.
2. Create a staging directory for the RDW upgrade.
3. Copy the rdw13.1.3-metadata.zip file from the RDW 13.1 release to the staging directory. This is referred to as STAGING\_DIR.
4. Change directories to STAGING\_DIR and extract the rdw13.1.3-metadata.zip file. This creates an rdw/res/L\_ru/Captions/ subdirectory under STAGING\_DIR.
5. Copy the L-<lang> directory from "<STAGING\_DIR>/rdw/res" and replace the existing L-<lang> directory under <BI\_INSTALL\_DIRECTORY>/OracleBIData/web/res This L-<lang> directory has language-specific translated strings in the form of xml files. For example, the L\_<lang> folder has two xml files; DashboardPromptsCaptions\_<lang>.xml and RDWPackagedreportsCaptions\_<lang>.xml, which have all the translated catalog strings.
6. After copying, restart the presentation server service. This ensures that the entire RDW specific catalog strings for example report names, dashboard names and dashboard prompts names can be viewed in the required language.



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## Appendix: RDW Code Tree

The following table describes the contents of each of the RDW code tree directories created during the RDW installation.

Path	Directory	Description
<base_directory>	dbasql	This directory contains all SQL scripts necessary to maintain the permissions for the database users.
<base_directory>	batch	Empty directory used for development and testing purposes only.
<base_directory>	data	This directory contains the text files that serve as the input to RDW RETL load modules. For users with Oracle Retail applications such as RMS, ReIM, etc, these text files can be generated in these source applications. The text files should be FTP from the source application to the RDW data directory. Directory is empty on installation.
<base_directory>	error	This directory holds all program error files, and status files. Directory is empty on installation.
<base_directory>	install	This directory contains all RETL modules and SQL scripts needed only at installation.
<base_directory>	log	This directory holds log files of program execution. Directory is empty on installation.
<base_directory>	rfx	This directory contains subdirectories for all the code and files related directly to RETL
<base_directory>/rfx	bookmark	This directory contains a file created during execution of each module to track the execution of the module. Files are deleted upon successful completion of module. Directory is empty on installation.
<base_directory>/rfx	etc	This directory contains files that hold variables used by RDW batch modules. The configuration file is found in this directory.
<base_directory>/rfx	include	This directory contains files that hold string language translations used by RDW batch modules.
<base_directory>/rfx	lib	This directory contains all RDW library code
<base_directory>/rfx	schema	This directory contains all RDW schema files used with each module.
<base_directory>/rfx	src	This directory contains RDW source code.



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## Appendix: Create Time in RDW

### Create Time in RDW

If more time data is needed in RDW after running the installer, modify the parameters below for the new time period and run the module again. To minimize the load time for adding additional time, enter only the first year to be added as the response for the first year prompt in number 5. The RDW\_LOCATION is the path you entered in the installer on the screen titled "Installation Location."

1. If RMS is not being used as the source of the time calendar, move on to step 2. After running time extraction in RMS (see *RMS Operations Guide volume 3* for details), FTP `time_454.txt`, `start_of_half_month.txt`, and `wkday.txt` from RMS install directory to the RDW directory `<RDW_LOCATION>/rdw/base_dir/dev/install/`.
2. Verify the RETL executable is in the path of your UNIX session by typing `which rfx` at the UNIX prompt.
3. Change directories to `RDW_LOCATION/rdw/base_dir/dev/install/`
4. Execute the `cr_time.ksh` module. At the UNIX prompt enter:
  - `cr_time.ksh`
5. This script prompts for the calendar type. Choose 1 for 454 time, 2 for 13 period time and 3 for 454 with Gregorian time.
6. At the prompt enter the 4-digit year for the beginning and ending of the time calendar:
 

Please enter first year to be loaded:  
Please enter last year to be loaded:

**Note:** To determine the beginning and ending fiscal year, refer to the text file modified above. Verify all months or periods are included in the text file for the first year; no partial years are allowed.

  - One text file is generated in the install directory for each dimension table.
7. At the UNIX prompt, for 454 time calendar or 13 period time calendar enter:
  - `time_load.ksh`
  - `time_trnsfrm_load.ksh`
8. At the UNIX prompt, for 454 time with Gregorian time calendar enter
  - `time_load.ksh`
  - `g_time_load.ksh`
  - `time_trnsfrm_load.ksh`
  - `g_time_trnsfrm_load.ksh`
9. Change directories on the UNIX server to `RDW_LOCATION/rdw/base_dir/dev/log/`. Review the log file that was created or modified.
10. Change directories on the UNIX server to `RDW_LOCATION/rdw/base_dir/dev/error/`. Review the error files that were created for `time_load` and `time_trnsfrm_load`. Review also the error files that were created for `g_time_load` and `g_time_trnsfrm_load` if 454 time with Gregorian calendar is used.

11. Refer to the *RDW Operations Guide* for more information on the log files and error files.

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**Note:** DAY\_IDNT serves as a surrogate key for day of the time. It can represent 454 time, 13 period time or Gregorian time. Since it is a surrogate key, it does not have meaning to it as long as it is unique across all the days of the time used in RDW.

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## Appendix: Time

### Time Calendar (4-5-4)

RDW provides support for the retail 4-5-4 calendar. The fiscal 4-5-4 calendar is the calendar supported by RMS and other Oracle Retail applications and is populated in RDW via an extract from RMS. The 4-5-4 calendar is the default calendar used when viewing the time dimension via the Oracle BI middle tier layer of RDW.

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**Note:** Even if 4-5-4 is the default calendar for RDW, you can still see the Gregorian Time attributes and transformations from within Oracle BI. However, you can only utilize these objects if you have opted for Gregorian calendar during database installation.

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### Time Calendar (4-5-4/Gregorian)

RDW provides support for the combined 4-5-4 calendar/Gregorian calendar. If a user chooses to use the combined 4-5-4/Gregorian calendar, the user must execute the batch program that generates the text files needed to populate the Gregorian time dimension.

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**Note:** In order to update RDW to report in combined 4-5-4/Gregorian calendar, please see the Appendix I, *Create Time in RDW* for specific instructions. Nothing needs to be modified within Oracle BI.

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## Time Calendar (13 period)

The 13-Period calendar can also be used, but RMS does not support it. If a user chooses to use the 13-Period calendar, the user can either provide a flat file with its 13-period time, or utilize a sample 13-period time flat file, and then ETL scripts populate the time dimension with this file during RDW installation. Within the middle-tier application, all references to Month must be manually updated to Period, to comply with the 13 period nomenclature.

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**Note:** In order to update RDW to report in 13 period time, follow these steps:

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1. Update the time dimension tables. (For complete instructions, reference the RDW Database Installation Guide.)
2. Within the repository, delete the attribute Half Year, and re-name the objects referencing month.
  - Highlighting the object in the Business Layer and pressing the delete key deletes the attribute Half Year. All relationships and hierarchies are automatically updated. The table TIME\_HALF\_DM and its Aliases can also be deleted the same way in the Physical layer. Global Consistency check is recommended after the change.
  - Each repository object referencing Month can be re-named by selecting the object and pressing F2. After all the changes, Global Consistency check is recommended before saving the repository.

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## Appendix: Installation Order

This section provides a guideline as to the order in which the Oracle Retail applications should be installed. If a retailer has chosen to use some, but not all, of the applications the order is still valid less the applications not being installed.

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**Note:** The installation order is not meant to imply integration between products.

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### Enterprise Installation Order

1. Oracle Retail Merchandising System (RMS), Oracle Retail Trade Management (RTM), Oracle Retail Sales Audit (ReSA)
2. Oracle Retail Service Layer (RSL)
3. Oracle Retail Extract, Transform, Load (RETL)
4. Oracle Retail Active Retail Intelligence (ARI)
5. Oracle Retail Warehouse Management System (RWMS)
6. Oracle Retail Allocation
7. Oracle Retail Invoice Matching (ReIM)
8. Oracle Retail Price Management (RPM)

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**Note:** During installation of RPM, you are asked for the RIBforRPM provider URL. Since RIB is installed after RPM, make a note of the URL you enter. If you need to change the RIBforRPM provider URL after you install RIB, you can do so by editing the `jndi_provider.xml` file.

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9. Oracle Retail Central Office (ORCO)
10. Oracle Retail Returns Management (ORRM)
11. Oracle Retail Back Office (ORBO) or Back Office with Labels and Tags (ORLAT)
12. Oracle Retail Store Inventory Management (SIM)

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**Note:** During installation of SIM, you are asked for the RIB provider URL. Since RIB is installed after SIM, make a note of the URL you enter. If you need to change the RIB provider URL after you install RIB, you can do so by editing the `jndi_providers_ribclient.xml` file.

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13. Oracle Retail Predictive Application Server (RPAS)
14. Oracle Retail Demand Forecasting (RDF)
15. Oracle Retail Category Management (CM)
16. Oracle Retail Replenishment Optimization (RO)
17. Oracle Retail Analytic Parameter Calculator Replenishment Optimization (APC RO)
18. Oracle Retail Regular Price Optimization (RPO)
19. Oracle Retail Merchandise Financial Planning (MFP)
20. Oracle Retail Size Profile Optimization (SPO)

- 21.** Oracle Retail Assortment Planning (AP)
- 22.** Oracle Retail Item Planning (IP)
- 23.** Oracle Retail Item Planning configured for COE (IPCOE)
- 24.** Oracle Retail Advanced Inventory Planning (AIP)
- 25.** Oracle Retail Integration Bus (RIB)
- 26.** Oracle Retail Point-of-Service (ORPOS)
- 27.** Oracle Retail Analytics Applications
- 28.** Oracle Retail Data Warehouse (RDW)
- 29.** Oracle Retail Workspace (ORW)