

# Oracle® Retail Insights Cloud Service

## Implementation Guide



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# Preface

The Oracle Retail Insights Cloud Service Implementation Guide provides detailed information useful for implementing the application. It helps you to view and understand the behind-the-scenes processing of the application.

## Audience

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<https://docs.oracle.com/en/industries/retail/index.html>

An updated version of the applicable Oracle Retail document is indicated by Oracle part number, as well as print date (month and year). An updated version uses the same part number, with a higher-numbered suffix. For example, part number E123456-02 is an updated version of a document with part number E123456-01.

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Oracle Retail product documentation is available on the following web site:

<https://docs.oracle.com/en/industries/retail/index.html>

(Data Model documents can be obtained through My Oracle Support.)

## Conventions

The following text conventions are used in this document:

| Convention      | Meaning                                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>boldface</b> | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.         |
| <i>italic</i>   | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.                          |
| monospace       | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

# 1

## Introduction

Retail Insights offers cloud-based rich business intelligence solution to retail industry users. Retail Insights is built on top of the latest Oracle technology stack and utilizes Oracle Data Integrator (ODI) for extracting, transforming, and loading (ETL) the data and Oracle Analytics Cloud (OAC) for end user reporting and analysis needs.

Retail Insights architecture is designed to meet the retail industry's business intelligence needs in both program and report performance.

The main characteristics of the Retail Insights product are:

- **Rich Reporting Capabilities:** Retail Insights offers report creation capabilities in two different flavors: Historical (As Was) and Current (As Is) in same environment. Packaged reports are provided as reference examples for users to create their own customized reports according to their needs.
- **Comprehensive Solution:** Retail Insights includes an end-to-end solution for reporting and BI needs of the retailer by providing data integration with source applications, transforming and loading the fact and dimension data, rolling up the data for improved query performance, Web-based graphical user interface (GUI) for report creation, shell scripts for setting up the batch schedule, and an automated installer by following business intelligence best practices.
- **Performant ETL Code:** Retail Insights data processing tool, ODI, offers high performance for the database batch processes on Oracle database.
- **Performant Reports:** Retail Insights metadata is built using Oracle Analytics and are designed to work in complex reporting scenarios.
- **Robust Data Model:** Retail Insights data model is designed for supporting a retailers' data needs in a business intelligence environment. Data model elements are designed to work with Oracle Analytics architecture.
- **Packaged Integrations:** Retail Insights data model is leveraged for many down-stream applications such as the Retail AI Foundation Cloud Services with built-in integrations and data flows.

## Business Intelligence and Retail Insights

This section briefly explains the fundamentals of business intelligence and data warehousing in general. It is important to understand the overall architecture and data flow for implementing Retail Insights.

Business intelligence includes the processes, methods, and technologies adopted by organizations to answer complex business questions and for building comprehensive decision support systems. These systems help organizations in maintaining secure, conformed, and highly available data for all levels of users from top executives who make decisions based on corporate level information to managers/analysts who analyze their area and take actions based on the information.

Business intelligence is built using several processes and applications that maintain these processes by adopting latest tools and technologies. One of the main components of business intelligence is a data warehouse. A data warehouse is the repository that stores the data



extracted from several source systems and modelled to perform for data loading, reporting, and ad-hoc analysis needs.

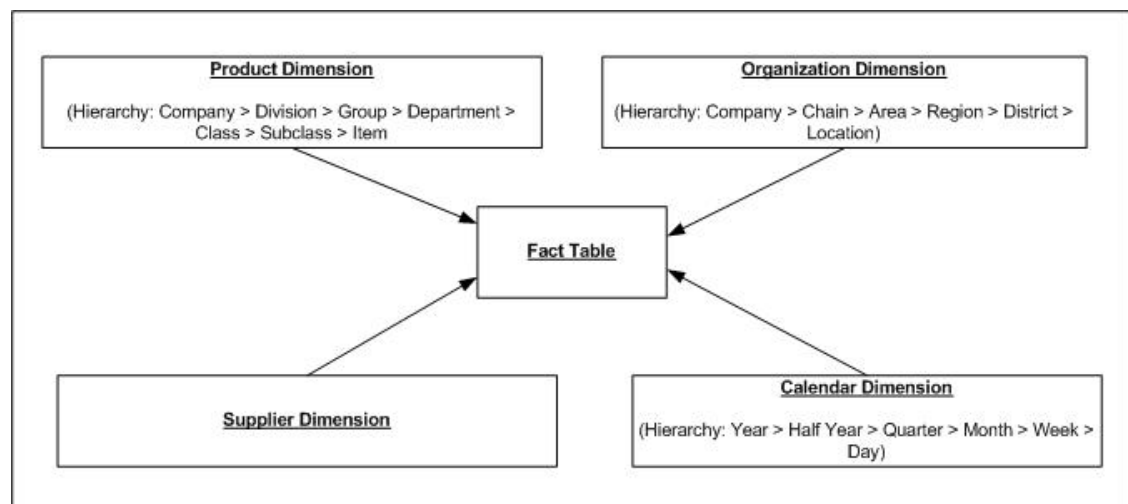
Retail Insights uses sophisticated techniques to populate the data warehouse. Explained in greater detail throughout this guide, these techniques include taking the data provided by Oracle Retail Data Extractor (RDE) and then rapidly transforming that data and loading it into the data warehouse. Techniques used to load data into the warehouse vary depending upon whether the data consists of facts or dimensions.

There are several fact and dimension tables in the subject areas available in Retail Insights. Some examples of subject areas that exist in Retail Insights include Sales, Inventory Position, and Base Cost. Each subject area has its own data mart to support reporting and analytic needs. At the center of each data mart is fact data (note that fact data here corresponds to both base fact data and aggregated data). Facts are the transactions that occur in your data warehouse's source systems, such as RMS. You may want to look at sales transaction facts, inventory stock count facts at stores or warehouses, or inventory movement facts.

Facts have little meaning by themselves because they are usually just values (for example, six sales at a store, 15 items left at a warehouse, or 300 items transferred). What gives fact data true meaning is the intersection of dimensions in which facts exist. In other words, six sales on Wednesday at store B, or 15 dishwashers in stock last Monday at the Chicago warehouse, or 300 blouses transferred during the last week in February from the St. Louis warehouse to the Denver warehouse. Dimension data, therefore, exists in the data warehouse to serve as reference data to facts.

The following diagram illustrates data elements of a generic data mart and their inter-relationships:

**Figure 1-1 Data Element Relationships**



# 2

## Setup and Configuration

The Retail Insights application is a part of the Retail Analytics and Planning solutions and much of the implementation steps have been combined into a single platform-level document referred to as the Retail Analytics and Planning Implementation Guide. For general guidance on implementing RI or AI Foundation applications, first refer to that document. The chapters of this guide supplement the platform documents with RI-specific details as needed.

### Initial Configurations

After performing all instructions for initial environment configuration in the RAP Implementation Guide, you may also want to configure Retail Insights-specific parameters that will impact your data loading and conversion processes. Review the table below for a complete list of these parameters.

Additionally, the Retail Data Extractor (RDE) tool has some configurations specifically for controlling the ETL logic between RMFCS and RI. These settings do not apply if you are implementing the Retail Insights without RMFCS. The RDE settings are available from the Control Center in the same C\_ODI\_PARAM\_VW table used for RI.

**Table 2-1 C\_ODI\_PARAM Initial Setup**

| Scenario | Parameter             | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RI_UA_ROW_DELIMITER   | Change the row ending characters for all data files sent into RI, both from RDE and external sources. If the default value of "\n" may occur in text strings, a custom delimiter MUST be set before loading data.                                                                                                                                                                                                                                           |
| GLOBAL   | NON_NUMERIC_HIERARCHY | Configures certain RI attributes in reporting to allow non-numeric values in hierarchy IDs. Default = N, which means only numeric values are allowed. Change this value to "Y" if you will be having non-numeric hierarchy IDs and then raise a Service Request to Oracle informing them that you have altered the value of NON_NUMERIC_HIERARCHY in C_ODI_PARAM and you will need your Retail Insights configuration to be reloaded for it to take effect. |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter              | Usage                                                                                                                                                                                                                                                                                                                                                                                |
|----------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | LANGUAGE_CODE          | Default language code used by the system to load data. Do not change unless your source systems are also using a non-English default language.                                                                                                                                                                                                                                       |
| GLOBAL   | RI_INV_HIST_DAYS       | The number of days to retain a zero-balance record on inventory positions. After the set number of days, we will stop carrying forward a balance on W_RTL_INV_IT_LC_DY_F table for the zeros, and it will also stop appearing on the aggregates from that day on. Excessive retention of zero balances can cause batch performance issues due to high data volumes. Default=91 days. |
| GLOBAL   | RI_CLOSED_PO_HIST_DAYS | The number of days to retain closed purchase orders on the daily positional snapshots. After the set number of days, we will stop carrying forward a balance on W_RTL_PO_ONORD_IT_LC_DY_F table for the closed order. Default=30 days.                                                                                                                                               |
| GLOBAL   | PO_COST_ELC_IND        | Set to Y to include MFCS expenses and duties in the calculation of total on order cost based on ELC components associated with the orders. It is disabled by default, meaning ELC components are not included in the order cost.                                                                                                                                                     |
| GLOBAL   | RI_PART_DDL_CNT_LIM IT | Maximum number of partitions to create during the initial setup run, recommended value is 100000. The average initial setup of the calendar may need 50-60,000 partitions.                                                                                                                                                                                                           |
| GLOBAL   | RA_CLR_LEVEL           | Disables the mapping of clearance event IDs to clearance inventory updates, set to N to disable. Disabling may improve batch performance.                                                                                                                                                                                                                                            |
| GLOBAL   | ANCHOR_TO_YEARS        | Number of years of data to consider for Same Stores method of Comparable Store reporting. Set to 3 if LLY is required.                                                                                                                                                                                                                                                               |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter                                                                                                         | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | SAME_STORES                                                                                                       | Enable or disable Same Stores method of Comparable Store reporting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| GLOBAL   | GIFT_CARD_TENDER_TYPE_ID                                                                                          | The tender type ID associated with gift cards in RMS, for gift card fact usage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| GLOBAL   | CLSTR_GRP_TYPE                                                                                                    | Controls the type of data loaded to the Cluster interfaces, either CLSTR for store clusters or PRICE_ZONE for price zones.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GLOBAL   | ITEM_CFA_VISIBILTY<br>LOC_CFA_VISIBILTY<br>SUPS_CFA_VISIBILTY<br>ITEM_LOC_CFA_VISIBILTY<br>MCAL_DAY_CFA_VISIBILTY | Controls access to CFAS attributes in reporting, set to 0 to enable, 1 to disable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| GLOBAL   | LY_SHIFT_TYPE                                                                                                     | Controls the default LY calendar mapping used, accepts values in UNSHIFT, SHIFT, or GUNSHIFT. The first two are fiscal calendar variations, while the third is Gregorian calendar. The value in the param chooses which LY calendar to use out of the three stored in the database. SHIFT calendar maps LY shifted by 1 week, so week 53 maps to week 1 of the same FY. UNSHIFT keeps the days/weeks mapped 1-to-1 (FY week 52 maps to week 52 LY, week 53 has no LY). GUNSHIFT uses 1-for-1 mapping but on Gregorian calendar (Day 1 of the year maps to day 1 LY). |
| GLOBAL   | ITEM_GRP1_IS_INCREMENTAL                                                                                          | Enable incremental processing of the W_RTL_ITEM_GRP1_D table, which is used for product attributes, UDAs, and item lists. Should be set to 'Y' in production environments once initial loading is done. When set to 'N', records not part of the daily load are set to CURRENT_FLG=N and cannot be used or reactivated.                                                                                                                                                                                                                                              |
| GLOBAL   | RTVR_REASON_CAT_CODE                                                                                              | RMS code type for RTV reason codes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter                    | Usage                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RI_TRX_COUNT_RECLASS_IND     | Set to 'Y' to enable reclassification processing of transaction count aggregates. This may greatly impact batch runtimes so it should not be enabled unless required.                                                                                                                                                                                                                     |
| GLOBAL   | RI_GEN_PROD_RECLASS_IND      | Set to 'Y' to enable RI product data loads to automatically generate item-level reclass records from your hierarchy data. From version 24 onwards, this is the default method to handle reclasses. Requires that full product files are sent every day, or at least full enough to detect when an item moves between hierarchy positions even if no other change occurred.<br>Default = Y |
| GLOBAL   | ITEM_GRP_DIV_RECLASS_ENABLED | By default, deleted items are not included in product reclassifications, and history data for such items will remain under their last known hierarchy levels. If you need deleted items to be included in reclassifications, then you must update the parameter to a value of Y. Default = N.                                                                                             |
| GLOBAL   | RI_INT_ORG_DS_MANDATORY_IND  | Set to 'Y' to require input data on the Organization hierarchy interface in order for the batch to run. This will prevent the batch from executing if the data files were not uploaded properly for a given day or the file was missing from the upload.                                                                                                                                  |
| GLOBAL   | RI_PROD_DS_MANDATORY_IND     | Set to 'Y' to require input data on the Product hierarchy interface in order for the batch to run. This will prevent the batch from executing if the data files were not uploaded properly for a given day or the file was missing from the upload.                                                                                                                                       |
| GLOBAL   | CURRENCY_CODE                | Set the default currency code to use when loading CSV-based fact data files if none are provided on the files themselves. Defaults to 'USD'.                                                                                                                                                                                                                                              |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter             | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RI_EXCLUDE_VAT_IND    | Determines if special Sales metrics are displayed in RI for “Sales excluding VAT”. These metrics subtract the tax amounts from the sales values under the assumption tax is always included in the inputs, but should not be shown in reporting. Set to ‘0’ to show the metrics, or ‘1’ to hide them.                                                                                                                                                                        |
| GLOBAL   | START_OF_YEAR_MONTH   | The name of the Gregorian month associated with the first fiscal period in your business calendar. For example, if your fiscal year starts 06-FEB-22 then set this to FEBRUARY. This will be used to display month names in RI reporting on the fiscal calendar.<br>Default = JANUARY                                                                                                                                                                                        |
| GLOBAL   | HIST_ZIP_FILE         | Change the default name for the ZIP file package used by the history file load process.<br>Default=RAP_DATA_HIST.zip                                                                                                                                                                                                                                                                                                                                                         |
| GLOBAL   | RI_AGG_FULL_LOAD_TYPE | Controls date extending behavior for aggregation utility. Should be one of (F, FS, FE, NA). Refer to the <i>AIF Operations Guide</i> for details on the utility usage. Default = FS                                                                                                                                                                                                                                                                                          |
| GLOBAL   | RI_ITEM_REUSE_IND     | Enable or disable the ability to re-use item numbers over time to represent entirely new items. Also enables retention of existing items for a number of days, so that if an item drops and reappears quickly, it is not considered a new item and will continue to use the existing records. Set to ‘Y’ to enable. If this is not enabled, items that are dropped from the product interface are immediately closed and deactivated and cannot be re-opened.<br>Default = N |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter                | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RI_ITEM_REUSE_AFTER_DAYS | The number of days between when an item is deleted and when it's allowed to appear as a new item having the same ID. This will trigger the old version of the item to be archived in the data warehouse using an alternate key, so the new version of the item is treated as completely new. For example, setting this to 5 days means that an item can be dropped/ deleted and after 5 days, when the same items come again it will be treated as a brand-new item. If the item re-appears in the data before 5 days has passed, it will be treated as the same item as before and the existing item data remains active.<br>Default = 0 |
| GLOBAL   | RI_LOC_CLOSE_AFTER_DAYS  | The number of days a location record will be kept active after it has been dropped from the inbound interfaces such as ORGANIZATION.csv. After the number of days is passed, the location will be closed, marked inactive, and may not be re-added to the interface again.<br>Default = 0                                                                                                                                                                                                                                                                                                                                                 |
| GLOBAL   | RI_LAST_MKDN_HISTORY     | Set to Y to enable the Price fact columns for LPO (LST_MKDN_RTL_AMT_LCL, LST_MKDN_DT, LST_PROMO_RTL_AMT_LCL, LST_PROMO_DT) to be populated during history loads. This will impact performance of the loads and is disabled by default.                                                                                                                                                                                                                                                                                                                                                                                                    |
| GLOBAL   | PDS_PROD_INCLUDE_ITEM_ID | Control if item identifiers are included in the PDS product labels or not. When set to a value of "N", only the product descriptions are included in the labels. When changed to a value of "Y", the item IDs are concatenated in front of the descriptions on W_PDS_PRODUCT_D.Default = N                                                                                                                                                                                                                                                                                                                                                |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter                 | Usage                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RI_LAST_MKDN_HIST_IND     | Set to Y to enable the Price fact columns for LPO (LST_MKDN_RTL_AMT_LCL, LST_MKDN_DT, LST_PROMO_RTL_AMT_LCL, LST_PROMO_DT) to be populated during history loads. This will impact performance of the loads and is disabled by default.                                                                                                                                                                                         |
| GLOBAL   | PDS_PROD_INCLUDE_ITEM_ID  | Control if item identifiers are included in the PDS product labels or not. When set to a value of "N", only the product descriptions are included in the labels. When changed to a value of "Y", the item IDs are concatenated in front of the descriptions on W_PDS_PRODUCT_D.Default = N                                                                                                                                     |
| GLOBAL   | PDS_PROD_INCLUDE_NS_ITEMS | Control if the PDS product export should include non-sellable items in W_PDS_PRODUCT_D or not. When changed to a value of "Y", the export will include non-sellable items. Default = N                                                                                                                                                                                                                                         |
| GLOBAL   | PDS_TRANSFER_SOURCE_TYPE  | Control the export of inventory transfers data to PDS based on the source system and data structure used. Must be set to a value of "MFCS" or "NON-MFCS". When the value is "NON-MFCS" (default setting), the data from the input file is directly exported to PDS without transformation. When set to "MFCS", the data is transformed to aggregate total transfer in/out activity based on the to-locations on the transfers. |



Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario | Parameter               | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | PDS_EXPORT_DAILY_ONORD  | Determines if the EOW_DATE used in Purchase Order export data is allowed to contain non-end-of-week (EOW) dates or the system must convert it to a week-ending date in all cases. When set to a value of 'Y', it means daily dates are allowed in the EOW_DATE field on the export (if there is a daily date in the OTB_EOW_DATE column of ORDER_HEAD.csv). When set to a value of 'N', it means the system will automatically convert the input dates from ORDER_HEAD.csv to be week-ending dates only. |
| GLOBAL   | PDS_EXPORT_DAILY_INV    | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INV_IT_LC_WK_A. This flag only affects the EOW_DATE value as the inventory export is always a full snapshot of current positions. Default = N                                                                                                                                                                                                                                                                              |
| GLOBAL   | PDS_EXPORT_DAILY_SLS    | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_SLS_IT_LC_WK_A and W_PDS_GRS_SLS_IT_LC_WK_A. Default = N                                                                                                                                                                                                                                                                                                                                                                   |
| GLOBAL   | PDS_EXPORT_DAILY_SLSWF  | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_SLSWF_IT_LC_WK_A. Default = N                                                                                                                                                                                                                                                                                                                                                                                              |
| GLOBAL   | PDS_EXPORT_DAILY_INVRC  | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INVRC_IT_LC_WK_A. Default = N                                                                                                                                                                                                                                                                                                                                                                                              |
| GLOBAL   | PDS_EXPORT_DAILY_INVTSF | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INVTSF_IT_LC_WK_A. Default = N                                                                                                                                                                                                                                                                                                                                                                                             |
| GLOBAL   | PDS_EXPORT_DAILY_INVADJ | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INVADJ_IT_LC_WK_A. Default = N                                                                                                                                                                                                                                                                                                                                                                                             |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario                | Parameter                       | Usage                                                                                                                                                                                                                                                               |
|-------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL                  | PDS_EXPORT_DAILY_I<br>NVRTV     | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INVRTV_IT_LC_WK_A. Default = N                                                                                                                                                        |
| GLOBAL                  | PDS_EXPORT_DAILY_I<br>NVRECLASS | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_INVRECLASS_IT_LC_WK_A. Default = N                                                                                                                                                    |
| GLOBAL                  | PDS_EXPORT_DAILY_M<br>KDN       | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_MKDN_IT_LC_WK_A. Default = N                                                                                                                                                          |
| GLOBAL                  | PDS_EXPORT_DAILY_D<br>EALINC    | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_DEALINC_IT_LC_WK_A. Default = N                                                                                                                                                       |
| GLOBAL                  | PDS_EXPORT_DAILY_I<br>CM        | Set to 'Y' if you want daily data to be sent from the data warehouse to W_PDS_ICM_IT_LC_WK_A. Default = N                                                                                                                                                           |
| PLP_RETAILFACTCLOSEFACT | RI_PRICE_G_MOVE_MI<br>N_CNT     | Controls the behavior of the pricing fact update during a major reclassification, specific to the FACTCLOSE program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.   |
| PLP_RETAILFACTCLOSEFACT | RI_Bcost_G_MOVE_MI<br>N_CNT     | Controls the behavior of the base cost fact update during a major reclassification, specific to the FACTCLOSE program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes. |
| PLP_RETAILFACTCLOSEFACT | RI_Ncost_G_MOVE_M<br>IN_CNT     | Controls the behavior of the net cost fact update during a major reclassification, specific to the FACTCLOSE program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.  |

**Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup**

| Scenario                | Parameter                    | Usage                                                                                                                                                                                                                                                               |
|-------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLP_RETAILFACTCLOSEFACT | RI_INV_G_MOVE_MIN_CNT        | Controls the behavior of the inventory fact update during a major reclassification, specific to the FACTCLOSE program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes. |
| PLP_RETAILFACTOPENFACT  | RI_PRICE_G_OPENCLOSE_MIN_CNT | Controls the behavior of the pricing fact update during a major reclassification, specific to the FACTOPEN program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.    |
| PLP_RETAILFACTOPENFACT  | RI_Bcost_G_OPENCLOSE_MIN_CNT | Controls the behavior of the base cost fact update during a major reclassification, specific to the FACTOPEN program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.  |
| PLP_RETAILFACTOPENFACT  | RI_Ncost_G_OPENCLOSE_MIN_CNT | Controls the behavior of the net cost fact update during a major reclassification, specific to the FACTOPEN program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.   |
| PLP_RETAILFACTOPENFACT  | RI_INV_G_OPENCLOSE_MIN_CNT   | Controls the behavior of the inventory fact update during a major reclassification, specific to the FACTOPEN program. When the reclass would require updating more rows than this parameter specifies, a more performant logic is used for extremely high volumes.  |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario                                 | Parameter          | Usage                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLP_RETAILINVPOSITIONITLCWKAGGR<br>EGATE | INV_CLR_REQ_IND    | Controls the behavior of inventory loads with regards to the Clearances dimension. When set to "Y", the inventory load ETL will join with the clearance dimension to capture the clearance ID and markdown number associated with the inventory updates. When set to "N", the join is disabled and inventory will not be tracked by clearance ID or markdown ID. Default = N |
| SIL_DAYDIMENSION                         | END_DT             | End date for generating the system calendar (this is different from the fiscal calendar). Set at least 6 months beyond the end of the fiscal calendar.                                                                                                                                                                                                                       |
| SIL_DAYDIMENSION                         | START_DT           | Start date for generating the system calendar (this is different from the fiscal calendar). Set at least 6 months before the start of the fiscal calendar.                                                                                                                                                                                                                   |
| SIL_DAYDIMENSION                         | WEEK_START_DT_VAL  | Starting day of the week for the system calendar (1 = Sunday).                                                                                                                                                                                                                                                                                                               |
| SIL_RETAILINVPOSITIONFACT                | RI_INVAGE_REQ_IND  | Disables calculation of first/last receipt dates and inventory age measures. Disabling may improve batch performance.                                                                                                                                                                                                                                                        |
| SIL_RETAILINVPOSITIONFACT                | RI_PRES_STOCK_IND  | Disables usage of replenishment data for presentation stock to calculate inventory availability measures. Disabling may improve batch performance.                                                                                                                                                                                                                           |
| SIL_RETAILINVPOSITIONFACT                | RI_BOH_SEEDING_IND | Disables the creation of initial beginning-on-hand records so analytics have a non-null starting value in the first week. Disabling may improve batch performance.                                                                                                                                                                                                           |
| SIL_RETAILINVPOSITIONFACT                | RI_MOVE_TO_CLR_IND | Disables calculation of move-to-clearance inventory measures when an item/ location goes into or out of clearance status. Disabling may improve batch performance.                                                                                                                                                                                                           |

**Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup**

| Scenario                          | Parameter             | Usage                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SIL_RETAILINVPOSITIONFACT         | RI_MULTI_CURRENCY_IND | Disables recalculation of primary currency amounts if you are only using a single currency. Disabling may improve batch performance.                                                                                                                                                                                                                |
| SIL_RETAILINVPOSITIONFACT         | INV_FULL_LOAD_IND     | Control the Inventory Position fact load behavior. When set to N it uses the incremental update behavior where it requires just the changes to inventory to be posted, including zeros. When set to Y, it assumes full nightly snapshots are being loaded and automatically zeroes out all inventory positions not sent for that load. Default = N. |
| SIL_ITEMDIMENSION                 | IS_INCREMENTAL        | Controls if the product dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                                  |
| SIL_RETAILITEMCFADIMENSION        | IS_INCREMENTAL        | Controls if the product CFAS dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                             |
| SIL_RETAILITEMLOCCFADIMENSION     | IS_INCREMENTAL        | Controls if the product loc CFAS dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                         |
| SIL_RETAILLOCATIONCFADIMENSION    | IS_INCREMENTAL        | Controls if the location CFAS dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                            |
| SIL_RETAILSUPPCFADIMENSION        | IS_INCREMENTAL        | Controls if the supplier CFAS dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                            |
| SIL_RETAILSUBSTITUTEITEMDIMENSION | IS_INCREMENTAL        | Controls if the substitute item dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                          |
| SIL_RETAILPROMOTIONDIMENSION      | RI_INCREMENTAL_IND    | Controls if the promotion dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                                |

**Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup**

| Scenario                                   | Parameter                 | Usage                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SIL_RETAILPOONORDERFACT                    | PO_FULL_LOAD_IND          | Control the Purchase Order fact load behavior. When set to "N" it will use the incremental update behavior where it requires just the changes to POs to be posted, including zeros. When set to "Y", it will assume full nightly snapshots are being loaded and will automatically zero out all POs not sent for that load.<br>Default = N |
| SIL_SEEDEMPLOYEEEDIMENSION                 | RI_MIS_CASHIER_REQ_IND    | Seed missing Cashier IDs from sales fact to Employee dimension.                                                                                                                                                                                                                                                                            |
| SIL_SEEDCOHEADDIMENSION                    | RI_MISSLS_COHEAD_REQ_IND  | Seed missing customer order (CO) head IDs from sales fact to CO Dimension.                                                                                                                                                                                                                                                                 |
| SIL_SEEDCOLINEDIMENSION                    | RI_MIS_COLINE_REQ_IND     | Seed missing customer order (CO) line IDs from sales fact to CO Dimension.                                                                                                                                                                                                                                                                 |
| SIL_SEEDCOUPONDIMENSION                    | RI_MIS_COUPON_REQ_IND     | Seed missing coupon IDs from sales discount fact to Coupon dimension.                                                                                                                                                                                                                                                                      |
| SIL_SEEDCUSTOMERDIMENSION                  | RI_MIS_CUSTOMER_REQ_IND   | Seed missing customer IDs from sales fact to Customer dimension.                                                                                                                                                                                                                                                                           |
| SIL_SEEDCUSTOMERLOYALTYAWARDCOUNTDIMENSION | RI_SEED_AWARD_ACCOUNT_IND | Seed missing award account IDs from loyalty fact to Award Account dimension.                                                                                                                                                                                                                                                               |
| SIL_SEEDDISCOUNTTYPEDIMENSION              | RI_MIS_DISC_TYPE_REQ_IND  | Seed missing discount type codes from sales discount fact to Discount Type dimension.                                                                                                                                                                                                                                                      |
| SIL_SEEDPROMOTIONDIMENSION                 | RI_MISSLS_PROMO_REQ_IND   | Seed missing promotions from the sales promo fact to the Promotion dimension.                                                                                                                                                                                                                                                              |
| SIL_SEEDSTOCKCOUNTDIMENSION                | RI_MIS_STOCK_CNT_REQ_IND  | Seeds missing stock counts from the systemic (RMS) stock count fact to the stock count dimension.                                                                                                                                                                                                                                          |
| SIL_RETAILSALESPROMOTIONTRANSACTIONFACT    | RI_EXT_PROMO_COL          | Select a reference column on the sales fact which represents an External Promotion. This will be joined with W_RTL_PROMO_EXT_DS interface to load externally sourced promotion sales into RI that don't exist in Pricing CS, and treat them as valid promo sales.                                                                          |

Table 2-1 (Cont.) C\_ODI\_PARAM Initial Setup

| Scenario                          | Parameter         | Usage                                                                                                                                                                                       |
|-----------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SIL_RETAIL_SALESPOS_DATA_HANDLING | PURGE_POSXML_DAYS | Number of days to keep POS sales logs in raw XML format. This data is only intended for internal debugging/error resolution, as POS sales are only shown in reporting for the current date. |

Table 2-2 C\_ODI\_PARAM RDE Configurations

| Scenario | Parameter                 | Usage                                                                                                                                                                                                                                                                                                                                |
|----------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL   | RDE_UA_ROW_DELIMITER      | Default row delimiter on incoming data files (both RMS and external).                                                                                                                                                                                                                                                                |
| GLOBAL   | RI_UA_ROW_DELIMITER       | Default row delimiter on data files going out to RI, must match with RI incoming UA delimiter value.                                                                                                                                                                                                                                 |
| GLOBAL   | RPM_PROMO_EVENT_LEVEL     | Enable (set to 'Y') if using legacy RPM on-premise functionality.                                                                                                                                                                                                                                                                    |
| GLOBAL   | RETURN_REASON_CODE        | RMS code type for customer return reason codes.                                                                                                                                                                                                                                                                                      |
| GLOBAL   | RTVR_REASON_CATEGORY_CODE | RMS code type for RTV reason codes.                                                                                                                                                                                                                                                                                                  |
| GLOBAL   | WHOLESALE_CHANNEL         | Identify if there is a wholesale channel setup in RMS.                                                                                                                                                                                                                                                                               |
| GLOBAL   | ITEM_GRP1_IS_INCREMENTAL  | Controls if item attributes are incremental or full snapshot on the daily load. Must be in sync with the same-named RI parameter.                                                                                                                                                                                                    |
| GLOBAL   | RMS_VERS_CHECK            | Controls the behavior of code that is linked to a specific RMS version.                                                                                                                                                                                                                                                              |
| GLOBAL   | RA_INV_WAC_IND            | Controls the inventory cost calculation in RDE. When set to 'Y' it will use Weighted Avg Cost (WAC) as the item cost for all items. When set to 'N' it will dynamically load RMFCS valuation methods set per department or item and apply them, choosing from avg cost, unit cost, and retail-based cost.                            |
| GLOBAL   | RA_INV_TAX_IND            | Controls the calculation and removal of tax amounts from retail valuation of stock on hand and on-order amounts. When set to 'N', only simple VAT (SVAT) calculations are supported and non-VAT items are left as-is. When set to 'Y', the system dynamically loads RMFCS global tax and VAT information and applies it by item/loc. |

Table 2-2 (Cont.) C\_ODI\_PARAM RDE Configurations

| Scenario                              | Parameter           | Usage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GLOBAL                                | RA_SLS_TAX_IND      | Controls the calculation and removal of tax amounts from retail valuation of sales. When set to 'N', VAT rates are included in the sales retail amounts (this is how it comes from Sales Audit). When set to 'Y' the VAT is removed from the retail amounts. Profit is always VAT-exclusive in either case, this applies to columns based on the total selling retail like SLS_AMT and RET_AMT.                                                                                                           |
| GLOBAL                                | PO_EXCHANGE_DT_TYPE | Controls the date used to convert currency amounts on purchase orders extracted from Merchandising Foundation CS. By default, the system will convert currency amounts using the current business date (C), which means a change to exchange rates will also change the converted cost and retail amounts on the order. Update this parameter to a value of 'A' to use the PO Approval Date, which does not change each time the order data is extracted, resulting in fixed cost/retail rates over time. |
| GLOBAL                                | PO_PACK_LEVEL_IN D  | When set to 'Y', extracts purchase orders from MFCS at pack item level. When set to 'N', pack items are converted to their components. Default value is N, meaning that all PO data is extracted at component item level and packs are split into their components. This setting may be needed for Inventory Planning & Optimization (IPO) projects where pack items will be allocated or transferred at pack level.                                                                                      |
| SDE_RETAILINVRECEIPTSFACT             | VWH_NO_ALC_RCPTS    | Specify a type of warehouse that cannot receive allocations in the feed to RI. Converts the allocs to normal transfer receipts. Uses codes from VWH_TYPE column in RMFCS.                                                                                                                                                                                                                                                                                                                                 |
| SDE_RETAILINVRECEIPTSFACT             | STORE_NO_ALC_RCPTS  | Specify a type of store that cannot receive allocations in the feed to RI. Converts the allocs to normal transfer receipts.                                                                                                                                                                                                                                                                                                                                                                               |
| SDE_RETAILITEMDIMENSION               | IS_INCREMENTAL      | Controls if the product dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                                                                                                                                                                                        |
| SDE_RETAILITEMLOCATIONRANG EDIMENSION | IS_INCREMENTAL      | Controls if the product location range dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                                                                                                                                                                         |
| SDE_RETAILITEMSUPPLIERDIME NSION      | IS_INCREMENTAL      | Controls if the supplier-item dimension is full snapshot or incremental changes only for the daily load.                                                                                                                                                                                                                                                                                                                                                                                                  |



**Table 2-2 (Cont.) C\_ODI\_PARAM RDE Configurations**

| Scenario                          | Parameter      | Usage                                                                                                                 |
|-----------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| SDE_RETAILSUBSTITUTEITEMDIMENSION | IS_INCREMENTAL | Controls if the substitute-item dimension is full snapshot or incremental changes only for the daily load.            |
| SDE_RETAILITEMLOCATIONDIMENSION   | IS_INCREMENTAL | Controls if the product location attribute dimension is full snapshot or incremental changes only for the daily load. |
| SDE_RETAILITEMLOCCFADIMENSION     | IS_INCREMENTAL | Controls if the product location CFAS dimension is full snapshot or incremental changes only for the daily load.      |
| SDE_RETAILSUPPCFADIMENSION        | IS_INCREMENTAL | Controls if the supplier CFAS dimension is full snapshot or incremental changes only for the daily load.              |
| SDE_RETAILLOCATIONCFADIMENSION    | IS_INCREMENTAL | Controls if the location CFAS dimension is full snapshot or incremental changes only for the daily load.              |
| SDE_RETAILITEMCFADIMENSION        | IS_INCREMENTAL | Controls if the product CFAS dimension is full snapshot or incremental changes only for the daily load.               |

## Configuration Recommendations

**Table 2-3 Configuration Recommendations**

| Scenario                                          | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First Time Dimension Loads (Full vs. Incremental) | When first loading data into RI, you will need to ensure all IS_INCREMENTAL flags are set to a value of N, meaning the programs will expect full snapshots of your data and not deltas only.                                                                                                                                                                                                                                                                                                                |
| First Time Dimension Loads (Seeding)              | When loading fact data for the first time, you will want to verify the seeding indicators are mostly set to a value of Y, meaning that if any fact record has an unknown identifier, we will try to create the record for it to avoid rejected data or failures. For example, RI_MIS_COHEAD_REQ_IND must be set to Y to auto-seed customer order IDs that may appear on your sales transaction history.                                                                                                     |
| Inventory History Loads                           | When loading inventory history, you should disable (set to N) all configuration options that you do not need in the final dataset, in order to improve the load performance. For example, RI_BOH_SEEDING_IND should be disabled if you don't need RI to create zero-balance BOH records, as these records are purely for reporting purposes to show a zero instead of null values in initial BOH positions.                                                                                                 |
| Daily/Weekly Data Loads (Full vs. Incremental)    | Once you are done with initial data loads, you may want to switch interfaces from full snapshot to incremental. Update the IS_INCREMENTAL parameters to Y at this time to start accepting regular delta files. If you are loading data from RMFCS you must synchronize this between programs to avoid failures in the batch (for example, if you change RDE to send incremental attributes data, but RI expects full snapshot, then the RI batch will deactivate all records which don't come on the file). |

Table 2-3 (Cont.) Configuration Recommendations

| Scenario         | Details                                                                                                                                                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Report Behaviors | Several parameters in C_ODI_PARAM actually affect reporting behaviors and need to be configured properly before allowing end-users into the system. This includes: Comp Store handling, CFAS attribute visibility, and LY calendar shift type. |

## Row Delimiter Usage

The configuration setting in C\_ODI\_PARAM for RI\_UA\_ROW\_DELIMITER can be very helpful when integrating data from RMFCS that may contain traditional line-ending characters like \n or \r\n (the UNIX and Windows default line endings). When line-endings are encountered within a record that match the actual line-ending character on the data file rows, RI will fail to process those records because of the additional row breaks. For example, users may accidentally copy and paste a string of text into RMFCS that includes these line-ending characters but have no knowledge of it, because the characters will be invisible when displayed back in the RMFCS UI.

With this RI\_UA\_ROW\_DELIMITER parameter, you have the option to add additional characters to the RDE/RI flat file row delimiter, effectively allowing the system to process mid-line breaks without failing. A common sequence used is ~~\n instead of the default \n. This will cause RDE to append the ~~ symbols to every line of output data, and likewise RI will only accept line breaks if the same sequence is found. Once the parameter is set on both RDE and RI, the effect on the data is entirely transparent to the end user, as the extra characters will be ignored after the data is pulled into the RI database.

Also note that this parameter can apply to both DAT and CSV files. This means that by default, CSV files which don't come from RMFCS should still use the line-ending character set on this parameter (i.e. UNIX line endings). If your files will have Windows line-endings, then you may want to change RI to use \r\n for this parameter. If you are using a version of RI that allows line-endings to be set on the Context Files, then this does not apply as the context files will override the system setting.

## Error Tables

The following table describes database tables you may need to query during the initial data load process to identify and resolve rejected records in RI (using Data Visualizer to access the database, as described in the RAP Implementation Guide). Note that error tables do not exist unless created as part of the rejection process. The list below describes the most commonly used rejection tables, but all fact interfaces to RI have the ability to generate one using a similar naming scheme.

**Table 2-4 Core Data Load Error Tables**

| Table Name                                                                                                                                                                                                                                                                                 | Usage                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E\$_W_RTL_BCost_IT_LC_DY_TMP<br>E\$_W_RTL_NCost_IT_LC_DY_TMP<br>E\$_W_RTL_PRICE_IT_LC_DY_TMP                                                                                                                                                                                               | Rejection of base cost, net cost, and price records. The most common rejection reason is due to inactive items, locations, or suppliers in the dimension data. Closed items or locations should stop getting data on these interfaces but it can happen that the source system tries to send an update for them. |
| E\$_W_RTL_CUST_LYL_AWD_TRX_DY_T<br>E\$_W_RTL_CUST_LYL_TRX_LC_DY_TM                                                                                                                                                                                                                         | Rejection of customer loyalty transaction records. The most common rejection reason is due to inactive or missing customers or loyalty account records.                                                                                                                                                          |
| E\$_W_RTL_FLEXFACT1_TMP<br>E\$_W_RTL_FLEXFACT2_TMP<br>E\$_W_RTL_FLEXFACT3_TMP<br>E\$_W_RTL_FLEXFACT4_TMP                                                                                                                                                                                   | Rejection of flexible fact records. The most common reason for rejections is due to dimension identifiers on the incoming file not aligning with the configured data levels of the flex fact (such as department identifiers in a file intended for class level data).                                           |
| E\$_W_RTL_INVADJ_IT_LC_DY_TMP<br>E\$_W_RTL_INVRC_IT_LC_DY_TMP<br>E\$_W_RTL_INVRECLASS_IT_LC_DY_T<br>E\$_W_RTL_INVRTV_IT_LC_DY_TMP<br>E\$_W_RTL_INVTSE_IT_LC_DY_TMP<br>E\$_W_RTL_INV_IT_LC_DY_TMP<br>E\$_W_RTL_INV_IT_LC_DY_TMP1                                                            | Rejection if various inventory transaction records. The most common reason for rejections is due to invalid or missing status codes, reason codes, or product/location records in the dimension data.                                                                                                            |
| E\$_W_RTL_PLAN1_PROD1_LC1_T1_TMP<br>E\$_W_RTL_PLAN2_PROD2_LC2_T2_TMP<br>E\$_W_RTL_PLAN3_PROD3_LC3_T3_TMP<br>E\$_W_RTL_PLAN4_PROD4_LC4_T4_TMP<br>E\$_W_RTL_PLAN5_PROD5_LC5_T5_TMP<br>E\$_W_RTL_PLAN6_PROD6_LC6_T6_TMP<br>E\$_W_RTL_PLANFC_PROD1_LC1_T1_T<br>E\$_W_RTL_PLANFC_PROD2_LC2_T2_T | Rejection of inventory position records. Positional data may be rejected if an item or location record is not active on the effective date of the fact record. The second table is only used for history load rejections.                                                                                        |
| E\$_W_RTL_FACT1_PROD1_LC1_T1_TMP<br>E\$_W_RTL_FACT2_PROD2_LC2_T2_TMP<br>E\$_W_RTL_FACT3_PROD3_LC3_T3_TMP<br>E\$_W_RTL_FACT4_PROD4_LC4_T4_TMP                                                                                                                                               | Rejection of planning and forecast data. The most common reason for rejections is due to dimension identifiers on the incoming file not aligning with the configured data levels of the fact (such as department identifiers in a file intended for class level data).                                           |
| E\$_W_RTL_FACT1_PROD1_LC1_T1_TMP<br>E\$_W_RTL_FACT2_PROD2_LC2_T2_TMP<br>E\$_W_RTL_FACT3_PROD3_LC3_T3_TMP<br>E\$_W_RTL_FACT4_PROD4_LC4_T4_TMP                                                                                                                                               | Rejection of fact aggregate interface data. The most common reason for rejections is due to dimension identifiers on the incoming file not aligning with the configured data levels of the fact (such as department identifiers in a file intended for class level data).                                        |
| E\$_W_RTL_SLSDSC_TRX_IT_LC_DY_T                                                                                                                                                                                                                                                            | Rejection of sales discount data. The most common reason for rejections is due to invalid/missing discount type codes, promotion codes, or inactive item/locations on the date the transaction occurred.                                                                                                         |
| E\$_W_RTL_SLS_TRX_IT_LC_DY_TMP                                                                                                                                                                                                                                                             | Rejection of sales transaction data. Sales transactions have a large number of primary keys and could be rejected due to invalid/missing dimensions on any of them (employee, customer order number, item, location, date, time-of-day, etc.)                                                                    |

**Table 2-4 (Cont.) Core Data Load Error Tables**

| Table Name                   | Usage                                                                                                                                                                         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E\$_W_RTL_TRX_TNDR_LC_DY_TMP | Rejection of sales tender data. The most common reason for rejections is due to invalid/missing tender type codes or inactive locations on the date the transaction occurred. |

## Attribute Metadata Configuration

If you plan to use User-Defined Attributes (UDAs) in RI reports, then you will also want to provide a UDA configuration file to setup your most important reporting attributes. When UDA data first comes into RI, it is held in a raw row-based format where each row is an item/attribute value pair. From that data, RI can take up to 50 attribute groups and pivot them into a column-based format that is better suited to most reporting needs. Only attributes which are pivoted in this manner can be displayed side-by-side in reports as named columns. Unpivoted attributes have to pull from the larger row-based dataset which can take a significant amount of time to return results and cannot be displayed with more than one attribute group at a time.

The interface file for this configuration is W\_RTL\_UDA\_METADATA\_G.dat. It is a full load interface, meaning it should be sent nightly in the batch or the data will be dropped. If you do not have the ability to send it nightly, you can instead disable the job in POM after the file is loaded once. The file uses the legacy RI data format with pipe delimiters and Unix line endings. All columns on the interface should be provided in the file. The table below describes the fields in the interface.

**Table 2-5 W\_RTL\_UDA\_METADATA\_G Interface Columns**

| Field Name        | Usage                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| ATTR_NAME         | The attribute group ID for the UDA you want to place in a pivoted column.                                                      |
| SOURCE            | Reference code for the source system providing the attributes data. Is not used at this time and could be hard-coded as "RMS". |
| PHYSICAL_COL_NAME | The target column in RI where this UDA will be stored. Column names start from UDA_ATTR01_NAME and go through UDA_ATTR50_NAME. |
| TABLE_NAME        | Reference code for the RI data table. Currently should be hard-coded as "W_PRODUCT_ATTR_D"                                     |
| DESCRIPTION       | Descriptive value for the attribute group specified on ATTR_NAME.                                                              |
| DATA_TYPE         | Not used at this type – leave blank in the file                                                                                |
| DATASOURCE_NUM_ID | Hard-code as "1"                                                                                                               |
| INTEGRATION_ID    | Set equal to the ATTR_NAME                                                                                                     |
| TENANT_ID         | Not used at this type – leave blank in the file                                                                                |
| X_CUSTOM          | Not used at this type – leave blank in the file                                                                                |

The data below shows example records for five UDA groups which will be pivoted into the first five columns in the attributes table.

- 45|RMS|UDA\_ATTR01\_NAME|W\_PRODUCT\_ATTR\_D|Color Family||1|45||
- 61|RMS|UDA\_ATTR02\_NAME|W\_PRODUCT\_ATTR\_D|Silhouette||1|61||
- 7|RMS|UDA\_ATTR03\_NAME|W\_PRODUCT\_ATTR\_D|Material||1|7||
- 18|RMS|UDA\_ATTR04\_NAME|W\_PRODUCT\_ATTR\_D|Print||1|18||
- 29|RMS|UDA\_ATTR05\_NAME|W\_PRODUCT\_ATTR\_D|Design||1|29||

Once this file is loaded into RI, the job which loads the UDA data in POM is W\_RTL\_PRODUCT\_ATTR\_UDA\_D\_JOB. This job will populate the target table W\_RTL\_PRODUCT\_ATTR\_UDA\_D. If you are not sending the metadata file every night in batch, then after the load is successful you should disable the job W\_RTL\_UDA\_METADATA\_G\_JOB and restart your POM schedule so it will take effect for the next batch.

The pivoted UDA data is accessible using Item dimension attributes. By default, these are named like "Item UDA ID 1" and "Item UDA Desc 1". You may rename the attributes to better match their contents using Resource Bundle Customization screens in Retail Home. You may add one or more of these attributes into your Item level reporting, or use them to aggregate item level data to the UDA level of summarization.

## Oracle Analytics Configuration

Oracle Analytics Cloud (OAC) will be provisioned with a fixed set of configurations depending on the hardware levels purchased. These settings cannot be changed by the end user from the application and may result in errors while working in Retail Insights, so it is important to understand them. The most impactful OAC settings for Retail Insights are listed below.

| Parameter                                                 | 2-12 OCPU Sizing             | 16+ OCPU Sizing |
|-----------------------------------------------------------|------------------------------|-----------------|
| Max input rows returned from any data source query        | 2,000,000                    | 4,000,000       |
| Max summarized rows displayed from any data source query  | 500,000                      | 1,000,000       |
| Query timeout from any data source query                  | 660 Secs                     | 660 Secs        |
| Limits Exporting Data (DV Workbooks) to CSV               | 2,000,000                    | 4,000,000       |
| Limits Exporting Data (DV Workbooks) to XSLX              | 50,000 (100,000 for 12 OCPU) | 100,000         |
| Limits Exporting Data (Classic) to CSV                    | 2,000,000                    | 4,000,000       |
| Limits Exporting Data (Classic) to XSLX                   | 200,000                      | 400,000         |
| Data Size Limits (Classic Pixel-Perfect Reports Offline)  | 2GB                          | 4GB             |
| Data Size Limits (Classic Pixel-Perfect Reports Bursting) | 4GB                          | 8GB             |
| BI Publisher (SQL Query timeout)                          | 1800 Secs                    | 3600 Secs       |
| BI Publisher Max rows for CSV output                      | 4,000,000                    | 6,000,000       |
| BI Publisher Max number rows in XPT layout                | 200,000                      | 300,000         |
| Max number of concurrent scheduled jobs                   | 4                            | 10              |

The maximum row limits shown in the table are based on exports that contain up to 40 columns. Additional columns may reduce the maximum number of rows you can export. While these settings are generally equal to or greater than past Retail Insights configurations on Oracle Analytics Server, you may encounter some limits which are more restrictive than past versions. In those cases, you will be expected to adjust your export or delivery processes to fall within allowable row counts and data volumes.

For a complete list of all configurations scaled by OCPU count, refer to *Administering Oracle Analytics Cloud on Oracle Cloud Infrastructure (Gen 2)* documentation.

# 3

## Planning and Flex Fact Configuration

Retail Insights supports Merchandise Financial Planning (MFP) data on four main interfaces, referred to as PLAN1 through PLAN4 tables, Assortment Planning (AP) data on a fifth interface called PLAN5, MFP budgets for LPO on a sixth interface called PLAN6, as well as two IPO Cloud Service-Demand Forecasting forecast interfaces (PLANFC1 and PLANFC2) and four flexible fact interfaces (FLEXFACT1 to FLEXFACT4) for any other external data. All of these tables have configurable data levels to align with the hierarchy levels used in MFP, IPO Cloud Service-Demand Forecasting, or other source systems, but they must be configured prior to using them. The following section describes how to configure RI flexible interfaces for first-time use.

### Setting Data Levels

Perform the following procedure to update the expected data levels for the planning interfaces. These levels determine which values the primary key columns are joined with inside Retail Insights (for example, is your plan at Department level or Subclass level). Each interface can be configured with a different set of levels.

1. Access the Control & Tactical Center to make updates to the C\_ODI\_PARAM\_VW table.
2. Search for parameter names in the list below, depending on which interfaces you wish to use:

**Table 3-1 C\_ODI\_PARAM Planning and Flex Fact Parameters**

| Planning Facts      | Flexible Facts          | Planning Forecast Facts |
|---------------------|-------------------------|-------------------------|
| RI_PLAN1_CAL_LEVEL  | RI_FLEXFACT1_CAL_LEVEL  | RI_PLANFC1_CAL_LEVEL    |
| RI_PLAN1_ORG_LEVEL  | RI_FLEXFACT1_ORG_LEVEL  | RI_PLANFC1_ORG_LEVEL    |
| RI_PLAN1_PROD_LEVEL | RI_FLEXFACT1_PROD_LEVEL | RI_PLANFC1_PROD_LEVEL   |
| RI_PLAN1_SUPP_LEVEL | RI_FLEXFACT1_SUPP_LEVEL | RI_PLANFC1_SUPP_LEVEL   |
| RI_PLAN1_ATTR_LEVEL | RI_FLEXFACT1_ATTR_LEVEL | RI_PLANFC1_ATTR_LEVEL   |
| RI_PLAN2_CAL_LEVEL  | RI_FLEXFACT2_CAL_LEVEL  | RI_PLANFC2_CAL_LEVEL    |
| RI_PLAN2_ORG_LEVEL  | RI_FLEXFACT2_ORG_LEVEL  | RI_PLANFC2_ORG_LEVEL    |
| RI_PLAN2_PROD_LEVEL | RI_FLEXFACT2_PROD_LEVEL | RI_PLANFC2_PROD_LEVEL   |
| RI_PLAN2_SUPP_LEVEL | RI_FLEXFACT2_SUPP_LEVEL | RI_PLANFC2_SUPP_LEVEL   |
| RI_PLAN2_ATTR_LEVEL | RI_FLEXFACT2_ATTR_LEVEL | RI_PLANFC2_ATTR_LEVEL   |

**Table 3-1 (Cont.) C\_ODI\_PARAM Planning and Flex Fact Parameters**

| Planning Facts      | Flexible Facts          | Planning Forecast Facts |
|---------------------|-------------------------|-------------------------|
| RI_PLAN3_CAL_LEVEL  | RI_FLEXFACT3_CAL_LEVEL  |                         |
| RI_PLAN3_ORG_LEVEL  | RI_FLEXFACT3_ORG_LEVEL  |                         |
| RI_PLAN3_PROD_LEVEL | RI_FLEXFACT3_PROD_LEVEL |                         |
| RI_PLAN3_SUPP_LEVEL | RI_FLEXFACT3_SUPP_LEVEL |                         |
| RI_PLAN3_ATTR_LEVEL | RI_FLEXFACT3_ATTR_LEVEL |                         |
| RI_PLAN4_CAL_LEVEL  | RI_FLEXFACT4_CAL_LEVEL  |                         |
| RI_PLAN4_ORG_LEVEL  | RI_FLEXFACT4_ORG_LEVEL  |                         |
| RI_PLAN4_PROD_LEVEL | RI_FLEXFACT4_PROD_LEVEL |                         |
| RI_PLAN4_SUPP_LEVEL | RI_FLEXFACT4_SUPP_LEVEL |                         |
| RI_PLAN4_ATTR_LEVEL | RI_FLEXFACT4_ATTR_LEVEL |                         |
| RI_PLAN5_CAL_LEVEL  |                         |                         |
| RI_PLAN5_ORG_LEVEL  |                         |                         |
| RI_PLAN5_PROD_LEVEL |                         |                         |
| RI_PLAN5_SUPP_LEVEL |                         |                         |
| RI_PLAN5_ATTR_LEVEL |                         |                         |
| RI_PLAN5_SOURCE     |                         |                         |
| RI_PLAN6_CAL_LEVEL  |                         |                         |
| RI_PLAN6_ORG_LEVEL  |                         |                         |
| RI_PLAN6_PROD_LEVEL |                         |                         |
| RI_PLAN6_SUPP_LEVEL |                         |                         |
| RI_PLAN6_ATTR_LEVEL |                         |                         |

3. Modify the parameters as needed using the following list of supported values. A value of ALL means the column should be set to a default value of -1 on the data file and it will not be joined with any other dimension in RI during ETL. A value of FLEX# indicates an alternate hierarchy level will be used, such as FLEX1 matching data on the W\_PRODUCT\_FLEX\_D.FLEX1\_CHAR\_VALUE field. Usage of flex fields assumes that this is the same level also used in Planning applications for the plan data.

**Table 3-2 C\_ODI\_PARAM Planning and Flex Fact Values**

| Product (PROD) | Organization (ORG) | Calendar (CAL) | Supplier (SUPP) | Attribute (ATTR) | Plan Source (SOURCE) |
|----------------|--------------------|----------------|-----------------|------------------|----------------------|
| CMP            | COMPANY            | YEAR           | SUPPLIER        | C (for Color)    | AP_PLAN1_EXP         |



**Table 3-2 (Cont.) C\_ODI\_PARAM Planning and Flex Fact Values**

| Product (PROD) | Organization (ORG) | Calendar (CAL)   | Supplier (SUPP) | Attribute (ATTR) | Plan Source (SOURCE) |
|----------------|--------------------|------------------|-----------------|------------------|----------------------|
| DIV            | CHAIN              | HALFYEAR         | PARENT_SUPPLIER | B (for Brand)    | AP_PLAN2_EXP         |
| GRP            | AREA               | QUARTER          | ALL             | FLAVOR           | AP_PLAN3_EXP         |
| DEPT           | REGION             | PERIOD           |                 | FABRIC           |                      |
| CLS            | DISTRICT           | WEEK             |                 | SCENT            |                      |
| SBC            | LOCATION           | DAY              |                 | SIZE             |                      |
| ITEM           | CHANNEL            | GREGORIANYEAR    |                 | STYLE            |                      |
| ITEM_LEVEL1    | CHANNEL_COUNTRY    | GREGORIANQUARTER |                 | ALL              |                      |
| ALL            | PRICE_ZONE         | GREGORIANMONTH   |                 |                  |                      |
| FLEX1 - FLEX20 | ALL                | GREGORIANDAY     |                 |                  |                      |
|                | FLEX1 – FLEX20     |                  |                 |                  |                      |

- Specific to the calendar (CAL) settings, if you are using DAY or WEEK level calendar and are changing the parameter for any PLAN, FLEX, or FACT table, then you must run the following utility in APEX to make that change. Only updating the parameter in C\_ODI\_PARAM does not perform any table partitioning or cleanup of related configurations, which this process will do for you. Partitioning is only supported on DAY and WEEK level data, so if you only plan to use higher levels above WEEK, then just update the C\_ODI\_PARAM setting directly from Control & Tactical Center.

For the function call, specify your target table name along with a value of DAY or WEEK in the process call below. If you already ran this once, but are changing the level to a different value, then run it again for the new value (for example, changing from DAY to WEEK, or WEEK to DAY). When changing the value, existing partitions will be dropped and all data purged in order to reconfigure the interface, so backup any data that needs to be preserved.

```
BEGIN
RI_SUPPORT_UTIL.CONFIGURE_CAL_LEVEL_FOR_TABLE(p_table_name =>
'W_RTL_FLEXFACT1_F', p_cal_level => 'DAY');
END;
```

- For RI customers, raise a Service Request with Oracle Support when all configurations are complete, stating that the Planning Configuration processes must be executed on your environment (provide the environment name and summarize the interfaces you plan to use). Part of the configuration process directly alters the application metadata to use your specified levels, so it currently must be managed by Oracle. This step only applies if you need to use the Reporting functionality of RI. It does not apply if you are only loading data for AI Foundation applications.

The plan source parameter for the PLAN5 interface allows you to select which AP plan intersection you wish to load from. By default, the AP\_PLAN1\_EXP table will hold SKU/store level plan data and the AP\_PLAN2\_EXP table will hold style-color/store level plan data. If you will only be using the data for Retail Insights reporting, then it's best to load the

data at SKU/store to enable the maximum amount of reporting across fact areas. The style-color/store data is typically used for fashion customers and may be loaded into RI if you need it for any downstream purposes, such as feeding AI Foundation applications that will run at the style-color level. Style-color plan data will only work in RI reports which are above sku level.

## Preparing Data Files

After the interfaces are configured, you must prepare the data files for upload to Retail Insights. If you are using MFP, AP, or IPO Cloud Service-Demand Forecasting Cloud Services, the data can be automatically integrated between applications. This involves a one-time setup process during your Planning implementation to enable the batch processes that move data from PDS to RI, and then enable the RI jobs to consume that data. In that case the rest of this section does not apply. Proceed to the next section on partitioning the tables instead.

If you are uploading data files directly to RI, then there are some rules and guidelines to follow when creating the files:

- All key columns on the interface must be populated, even if you have specified "ALL" as the data level. You should use a default value of -1 to populate these fields. This includes the fields PROD\_DH\_NUM, PROD\_DH\_ATTR, ORG\_DH\_NUM, SUPPLIER\_NUM, as well as all other columns before the CAL\_DATE on the flex interfaces.
- The calendar (CAL\_DATE) field must always be a date. If loading the data above day level, use the end-of-period date. The format must match the date mask specified on the context (CTX) file.
- The PLANNING\_TYPE\_CODE field was originally used to specify if the plan type was COST or RETAIL, but this makes no functional difference in reporting at this time and can be set to any value.
- The VERSION\_NUM field specifies the plan version in numerical order, starting with 0. When integrating with MFP, the Original Plan is always version 0, and the Current Plan is version 1. These two versions correlate to OP and CP metrics in Retail Insights metadata. Versions greater than 1 may be used to capture version history in the RI database, and the highest available version will be shown in the CP set of metrics.
- The DATASOURCE\_NUM\_ID field must be provided with a hard-coded value of 1, similar to all other RI interface specifications.
- The INTEGRATION\_ID field must be provided with a unique value that identifies the record, such as a concatenation of all primary key values.
- The data file may use standard RI formatting, which uses pipes (|) as delimiters for the columns, or you may pick other delimiters as needed. You can change the file format options in the CTX file.

The accepted list of data files would align to the interfaces:

- W\_RTL\_PLAN1\_PROD1\_LC1\_T1\_FS.dat
- W\_RTL\_PLAN2\_PROD2\_LC2\_T2\_FS.dat
- W\_RTL\_PLAN3\_PROD3\_LC3\_T3\_FS.dat
- W\_RTL\_PLAN4\_PROD4\_LC4\_T4\_FS.dat
- W\_RTL\_PLAN5\_PROD5\_LC5\_T5\_FS.dat
- W\_RTL\_PLAN6\_PROD6\_LC6\_T6\_FS.dat
- W\_RTL\_PLANFC\_PROD1\_LC1\_T1\_FS.dat

- W\_RTL\_PLANFC\_PROD2\_LC2\_T2\_FS.dat
- W\_RTL\_FLEXFACT1\_FS.dat
- W\_RTL\_FLEXFACT2\_FS.dat
- W\_RTL\_FLEXFACT3\_FS.dat
- W\_RTL\_FLEXFACT4\_FS.dat

All of the files must be packaged into a ZIP file for upload, such as RI\_MFP\_DATA.zip or RI\_EXT\_DATA.zip. The zip file for these can be marked as optional (which means the nightly batch will not wait for them to arrive before starting) or required (meaning the batch must receive them every night to start processing). It is standard to mark these files as required, since you do not want the batch to run without your planning data, or the next day's reporting could be inaccurate.

Lastly, you must also provide context (CTX) files for each interface, which specifies the exact columns you are populating with data. This allows you to provide only a subset of the many columns on the interface, as long as the key columns and at least one data column are populated. Each CTX file is named similarly to the interface (e.g. W\_RTL\_PLAN1\_PROD1\_LC1\_T1\_FS.dat.ctx) and contains the file format parameters such as column delimiter and header row counts, followed by a single column of values matching the interface field names. Refer to the Retail Insights Interfaces Guide for complete details on the available fields. Refer to the Retail Analytics and Planning Implementation Guide for complete details on CTX file contents.

## Partition Tables

The first planning table (W\_RTL\_PLAN1\_PROD1\_LC1\_T1\_F) requires special partition structures due to its use in integrating data to the AI Foundation applications like Promotion and Markdown Optimization. The other plan tables (PLAN2-6) may also be partitioned but it's not required to use them with AI Foundation at this time. The flex fact and forecasting tables also require similar partitioning before they can be used. The plan and flex tables have flexible partitions which can be either Day or Week level, depending on the data level you plan to use.

The plan and flex fact partitioning is configured in table C\_MODULE\_EXACT\_TABLE where MODULE\_CODE in (PLAN1, PLANFC, FLEXFACT1, FLEXFACT2, FLEXFACT3, FLEXFACT4). Modify the columns PARTITION\_COLUMN\_TYPE and PARTITION\_INTERVAL to be one of the following values:

- If your input data will be at Day level, set both columns to 'DY'
- If your input data will be at Week level, set both columns to 'WK'

You must also enable the partitioning process in C\_MODULE\_ARTIFACT by locating the rows for MODULE\_CODE in (PLAN1, PLANFC, FLEXFACT1, FLEXFACT2, FLEXFACT3, FLEXFACT4) and setting ACTIVE\_FLG=Y and PARTITION\_FLG=Y. If your plan data will extend into the future, you must also change PARTITION\_FUTURE\_PERIOD to the number of future months that need partitions built beyond the specified business date (e.g. use a value of 6M to partition 6 months into the future).

Once the configuration steps are completed, you must run the adhoc POM process CREATE\_PARTITION\_ADHOC to apply them. If you already have nightly batches running, then the ETL date is being managed there, and you must disable both the ETL\_BUSINESS\_DATE\_JOB and W\_RTL\_CURR\_MCAL\_G\_JOB in this process and only run the two partition jobs by themselves.

Example Postman message body to send to POM via Rest API call:

```
{
  "cycleName": "Adhoc",
  "flowName": "Adhoc",
  "processName": "CREATE_PARTITION_ADHOC",
  "requestParameters": "jobParams.CREATE_PARTITION_PRESETUP_
JOB=2018-12-30,jobParams.ETL_BUSINESS_DATE_JOB=2021-02-06"
}
```

If you disabled the business date jobs, then the process call would be like this instead:

```
{
  "cycleName": "Adhoc",
  "flowName": "Adhoc",
  "processName": "CREATE_PARTITION_ADHOC",
  "requestParameters": "jobParams.CREATE_PARTITION_PRESETUP_JOB=2018-12-30"
}
```

If you are entering the parameters from the POM UI instead of Postman, then you must specify each date as the input parameter on the jobs listed above. The first date is added as the parameter on CREATE\_PARTITION\_PRESETUP\_JOB and the second date is added on ETL\_BUSINESS\_DATE\_JOB (if using).

## Loading Plan and Forecast Data

The plan and forecast data will be loaded either from flat files or directly from the planning systems. If you are loading from flat file, then you will run the COPY/STG jobs to import the file data followed by the fact loads (\*\_F\_JOB) and disable any other jobs. If you are loading from Planning directly, then you would use the \*\_SDE\_JOB programs followed by the fact loads (\*\_F\_JOB) and disable any other jobs. The forecast direct-loads are run outside the nightly batch as a recurring flow you can schedule, so that the weekly forecast load does not impact your nightly batch runtimes.

**Table 3-3 Dataset Jobs**

| Job                                      | Ad Hoc Processes or Flows     | Usage                                                                                                                                                                                                                                                                                                |
|------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W_RTL_PLAN1_PROD1_LC1_T1_FS_C<br>OPY_JOB | N/A (Nightly Only)            | Load the MFP and AP planning flat files from the server into the staging area in the database. Only used as part of nightly batch processing, flat files cannot be loaded in ad hoc processes. Tables are truncated at the beginning of each execution so new data can be inserted.                  |
| W_RTL_PLAN2_PROD2_LC2_T2_FS_C<br>OPY_JOB |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN3_PROD3_LC3_T3_FS_C<br>OPY_JOB |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN4_PROD4_LC4_T4_FS_C<br>OPY_JOB |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN5_PROD5_LC5_T5_FS_C<br>OPY_JOB |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN6_PROD6_LC6_T6_FS_C<br>OPY_JOB |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN1_PROD1_LC1_T1_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN2_PROD2_LC2_T2_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN3_PROD3_LC3_T3_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN4_PROD4_LC4_T4_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN5_PROD5_LC5_T5_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN6_PROD6_LC6_T6_FS_S<br>TG_JOB  |                               |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN1_PROD1_LC1_T1_FS_S<br>DE_JOB  | LOAD_PLANNING1<br>_DATA_ADHOC | Imports planning data directly from the MFP and AP exports from Planning Data Store (PDS) to Retail Insights. The data is inserted into the staging tables, and assumes you are not providing any data via flat file (each interface should only come from either MFP/AP or flat file but not both). |
| W_RTL_PLAN2_PROD2_LC2_T2_FS_S<br>DE_JOB  | LOAD_PLANNING2<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN3_PROD3_LC3_T3_FS_S<br>DE_JOB  | LOAD_PLANNING3<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN4_PROD4_LC4_T4_FS_S<br>DE_JOB  | LOAD_PLANNING4<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN5_PROD5_LC5_T5_FS_S<br>DE_JOB  | LOAD_PLANNING5<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN6_PROD6_LC6_T6_FS_S<br>DE_JOB  | LOAD_PLANNING6<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN1_PROD1_LC1_T1_F_JO<br>B       | LOAD_PLANNING1<br>_DATA_ADHOC | Transforms and loads planning data from staging areas into the final fact tables. Used both for the nightly processing and for ad hoc loads.                                                                                                                                                         |
| W_RTL_PLAN2_PROD2_LC2_T2_F_JO<br>B       | LOAD_PLANNING2<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN3_PROD3_LC3_T3_F_JO<br>B       | LOAD_PLANNING3<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN4_PROD4_LC4_T4_F_JO<br>B       | LOAD_PLANNING4<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN5_PROD5_LC5_T5_F_JO<br>B       | LOAD_PLANNING5<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |
| W_RTL_PLAN6_PROD6_LC6_T6_F_JO<br>B       | LOAD_PLANNING6<br>_DATA_ADHOC |                                                                                                                                                                                                                                                                                                      |

Table 3-3 (Cont.) Dataset Jobs

| Job                                   | Ad Hoc Processes or Flows           | Usage                                                                                                                                                                                                                                                                      |
|---------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W_RTL_PLANFC_PROD1_LC1_T1_FS_COPY_JOB | N/A (Nightly Only)                  | Load the forecast flat files from the server into the staging area in the database. Only used as part of nightly batch processing, flat files are not loaded in the ad hoc processes. Tables are truncated at the beginning of each execution so new data can be inserted. |
| W_RTL_PLANFC_PROD2_LC2_T2_FS_COPY_JOB |                                     |                                                                                                                                                                                                                                                                            |
| W_RTL_PLANFC_PROD1_LC1_T1_FS_STG_JOB  |                                     |                                                                                                                                                                                                                                                                            |
| W_RTL_PLANFC_PROD2_LC2_T2_FS_STG_JOB  |                                     |                                                                                                                                                                                                                                                                            |
| W_RTL_PLANFC_PROD1_LC1_T1_FS_SDE_JOB  | RI_FORECAST_AD_HOC                  | Imports forecast data directly from the AIF exports to Retail Insights. The data is inserted into the staging tables, and assumes you are not providing any data via flat file. Only the sku/store/week forecasts are pulled by default.                                   |
| W_RTL_PLANFC_PROD2_LC2_T2_FS_SDE_JOB  |                                     |                                                                                                                                                                                                                                                                            |
| W_RTL_PLANFC_PROD1_LC1_T1_F_JOB       | RI_FORECAST_AD_HOC                  | Transforms and loads forecast data from staging areas into the final fact tables. Used both for the nightly processing and for ad hoc loads.                                                                                                                               |
| W_RTL_PLANFC_PROD2_LC2_T2_F_JOB       |                                     |                                                                                                                                                                                                                                                                            |
| CLEANUP_C_LOAD_DATES_PLANNING_JOB     | CLEANUP_C_LOAD_DATES_PLANNING_ADHOC | In order to run a planning load more than once in a single business date, you must clear the execution status from the prior run, otherwise the batch process will skip any subsequent loads (until the business date changes).                                            |

## Loading Aggregate History

Special flex fact tables have also been provided to support loading of pre-aggregated history fact data for AI Foundation to use to generate forecasts for Planning. These tables should not be used unless there is no other way to provide history data except at a level above item/location. These tables will completely bypass the normal data flow for history in RI and AIF, directly populating history fact tables just for limited AIF use-cases.

These tables work identically to PLAN and FLEX tables described in the previous sections. They use FACT as the table name prefix, for example W\_RTL\_FACT1\_PROD1\_LC1\_T1\_F. Four such FACT tables are provided for the different data intersections that may exist for aggregate actuals. Just like PLAN tables, you must configure these in C\_ODI\_PARAM\_VW in the Control Center using parameters like RI\_FACT1\_PROD\_LEVEL and RI\_FACT1\_ORG\_LEVEL.

Refer to the *Retail Analytics and Planning Solutions Implementation Guide* section on Loading Aggregate History Data for additional information on how to use these tables.

# 4

## Xstore Sales Integration

Retail Insights supports loading intraday sales transactions from an Xstore string-based XML receiver API. The data loaded in this method is for the specific purpose of reporting on today's sales before the end-of-day batch processes the full snapshot of audited sales transactions. The sales data from Xstore is not used as a primary source of sales history in Retail Insights, as the system was designed around the concept of a Sales Audit system being used prior to data coming into the data warehouse.

Sales from XStore are currently displayed in reporting for the current Business Date+1. For example, if your audited sales have been loaded up to the business date of 09/21/2020, then the Xstore sales will be displayed in reporting only for 09/22/2020. Prior days of Xstore sales will not be shown, because it is assumed your audited sales will include all prior transactions. Prior days of Xstore sales will be kept in the database for a limited amount of time before being purged. It is also important to note that this integration is specifically for sales only, RI does not process other transaction types such as timeclock, pre-order, work order, till, open/close, and other non-sales types (except when one of those transactions results in a completed sale where customer payment is collected).

### Data Load Process

The data first comes from Xstore to the Retail AI Foundation data model using a web service API. The API is configured as part of AI Foundation but is leveraged by Retail Insights to get the raw XML POSLOGs into the database for transformation to our data model. The steps below highlight the flow of data into RI.

1. The XML is first extracted from the AI Foundation's staging area for the API into the RI database table `W_RTL_POSLOG_XML_G`.
2. Next, the data for the current load process is moved to temporary tables `W_RTL_SLS_POS_IT_LC_DY_TMP` and `W_RTL_SLS_POS_TAX_TMP`. The current set of records is defined as all unprocessed XMLs that have been received since the last time the intraday batch process was run. For example, if the process runs hourly then for each iteration of this cycle, one hour of transactions will be processed in a single set.
3. The XML data is transformed from raw XML into the RI relational data model, filtered to the subset of sales transaction types we support, and then inserted to `W_RTL_SLS_POS_IT_LC_DY_FS`.
4. Lastly the data is loaded from `W_RTL_SLS_POS_IT_LC_DY_FS` to `W_RTL_SLS_POS_IT_LC_DY_F`. This load process maps all of the primary key values in the transaction record to the RI dimensions and creates the links across all RI tables that are necessary to report on the data in Oracle Analytics.
5. Transactions which don't have matching keys on one or more of the RI dimensional tables (for example, a product that doesn't exist) will be rejected by the final load step and will not appear in the reporting layer. This will be the case for the core dimensions of product, location, and calendar. Employees are also matched against RI data but they have the option to be auto-seeded into our data model so that we do not reject records for new/unknown employee IDs.



The program used to perform this intraday processing is `LOAD_POSLOG_DATA_ADHOC`, which can be found in the Ad Hoc area of the POM batch schedule for Retail Insights. Using the ad hoc scheduling capabilities of POM, you would configure this job to run on a set frequency throughout the day. The actual frequency will largely depend on the trade-off of performance and data volumes. For example, if it takes X minutes to process a block of transactions which come in over Y minutes, X cannot be greater than Y or RI would not have enough time to complete a load before starting the next one. Identifying the optimal run frequency will need to be worked out during the implementation using realistic daily volumes.

## Supported Data Types

Only certain types of Xstore transactions are processed into RI as sales. All other transaction types are ignored by the data load process in order to provide equivalent comparisons of audited and unaudited sales data between our two subject areas. The general logic for this comparison is that a sale is recorded to the data warehouse when customer payment is collected and the item ownership has been transferred. A sale should show an equivalent reduction in inventory and both the sale and inventory changes would be recorded on the stock ledger at the end of the day. The only exception to this would be sales of services, which should be tracked as non-inventoried or non-merchandise items so that RI is still aware of the dimensions present on the transaction before it occurs. Review the transaction usage details below.

**Table 4-1 Transaction Usage Details**

| Transaction Type         | Usage Details                                                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sale                     | Processed as normal sale into RI SLS_* columns in the database.                                                                                                                                                      |
| Return                   | Processed as normal sale into RI RET_* columns in the database. Net sales in RI is calculated by subtracting return values from sales values, so both sales and returns are held in the database as positive values. |
| Exchange                 | An equal exchange transaction will have it's lines condensed to show values both on SLS_* and RET_* columns in the database for that item.                                                                           |
| Special Order (Complete) | A completed special order will be captured as a sale based on the PreviousCustomerOrder status.                                                                                                                      |
| Work Order (Pickup)      | A completed work order will be captured as a sale based on the PreviousCustomerOrder status.                                                                                                                         |
| Hold Account (Pickup)    | A pickup on a hold account will be captured as a sale based on the PreviousCustomerOrder status.                                                                                                                     |
| Pre-Sale (Pickup)        | A pickup on a pre-sale will be captured as a sale based on the PreviousCustomerOrder status.                                                                                                                         |
| Send Sale (Complete)     | A completed send sale will be captured as a sale based on the SaleForDelivery status.                                                                                                                                |
| Layaway (Complete)       | A completed layaway will be captured as a sale based on the PreviousLayaway status.                                                                                                                                  |

## Supported Dimensions



Only certain dimensions in RI are supported when reporting on Xstore sales data, based on what we expect to have in our daily interfaces with other applications such as RMFCS. Review the list of supported dimensions below.

**Table 4-2 Supported Dimensions**

| Dimension                               | Usage Details                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Item                                    | The item ID listed on a Line Item of the transaction must be a valid item in the RI Item hierarchy in order for us to load the record.                                                                                                                                                                                                                                                                                                                     |
| Organization                            | The location ID where the transaction was captured must be a valid location in the RI Organization hierarchy in order for us to load the record.                                                                                                                                                                                                                                                                                                           |
| Business Calendar<br>Gregorian Calendar | The date when the transaction occurred will be captured and reported using the Fiscal Calendar or Gregorian Calendar. POS sales are only shown for the current business date + 1.                                                                                                                                                                                                                                                                          |
| Time of Day                             | The hour and minute when the transaction occurred will be captured and reported using the Time of Day dimension. The POS Sales fact itself also as a supplemental Timestamp attribute for more granular analysis if needed.                                                                                                                                                                                                                                |
| Supplier                                | The primary supplier associated with an item can be used to report on and aggregate the POS sales data. The supplier-item relationship is a separate feed into RI and not part of the POS data.                                                                                                                                                                                                                                                            |
| Retail Type                             | The retail type of a POS transaction will depend on the contents of the transaction as well as the other data in RI. By default, a transaction will be categorized as a Regular (R) sale. If the transaction has a Price Modifier of type 'Promotion' then it will become a Promotional (P) transaction. If you are providing inventory data with clearance flags to RI, then we can leverage that additional detail to flag sales as Clearance (C) sales. |
| Employee                                | RI reports on employees using either the Cashier or Salesperson attributes, and both may be used with POS sales data assuming the cashier/salesperson is identified on the transaction. Because employee data is not maintained by a merchandising system, RI allows these records to be created automatically if we encounter an unknown employee ID on a transaction.                                                                                    |

## Intraday Scheduling

Due to the real-time nature of POSLOG data from Xstore, an intraday process must be used to move the data from it's raw XLML format into the Retail Insights relational data model throughout the day. This intraday process can be maintained in the POM application alongside the RI nightly batch. Follow the steps below to enable this process.

1. Login to the POM application UI as a user with batch scheduling permissions.
2. Click on the Scheduler Administration link under the Tasks menu.
3. Click on the RI schedule. Make sure the LOAD\_POSLOG\_DATA\_ADHOC process is present in the Standalone tab and enabled.

RI Adhoc Scheduler Tasks

Actions ▾ View ▾      Detach

| Filter ▾                                                                              | Filter                     | Filter                  | Filter           |
|---------------------------------------------------------------------------------------|----------------------------|-------------------------|------------------|
| Enabled                                                                               | Process Name               | Description             | Frequency        |
|  Yes | LOAD_DIM_INITIAL_ADHOC     | Test                    | Daily            |
|  Yes | WEEKLY_MAINTENANCE_PROCESS |                         | Daily            |
|  Yes | LOAD_POSLOG_DATA_ADHOC     | LOAD_POSLOG_DATA_ADH... | Every 30 minutes |

4. Highlight that row and click the Edit action icon.

Edit Task LOAD\_POSLOG\_DATA\_ADHOC 

Enabled 

Description  
LOAD\_POSLOG\_DATA\_ADHOC

Frequency  
Minutes ▾ 30 ▾ ▴

Limit occurrences  
▾ ▴

Schedule Time  
10:00 AM ⌚ (UTC-06:00) Chicago - Central Time ▾

Prevent start during nightly 

Cancel

Ok

5. Adjust the frequency to the desired interval, such as 30 minutes or 1 hour. Click OK to confirm the change.
6. Navigate to the Batch Monitoring screen and Restart Schedule for the RI Standalone schedule.

 RSP 19.1.005.2  
No cycles for 06/06/21  
Last Schedule Date: 04/16/21

 RDE 19.1.005.2  
No cycles for 06/06/21  
Last Schedule Date: 04/16/21

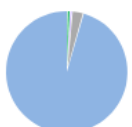
 RI 19.1.005.2.3  
Nightly: Loaded (0/825)  
Standalone: Error (1/299)

Nightly

Recurring

Standalone

RI Standalone Schedule Details



Completed (3)

Skipped (1)

Disabled (10)

Loaded (295)

Tot

Av

Ru

Ru

7. Once restarted, the adhoc process will begin to run automatically on the specified interval.

Actions ▾ View ▾   Detach | Hold Release Skip Release Skip Run Rerun Skip Dependencies

|                 |                                   |             |                       |           |                        |
|-----------------|-----------------------------------|-------------|-----------------------|-----------|------------------------|
| Completed (3) ▾ | Filter                            | Filter      | Filter                | Filter    | Filter                 |
| Status          | Job                               | Application | Last Update           | Parameter | Process Name           |
| ✔ Completed     | CLEANUP_C_LOAD_DATES_INTRADAY_JOB | RI          | 10/06/21 10:00:05 ... |           | LOAD_POSLOG_DATA_ADHOC |
| ✔ Completed     | W_RTL_SLS_POS_IT_LC_DY_FS_JOB     | RI          | 10/06/21 10:22:38 ... |           | LOAD_POSLOG_DATA_ADHOC |
| ✔ Completed     | W_RTL_SLS_POS_IT_LC_DY_F_JOB      | RI          | 10/06/21 10:22:49 ... |           | LOAD_POSLOG_DATA_ADHOC |

# 5

## Internationalization

Internationalization is the process of creating software that is able to be translated more easily. Changes to the code are not specific to any particular market. Retail Insights has been internationalized to support multiple languages.

### Note

Retail Insights uses DB language code and not ISO codes for all the supported languages. Retail Insights will look up language codes from RDE. If, in the case a language supported by Retail Insights is not available in the source system, then the language under SRC\_LANGUAGE\_CODE will be used as the local language.

This section describes configuration settings and features of the software that ensure that the base application can handle multiple languages.

## Translation

Translation is the process of interpreting and adapting text from one language into another. Although the code itself is not translated, components of the application that are translated may include the following:

- Graphical user interface (GUI)
- Error messages
- Application metadata (metric names and descriptions)

The following components are not translated:

- Documentation (online help, release notes, installation guide, user guide, operations guide)
- Batch programs and messages
- Log files
- Configuration tools
- Demonstration data and sample reports
- Training materials

The user interface for Retail Insights is provided by Oracle Analytics (OAC). The current list of languages for OAC can be found here:

<https://docs.oracle.com/en/cloud/paas/analytics-cloud/acabi/switch-different-language.html>

The metadata objects (RPD) for Retail Insights has been translated into:

- Arabic
- French
- German

- Italian
- Polish
- Portuguese (Brazilian)
- Spanish

## Multi-Language Setup

Retail Insights data is supported in 18 languages. This section provides details of various scenarios that may come across during implementation. See "[Translation](#)" for a list of supported languages.

Since multi-language data support in Retail Insights is dependent on the availability of the multi-language data in the source system, it is important to understand various scenarios the user may encounter. Before proceeding review the following facts about multi-language support:

- Retail Insights programs extracts multi-language data from source systems.
- A list of languages for multi-language data support can be chosen during the installation process. Please refer to the *Oracle Retail Insights Installation Guide* for more details.
- Depending on the implementation, the source system may or may not have data for particular supported language(s). For example, RMS supports Item Descriptions in multiple languages but the item's description may not be available in the translated languages.
- For source system released languages, please refer to source system Operations Guides.
- You must select a Retail Insights primary language for data purposes to be supported within the source system.
- You must delete not needed languages from W\_LANGUAGES\_G in Retail Insights, to improve batch performances.

Refer to the *Oracle Retail Home Administration Guide* for information on how to setup and use resource bundles for custom strings modifications.

### Scenario 1

All the supported languages are implemented in Retail Insights and the same set of languages are supported in the source system as well.

Multi-lingual data sets are enabled in both Retail Insights and the source system.

#### Data Scenario 1a

Translated data exists for all records in Source System: This is an ideal scenario where the source system supports data for the same set of languages as Retail Insights and data for the required column exists in all the languages in the source system.

In this scenario the attributes that are supported for multi-languages will get all the multi-language data in Retail Insights.

#### Data Scenario 1b

Translated data does not exist for some of the records in the source system.

For the attributes for which data is not available in the source system, Retail Insights will display the attribute in source system primary language. For example, Retail Insights requests

data in German and English languages. In RMS the Item attribute description is not available in the German language but is available in English language.

Retail Insights will display Item description in English to a user who is logged into Oracle Analytics (assuming English is the primary language of RMS for that implementation).

## Scenario 2

All or a subset of languages are implemented in Retail Insights and some of these are not supported in the source system:

### Data Scenario 2a

Translated data does not exist for some of the languages in the source system. In this case, the data is displayed in Retail Insights' primary language.

## Scenario 3

Source system supports more languages than are supported for Retail Insights. In this case Retail Insights filters out the additional languages' data. This data will not be loaded into Retail Insights tables and cannot be used for reporting.

# 6

## Compression and Partitioning

This chapter describes how Retail Insights implements compression and offers a discussion of Oracle partitioning.

### Overview of Compression

Although data warehouses are often very large, the amount of detail generated in some Retail Insights tables is enormous even by usual standards. That is, a retailer with 500,000 items and 500 locations would generate 250,000,000 new rows each day. Storing this amount of uncompressed data is impractical from a disk storage perspective, in the cost to store the rows, the cost to perform backups, and other database maintenance operations.

One approach that Retail Insights uses to reduce the data volume is compression. This chapter describes:

- What compression does
- Mechanics of compression
- Which tables are currently compressed
- Oracle features that are related to compression
- Strategies for implementing compressed tables

### What Compression Does

Compression refers to storing physical data that only reflects changes to the underlying data source, and filling in the gaps between actual data records through the use of database views. This method is engaged primarily for subject areas that are perpetual, such as inventory. That is, when querying sales data, a valid sale record exists (a sale occurred) or a record does not exist (no sale occurred). However, when querying for on-hand inventory, even if no change occurred to the inventory on the date desired, a valid value is still required. One way to resolve this discrepancy is to store a record for every day and a valid item-location combination as mentioned above. Another method, compression, allows for the storage of only changes to the inventory position. The query is resolved by looking backward through time from the desired date (if no change record exists on that date) until an actual change record is found. This method returns the correct current data with the minimum requirements necessary for processing and storing data.

Retail Insights compression is different with Oracle DB table compression. Oracle DB table compression compress data by eliminating duplicate values within a data block. Any repetitive occurrence of a value in a block is replaced by a symbol entry in a "symbol table" within the data block. So for example DEPT\_NUM=10 is repeated five times within a data block, it will be only stored once and for the other four times a symbol entry will be stored in symbol table. Oracle database table compression can also significantly reduce disk and buffer cache requirements for database tables while improving query performance. Oracle database compressed tables use fewer data blocks on disk, reducing disk space requirement.

## Mechanics of Compression

The purpose of decompression views is to give the application the illusion that there is a record for each possible combination (that is, an item-location-day record for each permutation), when in fact there is not. Thus, the fact of whether a table is compressed or not should not be visible to the application that queries data from that table. A compressed table is made up of two distinct parts: a 'seed' that consists of all existing combinations at a point in time (typically the first day or week of the table or partition) and the changed data since that time. Retail Insights compressed tables use FROM\_DT\_WID and TO\_DT\_WID columns to indicate the time range in which records are valid. When resolving a query for a particular record, the decompression view provides the latest record for the requested item and location with the maximum day that is less than or equal to the requested day. A decompression view needs to encompass both the seed and all of the changed data since that seed. A decompression view compares FROM\_DT\_WID and TO\_DT\_WID of records with FROM\_VALUE and TO\_VALUE on partition mapping table W\_RTL\_PARTITION\_MAP\_G to make sure that a right partition is used by the decompression view.

To illustrate how the decompression views actually work, assume the following:

- The user is interested in the inventory position of item 10 at location 10 on 1/23/02.
- The seed was done on 1/1/02. Changes were posted on 1/4/02, 1/15/02, and 1/30/02.
- The row that is presented to the application by the decompression view is the row on 1/15/02, because it is the latest date that is less than or equal to the requested date.

As a second example, assume that the inventory position of item 10, location 10, day 1/3/02 was desired. Because there was no change record less than or equal to the desired date, the seed record from 1/1/02 will be presented to the application.

Compression's performance is excellent when the user is querying for a single day (as in the example above). When querying over a group of days, however (that is, all of the inventory positions at a given location on a given day), the performance can be unacceptable. Even though the user is requesting a group of information back, and in most cases the database can process groups of information efficiently, each individual row must be evaluated individually by the decompression view and cannot be processed as a group. To counteract the slow performance of these summary operations, you may take advantage of compressed table partition seeding (see "[Overview of Partitioning Strategies](#)"). This partition seeding utilizes the latest position status tables (also known as 'current' tables). An example is the W\_RTL\_INV\_IT\_LC\_G table, which holds the current decompressed position for every item and location on the W\_RTL\_INV\_IT\_LC\_DY\_F table. This position can be used as a partition seed. This position is also utilized by base Retail Insights code during major change fact seeding.

## Compressed Tables and 'CURRENT' Tables

The table below illustrates the compressed tables within Retail Insights, along with their corresponding 'CURRENT' tables.

**Table 6-1 Compressed Tables and CURRENT Tables**

| Compressed Tables      | Current Tables      |
|------------------------|---------------------|
| W_RTL_PRICE_IT_LC_DY_F | W_RTL_PRICE_IT_LC_G |
| W_RTL_Bcost_IT_LC_DY_F | W_RTL_Bcost_IT_LC_G |
| W_RTL_Ncost_IT_LC_DY_F | W_RTL_Ncost_IT_LC_G |



**Table 6-1 (Cont.) Compressed Tables and CURRENT Tables**

| Compressed Tables           | Current Tables           |
|-----------------------------|--------------------------|
| W_RTL_CO_LINE_STATUS_F      | W_RTL_CO_LINE_STATUS_G   |
| W_RTL_COMP_PRICE_IT_LC_DY_F | W_RTL_COMP_PRICE_IT_LC_G |
| W_RTL_INVU_IT_LC_DY_F       | W_RTL_INVU_IT_LC_G       |
| W_RTL_INV_IT_LC_DY_F        | W_RTL_INV_IT_LC_G        |
| W_RTL_PO_ONALC_IT_LC_DY_F   | W_RTL_PO_ONALC_IT_LC_G   |
| W_RTL_PO_ONORD_IT_LC_DY_F   | W_RTL_PO_ONORD_IT_LC_G   |

## Coping with Slowly Changing Dimension Type 2

### Fact Close Program (factcloseplp.ksh)

On a compressed fact table, a record is only posted to the table when there is a change in one of the fact attributes. If there is no activity, no record is posted. Decompression views then fill in the gaps between physically posted records to ensure that a fact record appears for each item-location-day combination in the user interface. However, when an item, location, or department is closed or major-changed, any fact record with those dimensions becomes inactive. The decompression views need to be informed to stop filling in the gap after the last record was posted. To accomplish this instruction, scenario PLP\_RetailFactCloseFact (called by factcloseplp.ksh) first queries the W\_RTL\_PROD\_RECLASS\_TMP and W\_RTL\_ORG\_RECLASS\_TMP tables to determine the compressed item-location facts that need to be closed today. The PLP\_RetailFactCloseFact scenario then updates TO\_DT\_WID to the current date WID to stop the record. The decompression view fills in records up to the day that is in the range between FROM\_DT\_WID and TO\_DT\_WID.

### Fact Open Program (factopenplp.ksh)

Retail Insights Data Compression tables require seeding when a major change in the product and organization dimension causes new surrogate keys to be created for items or locations. Seeding the compressed tables is required because the new key represents a new hierarchy relationship. If the new key is not represented on the compressed table, the compression view does not pick up any data from the day the old dimensions were closed to the day a record with the new dimensions is posted to the compressed fact tables. This missed data causes inaccuracy in query results and incorrect data aggregation.

To accomplish this seeding scenario, PLP\_RetailFactOpenFact (called by factopenplp.ksh) first queries the W\_RTL\_PROD\_RECLASS\_TMP and W\_RTL\_ORG\_RECLASS\_TMP tables to determine what compressed item-location facts need to be closed today. The PLP\_RetailFactOpenFact scenario then inserts seeded (closed) records for tomorrow's FROM\_DT\_WID, indicating that the closed fact records are no longer valid beginning tomorrow, when the newly seeded records (from PLP\_RetailFactOpenFact) become active. In the case of the compressed week table, W\_RTL\_INV\_IT\_LC\_WK\_A, PLP\_RetailFactOpenFact inserts seeded records with next week's warehouse ID.

# Oracle Table Compression

Oracle table compression not only helps customers save disk space, it also helps to increase cache efficiency since more blocks can fit in the memory. Retail Insights may leverage compression on certain tables and this is managed automatically and cannot be changed.

Since compression could cause contention when tables get updated, it is common to only compress non-current partitions and leave the current partition uncompressed.

## Overview of Partitioning Strategies

This section describes partitioning strategies for Retail Insights data marts. For large tables, such as the inventory, pricing, cost and sales tables, splitting them into table partitions can provide the following benefits:

- Partitions are smaller and therefore easier to manage.
- Management operations on multiple partitions can occur in parallel.
- Partition maintenance operations (such as index rebuilds) are faster than full table operations.
- Partition availability is higher than table availability (that is, when recovering a particular partition, users may access all other partitions of the table at the same time).
- The optimizer can prune queries to access data in only the partition of interest, not the entire table (that is, if you are interested only in February's data, you do not need to look at any of the table's data outside of the February partition).
- Partitions are separate database objects, and can be managed accordingly (that is, if December sales are frequently accessed throughout the year whereas other months are not, the December sales partition could be located in a special tablespace that allows for faster disk access).
- In some situations, the Oracle database can create parallel operations on partitions that it cannot on tables; an example is joining between two different tables if they are partitioned on the same key (this feature is called a 'parallel partition-wise join').

Indexes, as well as tables, can be partitioned. Index partitions can be global (one index over the table, regardless of whether the table is partitioned or not) or local (there is a one-to-one correspondence between index partitions and table partitions). In general, when tables are partitioned, local indexes should be preferred to global indexes for the following reasons:

- Maintenance operations involve only one index partition instead of the entire index (that is, if the oldest table partition is aged out, a local index partition can be dropped along with its corresponding table partition, whereas an entire global index will need to be rebuilt after it becomes unusable when a table partition is dropped).
- The optimizer can generate better query access plans that use only an individual partition.
- When multiple index partitions are accessed, the optimizer may choose to use multiple parallel processes rather than just one.

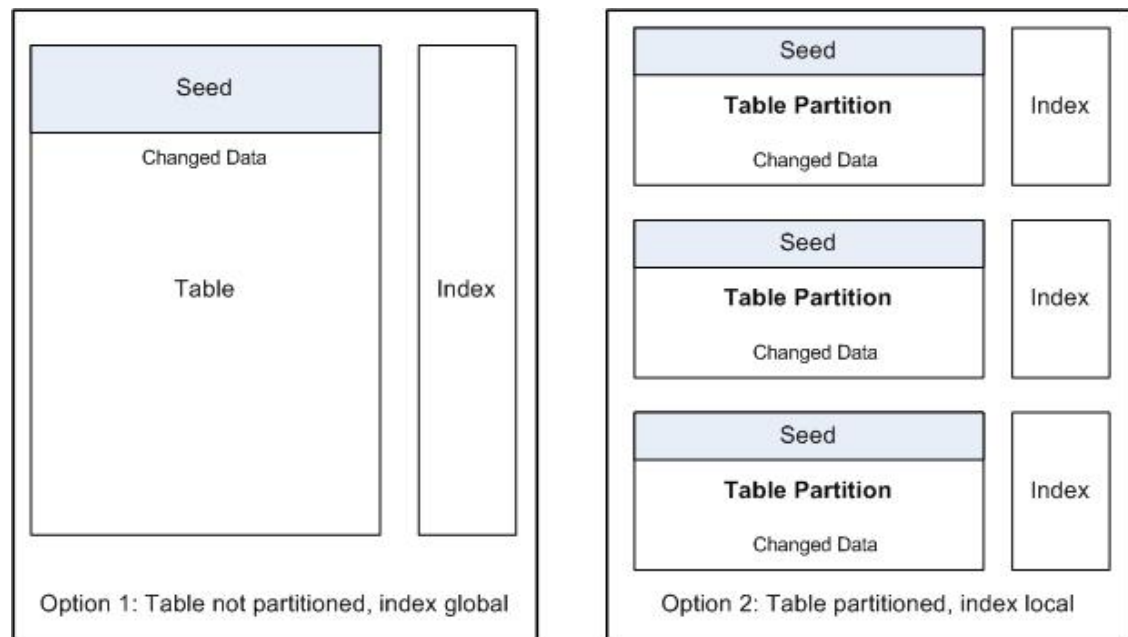
## Implementing Retail Insights Partitioning

The figure on the following page illustrates some of the possibilities for table and index layout used within RI.

In general, option 2 is the preferred solution for large regular or compressed tables (for example, the W\_RTL\_INV\_IT\_LC\_DY\_F and W\_RTL\_PRICE\_IT\_LC\_DY\_F tables). It uses table partitions and local indexes, thus minimizing the impact of index maintenance and the deletion of old table partitions. Global indexes on partitioned tables are not recommended.

Option 1 can be used for smaller compressed tables. The disadvantage is that, functionally, there is no way to delete historical data and the table continues to grow.

**Figure 6-1 Retail Insights Partitioning Options**



## Setup and Maintenance for Partitioning Retail Insights Compressed Inventory Table

The following procedure describes how we setup and maintain Retail Insights partitioning of the compressed inventory table (W\_RTL\_INV\_IT\_LC\_DY\_F) using Retail Insights partitioning. Note that these steps are informational and are managed by Oracle in cloud environments.

1. Make the following determinations, among others (see the *Oracle Retail Insights Installation Guide* for details):
  - Your partitioning strategy.
  - The time period your partitions will use.
  - The 'values less than' boundaries according to your multi business calendar WID values.
  - How many partitions are to be used.
  - The partition naming standard.
2. On the database, create the partitions and indexes for the tables you want to partition.
3. Verify you have populated the Time Calendar Dimension. See the *Oracle Retail Insights Installation Guide* for details.

4. Perform step numbers 2 and 3 whenever any of the following events occur:
  - Records are added to or deleted from the Time Calendar tables W\_MCAL\_DAY\_D (extending time calendar for a new time period).
  - Partitions are added to the Inventory Position table W\_RTL\_INV\_IT\_LC\_DY\_F.

Other maintenance activities include archiving and removing of partitions.

## Implementing Partitioning for Compressed Inventory Table

Once the tables (including partitions) and indexes have been created, the data must be loaded. For tables that have a corresponding current status table (such as W\_RTL\_INV\_IT\_LC\_DY\_F and W\_RTL\_INV\_IT\_LC\_G), the following steps are recommended:

### Note

All these steps can be performed automatically by the Retail Insights seeding program PLP\_RetailPartSeed.ksh. See the *Oracle Retail Insights Operations Guide* for detail about how to execute this script.

1. In the partition mapping table W\_RTL\_PARTITION\_MAP\_G, update column TO\_VALUE with the current business date WID for the latest partition on the target table W\_RTL\_INV\_IT\_LC\_DY\_F.
2. Insert a new record to partition mapping table W\_RTL\_PARTITION\_MAP\_G with next business date WID or week WID as FROM\_VALUE and dummy value '999999999999999' as TO\_VALUE. Column TABLE\_NAME must be populated with target table W\_RTL\_INV\_IT\_LC\_DY\_F and column PARTITION\_NAME must be populated with 'P\_XX'.

### Note

XX is the number part of current partition name on the same target table plus 1. This partition name 'P\_XX' can be different from the real partition name used in the database.

3. Copy data in W\_RTL\_INV\_IT\_LC\_G table as the seed to the first partition or a new partition that is going to be used on the next day.

At this point, only the changed records are added to the W\_RTL\_INV\_IT\_LC\_DY\_F table. Whereas the W\_RTL\_INV\_IT\_LC\_G table is a full and uncompressed version that holds the current inventory position as of the last time period.

4. When a partition boundary is crossed, the W\_RTL\_INV\_IT\_LC\_G table is copied as the seed to the new partition, via the PLP\_RetailPartSeed.ksh program.

If you have questions about how to implement partitioning with compression or require assistance implementing partitioning, contact Oracle Customer Support or Oracle Retail Services.

## Partitioning Automation Implementation

For newly created aggregate and planning tables, we run run\_partition\_util.ksh once before the batch cycle to create partitions as an initialization step during implementation.

Three new tables were created to manage this process, as shown below.

- **C\_MODULE\_ARCHIVE\_TBSP**  
This is for future. Currently, archiving of tablespaces are disabled.
  - **C\_MODULE\_ARTIFACT**  
This tables lists the modules that are supported by RI and those that are partitioned already.
  - **C\_MODULE\_EXACT**  
This tables holds the explicit search criteria for the tables that belongs to specific modules. By default: RI uses "Sales Promotion" (SLSPR), Supplier (SUPP) and Customer Order (CO) using defined search logic.
1. In the C\_MODULE\_ARTIFACT table, enable modules as applicable. By default, all modules will be set to 'N'. Eg: if sales and inventory are available, then set the ACTIVE\_FLG = 'Y' for these modules.
    - a. Set SCHEDULE\_EOM\_DAYS (Default Set to 0)  
Valid values are 0-6 with 0 = Saturday, 1 = Sunday,...6=Friday.
    - b. Set SCHEDULE\_EOW\_DAYS (Default set to (null)).
    - c. Enable ACTIVE\_FLG for the modules where it is applicable. For example, if sales and inventory are available, then set the ACTIVE\_FLG = 'Y' for these modules. By default all modules are set to 'N'.
  2. Set the RI\_PART\_DDL\_CNT\_LIMIT parameter. This parameter is set in C\_ODI\_PARAM. By default it is set to 10000. This limits the number of statements that can be executed. This is configurable.
  3. Perform the initial run to extend partitions for the newly created tables before the batch cycle.  
  
run\_partition\_util.ksh – This is the shell script that runs the partition program. It needs to be run to ensure that the required partitions are created before the batch cycle.
  4. Set the RI\_PART\_COMPRESSION\_PERIOD parameter. This parameter is set in C\_ODI\_PARAM. By default it is set to 7M. This compresses records which are older than 7 Months (Periods). This is configurable.
  5. Set the RI\_PART\_RETENTION\_PERIOD parameter. This parameter is set in C\_ODI\_PARAM. By default it is set to 37M. This purges records older than 37 Months(Periods). This is configurable.

## Partitioning Automation Operation

run\_partition\_util.ksh – This is the shell script that runs the partition program. This programs is scheduled to run after the batch cycle email notification is sent out.

## How Oracle Implements Partitions

This section highlights how partitions are implemented in an Oracle data warehouse. This section is informational and all partitions are managed automatically in cloud environments.

Range partitions in the Oracle data warehouse/database are split by a range of values on the partition key. Examples include partitions by month, partitions by department number, and partitions by item range. Partitioning options also include hash partitions (spreading the rows across a fixed number of partitions by applying a hash function to the partition key), and

composite partitioning (a combination of range partitioning and hash partitioning). It is recommended that you partition the tables using range partitioning. Oracle Retail also recommends that the partition key be the date field in the primary key to allow partitions to be aged out when no longer needed.

As a general guideline, partitioning must be considered for tables listed in the RA\_partitioned\_tables.xls spreadsheet (see the *Oracle Retail Insights Installation Guide*) and any fact tables in a slow-running query. There is an administrative trade-off between having more partitions to manage and obtaining the benefits of partitioning.

The actual physical layout of partitions varies from site to site. A general approach is to put each partition into its own tablespace and map each tablespace to a separate mount point. This has several advantages:

- Maintenance operations, as well as tablespace recovery, can occur on a partition while other partitions are unaffected.
- If manual performance tuning of the data files is being done, tablespaces and their files can be moved around to achieve optimal performance.
- If partitions are no longer being updated, their tablespaces can be changed to READ ONLY, which significantly reduces backup requirements.
- Separate mount points pointing to a separate set of physical drives significantly reduces I/O time.

Partitions are ordered from low values to high values. The partition key value for a partition is a non-inclusive upper bound (high value) for that partition. That is, if the W\_RTL\_SLS\_IT\_LC\_DY\_A table is partitioned by month, the high value for January, 2010, partition is 01-Feb-2010. A low value can always be inserted into the lowest partition. However, you may not be able to insert a high value depending on the high value of the highest partition. For instance, if the highest partition has a high value of 01-Feb-2000, and you attempt to insert a record with a date of 01-Feb-2010, the row will not be inserted into the table (the high value of 01-Feb-2010 is a non-inclusive upper bound). For this reason, a special high value partition with a key of MAXVALUE is available in the Oracle database. It is recommended that all partitioned tables include a dummy partition with a MAXVALUE high value.

There are special considerations for the partitioning of Retail Insights compressed tables. The following is a brief description of the different partition maintenance commands. Refer to the current Oracle database documentation set for more details:

- **ADD PARTITION:** Adds a new partition to the high end of a partitioned table. Because it is recommended to have a MAXVALUE partition, and this is the highest partition, the ADD PARTITION functionality can be achieved by performing a SPLIT of the MAXVALUE partition instead.
- **DROP PARTITION:** Drops the partition. This is the typical method to delete the oldest partitions (those with the lowest values) as they age to maintain a rolling window of data.
- **EXCHANGE PARTITION:** Converts a non-partitioned table into a partitioned table or converts a partitioned table into a non-partitioned table.
- **MERGE PARTITION:** Merges two adjacent partitions into one.
- **MOVE PARTITION:** Moves a partition to another segment; this is used to defragment a partition or to change its storage characteristics.
- **SPLIT PARTITION:** Splits an existing partition by adding a new partition at its low end.
- **TRUNCATE PARTITION:** Removes all rows from the partition.

Oracle database automatically maintains local index partitions in a 1-to-1 correspondence with their underlying table partitions. Any table partition operations, such as ADD PARTITION, also affect the relevant index partitions.

## Summary

Partitions are useful for breaking up large tables into smaller, more manageable pieces. Take note of the following partitioning recommendations when using Retail Insights in an on-premise implementation:

- Consider partitioning tables that are in the RA\_partitioned\_tables.xls spreadsheet (see the *Oracle Retail Insights Installation Guide*) and fact tables that are in a slow- running query.
- Use the date as the partition key for range partitioning.
- When tables are partitioned, make their indexes local.
- Consider putting each partition in its own tablespace and each tablespace on its own mount point.
- After updates on a partition cease, consider changing its tablespace to READ ONLY to reduce backup requirements.
- If partitioning compressed tables, be sure to address any special requirements for seeding.