

Oracle® Commerce Retail Extension Module
Merchandising Implementation Guide
Release 16.0
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Oracle® Commerce Retail Extension Module Merchandising Implementation Guide, Release 16.0
E79486-01

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Preface

This guide provides information needed for an implementation of Oracle Commerce Retail Extension Module with Oracle Retail Merchandising Operations Management.

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Related Documents

For more information, see the following documents in the Oracle Commerce Retail Extension Module 16.0 documentation set:

- *Oracle Commerce Retail Extension Module Installation Guide*
- *Oracle Commerce Retail Extension Module Implementation Guide*
- *Oracle Commerce Retail Extension Module Release Notes*
- *Oracle Commerce Retail Extension Module Security Guide*

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When contacting Customer Support, please provide the following:

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

Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 16.0) or a later patch release (for example, 16.0.1). If you are installing the base release or additional patch releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch releases can contain critical information related to the base release, as well as information about code changes since the base release.

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This process will prevent delays in making critical corrections available to customers. For the customer, it means that before you begin installation, you must verify that you have the most recent version of the Oracle Retail documentation set. Oracle Retail documentation is available on the Oracle Technology Network at the following URL:

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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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(Data Model documents are not available through Oracle Technology Network. You can obtain them through My Oracle Support.)

Conventions

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

This is a code sample

It is used to display examples of code

Introduction

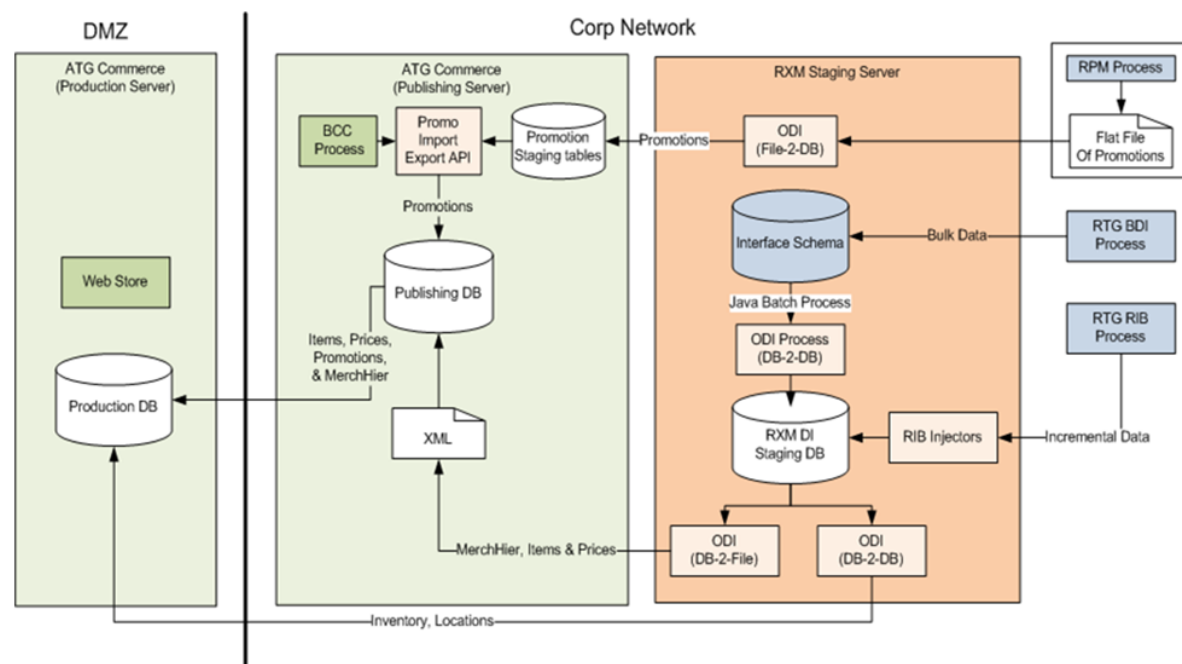
RXMDI and ODI run on the RXM Staging Server deployed at the Corporate Data Center. The RXM Staging server has access to two dedicated Oracle databases: BDI Interface Inbound Schema and RXMDI Staging Schema. RXMDI and ODI run on the Oracle Retail release 16.0 supported stack with Fusion Middleware 12.2.1.

The incremental and bulk data is staged and primarily mapped into XML files for feeding to Oracle Commerce's SQLImport program running on Oracle Commerce Publishing Server, or placed into the Oracle Commerce Production repository directly. The promotional data is mapped to staging tables in Oracle Commerce Publishing for further transformation and import by an RXM scheduled service.

Technologies used for data integration:

- Oracle Data Integrator Enterprise (ODI) 12c (12.2.1)
- Oracle WebLogic 12c (12.2.1)
- Oracle Database 12c (12.1.0.2.0)
- Java 8

Architecture



This diagram shows the BDI, RIB, and RPM processes. MOM and RXMDI are on the right, RXM Publishing in the middle, and RXM Production on the left.

Oracle Retail Merchandising System

- Bulk data moves from RMS to RXMDI through BDI Process flows. They move the data into the BDI Input (that is, BDI Inbound Interface) Schema. They are then transformed by ODI into the RXMDI Staging Schema using the RXM Batch jobs which invoke the appropriate ODI Scenarios.
- Incremental data moves from RMS to RXMDI through RIB. RIB data is processed by implementing RIB message injectors and persisting the data directly into the RXMDI Staging Schema using JPA.
- Merchandise Hierarchy and Item data from the RXMDI Staging Schema is transformed by ODI into XML files which are then imported into the RXM publishing server's Business Control Center (BCC) from where it is published to RXM's production server.
- Inventory, Store, and Warehouse data from the RXMDI Staging Schema is transformed by ODI and inserted into RXM's production server through Direct SQL Load.

Oracle Retail Price Management

RPM Regular and Clearance Price change data arrive as flat files into a directory read by ODI, and are transformed by ODI into XML files which are then imported into the RXM publishing server's Business Control Center (BCC) from where it is published to RXM's production server.

RPM Promotion data also arrives as flat files into a directory read by ODI, and are transformed by ODI and inserted directly into RXM's publishing server through Direct SQL Load. Using a timed Scheduler, they are then processed through the PromotionImportExport API provided by Oracle Commerce and imported into the BCC from where they are published to RXM's production server.

Prerequisite Data

Prior to loading data from RXMDI Staging tables to RXM, the following tables need to be populated with appropriate data.

Based on the values obtained from RMS and set up in RXM Publishing's Business Control Center (BCC) insert the following values into RXMDI_STORE_SITE:

- store_id: Obtained from RMS
- site id: Created in BCC
- catalog id: Created in BCC
- price_list_id: Created in BCC
- sale_list_id: Created in BCC
- file_name: Leave blank
- folder_id: Created in BCC

Based on the representation of unit of measure's (UOM) in RMS and ATG, map the UOMs in the RXMDI_LOOKUP_UOM.

RXMDI_LOOKUP_UOM Sample Data

```
INSERT INTO rxmdi_lookup_uom (mom_uom, atg_uom) VALUES ('EA', 'units');
INSERT INTO rxmdi_lookup_uom (mom_uom, atg_uom) VALUES ('LB', 'pounds');
INSERT INTO rxmdi_lookup_uom (mom_uom, atg_uom) VALUES ('LBS', 'pounds');
INSERT INTO rxmdi_lookup_uom (mom_uom, atg_uom) VALUES ('KG', 'kilograms');
```

- RXM requires latitude and longitude to be populated for a given address. If they are not available, latitude and longitude values are defaulted to zero in the DCS_LOCATION RXM table.
- RXMDI_LOCATION_GEO, located in the RXMDI staging schema, could be pre-populated with this data. ODI procedure GetGeoCode could also be customized to call an external geo location service to populate this data.

RXMDI_LOCATION_GEO Sample Data

```
Insert into RXMDI_LOCATION_GEO
(LOCATION_ID,LATITUDE,LONGITUDE,FORMATTED_ADDRESS,ERROR) values
(5251,'44.6496868','-93.2427200','Lakeville, MN, USA','0');
Insert into RXMDI_LOCATION_GEO
(LOCATION_ID,LATITUDE,LONGITUDE,FORMATTED_ADDRESS,ERROR) values
(4241,'44.8407980','-93.2982799','Bloomington, MN, USA','0');
Insert into RXMDI_LOCATION_GEO
(LOCATION_ID,LATITUDE,LONGITUDE,FORMATTED_ADDRESS,ERROR) values
(3231,'34.9353693','-83.3890464','York, GA 30568, USA','0');
Insert into RXMDI_LOCATION_GEO
(LOCATION_ID,LATITUDE,LONGITUDE,FORMATTED_ADDRESS,ERROR) values
(6261,'45.1607987','-93.2349489','Blaine, MN, USA','0');
```

Bulk Data Integration (BDI)

Oracle Bulk Data Integration (BDI) is a product that defines the architecture and infrastructure used to move bulk data between Oracle Retail applications. BDI sits in the middle of Oracle Retail Merchandising System (RMS) and other applications, and it is built on top of Java EE and Java Batch platform. In a Bulk Data Integration system, Message Families are represented as interface modules. Each interface module (such as DiffGrp_Fnd) contains an RMS component that takes care of pulling and staging data for publication to the External BDI system. Interface modules are divided by functional entity (such as Item Master, Stores, and Diffs).

RMS publishes Bulk Data through the Bulk Data Infrastructure (BDI) Process Flows into the BDI Interface Inbound Schema. The RXM Importer Jobs are part of the BDI Process flows and, through RXM Batch Jobs, invoke the corresponding ODI Scenario. This data is extracted by ODI, transformed, and then persisted into the Retail Extension Module Data Integration (RXMDI) Staging schema.

All the mappings in tables are same between RXMDI Staging schema and BDI Interface Inbound Schema. On reclassification of item, it is not deleted from the previously linked Merchandise Hierarchy.

Bulk Feeds

RXMDI receives Bulk data for the following feeds from RMS BDI:

- InvAvailWh_Tx (Inventory)
- Store_Fnd and StoreAddr_Fnd (Store and Store Address)
- MerchHier_Fnd (Merchandise Hierarchy)
- ItemHdr_Fnd (Item Header)
- ItemLoc_Fnd (Item Location)
- RelatedItem_Fnd (Related Items)
- Diff_Fnd and DiffGrp_Fnd (Diff and Diff Group)

Warehouse ,warehouse address and item image is definition only no data flow.

Importer Jobs

If data is known to be present in the BDI Interface Schema, the RXM Importer jobs can be directly invoked using the RXM Batch Job Admin through Importer jobs. Each interface module has its own Importer Job. For example, there is one for Store, one for Store Address, one for Inventory, and so on. Each Importer Job invokes the corresponding ODI Scenario which extracts the data from the BDI Interface Schema, transforms it, and persists it into the RXMDI Staging Schema.

This is how each Importer Job functions:

1. RMS publishes data with a unique data set ID for a particular interface module. This data set ID maps to a set of sequence numbers representing the records for that interface module. It is cumulative (that is, includes data from previous data sets).
2. When the Importer Job is invoked, the oracle.retail.commerce.batch.DataSetBatchlet determines the latest dataset ID and also queries the RXMDI_ODI_JOB_AUDIT table

in the RXMDI Staging schema to determine if this dataset has already been successfully processed.

3. If the dataset has not been processed, it computes the sequence numbers that belong to that data set and pass along that information to the oracle.retail.commerce.batch.ODIBatchlet.
4. The oracle.retail.commerce.batch.ODIBatchlet invokes the ODI Agent after setting relevant data retrieved from the Job XML as well as the sequence numbers obtained from the oracle.retail.commerce.batch.DataSetBatchlet.
5. Once the Job has been processed by ODI, the oracle.retail.commerce.batch.AuditBatchlet writes a record in the RXMDI_ODI_JOB_AUDIT table in the RXMDI Staging schema with a status of Processed or Failed.
6. An oracle.retail.commerce.batch.StepDecider works in conjunction with the logic in the Job Specification Language (JSL) to allow the Batchlets to decide the next step in the process or whether the process should be Stopped.

RXMDI_ODI_JOB_AUDIT

```
data_set_id                DECIMAL(19,0) NOT NULL, -- Data Set Id
provided as part of the Bulk data set
data_set_begin_seq_num     DECIMAL(19,0) NOT NULL, -- Beginning sequence
number of dataset in inbound interface table
data_set_end_seq_num       DECIMAL(19,0) NOT NULL, -- Ending sequence
number of dataset in inbound interface table
src_sys_data_set_ready_time  TIMESTAMP NOT NULL,    -- Time when source
system provided data in outbound tables
job_complete_status         VARCHAR2(20) NOT NULL, -- Status after Job
has completed
interface_module_name       VARCHAR2(20) NOT NULL, -- Name of the
Interface Module
create_time                 TIMESTAMP NOT NULL      -- Time when record
was created
);

-- Add primary key constraint

ALTER TABLE RXMDI_ODI_JOB_AUDIT ADD CONSTRAINT pk_rxmdi_odi_job_audit PRIMARY KEY
(data_set_id, create_time);
```

Incremental Data Integration (RIB)

RMS publishes create, modify, and delete messages to the Oracle Retail Integration Bus (RIB) for various Message Families through the RIB-RXM adapter. The messages from the adapter are consumed by RXMD) and persisted in the RXMDI Staging schema using the Java Persistence API (JPA).

Technologies

- EclipseLink JPA provider
- Apache Camel
- JPA (through xml)

Message Families

Stores

Stores can have multiple addresses one-to-many mapping using JPA.

Message Types:

- storecre: Message gets persisted in RXMDI_STORE, RXMDI_STORE_ADDRESS tables creating a new row with rxmdi_control as N (New) in both the RXMDI_STORE and RXMDI_STORE_ADDRESS (list of addresses) tables.
- storemod: Existing row in the database is updated and rxmdi_control is set to N (New) in both the RXMDI_STORE and RXMDI_STORE_ADDRESS (list of addresses) tables.
- storedel: Row with corresponding storeId is first retrieved from the database and then updated with corresponding values from StoreRef; rxmdi_control is set to D (Delete) in both RXMDI_STORE, and RXMDI_STORE_ADDRESS (list of addresses) tables.
- storedtlcre: Same as storecre
- storedtlmod: Same as storemod
- storedtldel: It is just address delete, so store's rxmdi_control will remain as only the corresponding addresses' rxmdi_control is set to D (Delete). Store changes rxmdi_control to D (Delete) only when there is a storedel message.

Item Locations

Message Types:

- ItemLocCre: Record is persisted in rxmdi_item_loc with rxmdi_control as N (New).
- ItemLocMod: Record is modified in rxmdi_item_loc with rxmdi_control as N (New).
- ItemLocDel: Record is persisted in rxmdi_item_loc with rxmdi_control as D (Delete).
- ItemLocReplMod: Not supported for RXMDI.

Warehouses

Message Types:

- whcre: Message gets persisted in the RXMDI_WH and RXMDI_WH_ADDR tables creating a new row with rxmdi_control as N (New) in both the RXMDI_WH and RXMDI_WH_ADDR (list of addresses) tables.
- whmod: Existing row in the database is updated and rxmdi_control is set to N (New) in both the RXMDI_WH and RXMDI_WH_ADDR (list of addresses) tables.
- whdel: Row with corresponding wh_Id is first retrieved from the database and then updated with the corresponding values from WHRef; rxmdi_control is set to D (Delete) in both the RXMDI_WH and RXMDI_WH_ADDR (list of addresses) tables.
- whdtlcre: Same as whcre.
- whdtlmod: Same as whmod.
- whdtldel: It is just address delete, so the WH's rxmdi_control will remain as is and only the corresponding addresses' rxmdi_control is set to D (Delete). WH changes rxmdi_control to D (Delete) only when there is a whdel message.
- whaddcre: Message to handle internal RMS processing, but it still comes out of RMS. Not supported by RXMDI.
- whaddmod: Message to handle internal RMS processing, but it still comes out of RMS. Not supported by RXMDI.

Merchandise Hierarchy

This table lists the attributes being statically set in the staging table, as these are not provided by the RIB.

Attribute in RXMDI_MERCH_HIER	Valid Values
HierarchyLevel	For department: Department For Class: CLASS For Subclass: SUBCLASS
HierarchyId	Field introduced by us for creating primary key. It is a unique identifier comprising all three display id plus prepended prefix. Example: For department 3: d3 For department 3, class 1: d3c1 For department 3, class 1 & subclass 4: d3c1s
Parent Level	For department: GROUP For class: DEPARTMENT For Subclass: CLASS

The rest of the attributes are obtained from RIB messages. RIB does not provide the hierarchy node ID and parent node ID.

Message Types:

- Record is persisted in the RXMDI_MERC_HIER table in the RXMDI staging schema.
- deptcre: New record is persisted and rxmdi_control is set to N (New).
- deptmod: Modifies record persisted in deptcre; rxmdi_control is set to N (New).
- deptdel: Modifies record persisted in above two; rxmdi_control is set to D (Delete).
- subclasscre: Creates new record is persisted; rxmdi_control is set to N (New).
- subclassmod: Modifies record persisted in subclasscre; rxmdi_control is set to N (New).

- subclassdel: Modifies record persisted in deptdel and subclasscre; rxmdi_control is set to D (Delete).
- classcre: Creates new record is persisted; rxmdi_control is set to N (New).
- classmod: Modifies record persisted in classcre; rxmdi_control is set to N (New).
- classdel: Modifies record persisted in subclassdel and classcre; rxmdi_control is set to D (Delete).

Items

The Item in RMS maps to either Product or SKU in RXM. On reclassification of item, item is not deleted from previously linked Merchandise Hierarchy.

Message Type:

- Items: Items and item components make up what is called the Items message family:
 - ItemCre: Comprised of several other messages, but RXMDI subscribes only to relatedItem, itemHeader, and itemImage. Record is persisted in the RXMDI_ITEM_HDR, RXMDI_ITEM_IMAGE, RXMDI_RELATED_ITEM, and RXMDI_RELATED_ITEM_DTL tables in RXMDI staging.
 - ItemHdrMod: Modifies record persisted in itemCre in the RXMDI_ITEM_HDR table with rxmdi_control as N (New).
 - ItemDel: Modifies record persisted in itemCre in RXMDI_ITEM_HDR table with rxmdi_control as D (Delete).
 - ItemImageCre: New record is persisted to the RXMDI_ITEM_IMAGE table with rxmdi_control as N (New).
 - ItemImageMod: Modify record is persisted to the RXMDI_ITEM_IMAGE table with rxmdi_control as N (New).
 - ItemImageDel: Modify record is persisted to the RXMDI_ITEM_IMAGE table with rxmdi_control as D (Delete).
 - RelItemHeadCre: New record is persisted to the RXMDI_RELATED_ITEM and RXMDI_RELATED_ITEM_DTL tables with rxmdi_control as N (New) in each.
 - RelItemHeadMod: Modify record is persisted to the RXMDI_RELATED_ITEM and RXMDI_RELATED_ITEM_DTL tables with rxmdi_control as N (New) in each.
 - RelItemHeadDel: Modify record is persisted to the RXMDI_RELATED_ITEM and RXMDI_RELATED_ITEM_DTL tables with rxmdi_control as D (Delete) in each.
- Differentiator Groups: Differentiator Groups allow clients to group differentiator identifiers (Diff IDs) into logical groupings (for example: pant sizes, shirt colors, or flavors).
- DiffGrpHdrCre: Record is persisted in rxmdi_diff_grp with rxmdi_control as N (New). BDI provides diff_type_desc attribute which is available in RIB in another message family called Seed Data message family: DiffTypeDesc.xsd to which RXM is not subscribing, so this attribute is changed to nullable in the schema:
 - DiffGrpHdrMod: Record is modified in rxmdi_diff_grp with rxmdi_control as N (New).
 - DiffGrpDel: Record is persisted in rxmdi_diff_grp with rxmdi_control as D (Delete).
DiffGrpDtl comprised of mapping between diff and diff group.
 - DiffGrpDtlCre: Record is persisted in rxmdi_diff_grp_dtl with rxmdi_control as N (New).

- DiffGrpDtlMod: Record is modified in rxmdi_diff_grp_dtl with rxmdi_control as N(New).
- DiffGrpDtlDel: Record is persisted in rxmdi_diff_grp_dtl with rxmdi_control as D (Delete).
- Differentiator Identifiers: Differentiators (Diffs, as they are commonly called) allow users to further distinguish items:
 - DiffCre: Record is persisted in rxmdi_diff with rxmdi_control as N (New).
 - DiffMod: Record is modified in rxmdi_diff with rxmdi_control as N (New).
 - DiffDel: Record is persisted in rxmdi_diff with rxmdi_control as D (Delete).

Overview of Message Flow

These are the steps in the message flow:

1. RIB-RXM adapter publishes messages which are consumed by RXMDI. The message types and families which can be consumed are referenced in injectors.xml. Injectors.xml can be modified to add or remove additional Message Families and Message Types. Following is a snippet of injectors.xml:
 - Message Family: STORES
 - Message Types: STORECRE, STOREDEL, STOREMOD

injectors.xml

```
<injector_config>
  <family name="STORES">
    <injector

class="oracle.retail.commerce.incremental.location.LocationMessageInjector">
      <type>STORECRE</type>
    </injector>
    <injector

class="oracle.retail.commerce.incremental.location.LocationMessageInjector">
      <type>STOREDEL</type>
    </injector>
    <injector

class="oracle.retail.commerce.incremental.location.LocationMessageInjector">
      <type>STOREMOD</type>
    </injector>
```

2. Any Message Type that is out of scope for RXM or is not in use is filtered out using a Message Filter. Following is a snippet of a Message Filter:

Message Filter

```
<injector

class="oracle.retail.commerce.incremental.filter.MessageFilteringInjector">
  <type>DIVISIONCRE</type>
</injector>
<injector

class="oracle.retail.commerce.incremental.filter.MessageFilteringInjector">
  <type>DIVISIONMOD</type>
</injector>
<injector

class="oracle.retail.commerce.incremental.filter.MessageFilteringInjector">
```

```

        <type>DIVISIONDEL</type>
    </injector>

```

3. The message injected by RIB is mapped to the appropriate Apache Camel route. The payload will be wrapped into a new Apache Camel integration framework message and sent to the mapped Camel route. The Camel route will be responsible for persistence and any other business logic. Following is a snippet of the camel route for STORECRE message:

Camel Route

```

<!-- CamelContext is the Camel runtime, where Camel routes are defined. -->
<camel:camelContext id="LocationCamelContext" trace="false"
xmlns="http://camel.apache.org/schema/spring">

    <!-- Route to create data received from StoreDesc RIB Message for message type:
STORECRE or STOREDTLCRE -->
    <route id="createStoreData">
        <from uri="direct:createStoreData"/>
        <bean ref="Store" method="createStore"/>
        <to uri="jpa://oracle.retail.commerce.incremental.location.Store"/>
        <log message="Store created with id: ${body.store}"/>
    </route>

```

4. There is an Entity for every message. It has setters and getters along with the business logic which gets mapped using entity mapping to the respective tables in the RXMDI schema. JPA uses XML to persist data to database. Following is a snippet of entity mapping for Store:

Store Entity Mapping

```

<entity-mappings
xmlns="http://www.eclipse.org/eclipselink/xsds/persistence/orm"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.eclipse.org/eclipselink/xsds/persistence/orm
http://www.eclipse.org/eclipselink/xsds/eclipselink_orm_2_4.xsd"
version="2.4">

    <!-- Entities -->

    <entity name="Store"
class="oracle.retail.commerce.incremental.location.Store" access="PROPERTY">
        <table name="rxmdi_store"/>
        <attributes>
            <id name="store" access="PROPERTY">
                <column name="store_id" length="10"/>
            </id>
            <basic name="storeType" access="PROPERTY">
                <column name="store_type" length="6"/>
            </basic>
            <basic name="storeName" access="PROPERTY">
                <column name="store_name" length="150"/>
            </basic>
            <basic name="storeName10" access="PROPERTY">
                <column name="store_name_10" length="10"/>
            </basic>
            <basic name="storeName3" access="PROPERTY">
                <column name="store_name_abbr" length="3"/>
            </basic>
            .....
            ...
            <basic name="timezone" access="PROPERTY">
                <column name="timezone" length="64"/>
            </basic>

```

```

        <basic name="rxmdiControl">
            <column name="rxmdi_control" length="20"/>
        </basic>
        <basic name="lastUpdate">
            <column name="last_update" length="6"/>
        </basic>
        <!-- unidirectional one-to-many -->
        <one-to-many name="storeAddress" target-
entity="oracle.retail.commerce.incremental.location.StoreAddress">
            <join-column name="store_id" referenced-column-name="store_id"
nullable="false" />
            <cascade>
                <cascade-all/>
            </cascade>
        </one-to-many>
    </attributes>
</entity>
</entity-mappings>

```

5. On delete, RXM gets a sparse RIB message, for delete to get a hold of the JPA object from the schema. Make changes based on the new RIB message and then persist. Similarly for modify (one-to-many objects), RXM retrieves the row from the database, updates the respective columns, and then persists it. This logic of getting a hold of the JPA object and then modifying it is based on requirements for implementation as a Camel Processor.
6. The Processor implements a camel processor to process message exchanges from the route. The processor gets the primary key from the message exchange, then reads the JPA object from the staging schema, updates the object with latest RIB message, and persists it. Following is a snippet of the StoreDeleteProcessor.java:

Camel Processor

```

@Override
public void process(Exchange exchange) throws Exception
{
    EntityManager em = exchange.getContext().getEndpoint("jpa:" +
Store.class.getName(), JpaEndpoint.class)
        .getEntityManagerFactory().createEntityManager();

    try
    {
        em.getTransaction().begin();
        StoreRef storeRef = (StoreRef)exchange.getIn().getBody();
        if (storeRef != null)
        {
            Query q =
em.createQuery(ProcessorQuery.selectStore).setParameter("store",
storeRef.getStore());
            if (q.getSingleResult() != null)
            {
                Store store = (Store)q.getSingleResult();
                store.setStockholdingInd(storeRef.getStockholdingInd());
                store.setStoreType(storeRef.getStoreType());

                List<StoreAddress> storeAddressList = store.getStoreAddress();
                for (StoreAddress storeAddress : storeAddressList)
                {
                    storeAddress.setRxmdiControl(IncrementalConstants.DELETE);
                    storeAddress.setLastUpdate(new Date());
                }
                store.setRxmdiControl(IncrementalConstants.DELETE);
                store.setLastUpdate(new Date());
                logger.info("Store id:" + store.getStore() + " deleted");
            }
        }
    }
}

```

```

        exchange.getOut().setBody(store);
    }
    em.getTransaction().commit();
}
}
catch (Exception e)

```

7. After the message is persisted in the staging schema, it is picked up by ODI Scenario and processed, transformed, and persisted in either of the following two forms:
 - The Merchandise Hierarchy and Item data from the RXMDI Staging Schema is transformed by ODI into XML files, which is then imported into the RXM publishing server's Business Control Center (BCC) from where it is published to RXM's production server.
 - Store and Warehouse data from the RXMDI Staging Schema is transformed by ODI and inserted into RXM's production server through Direct SQL Load.

Schema

The following tables are in RXMDI Staging:

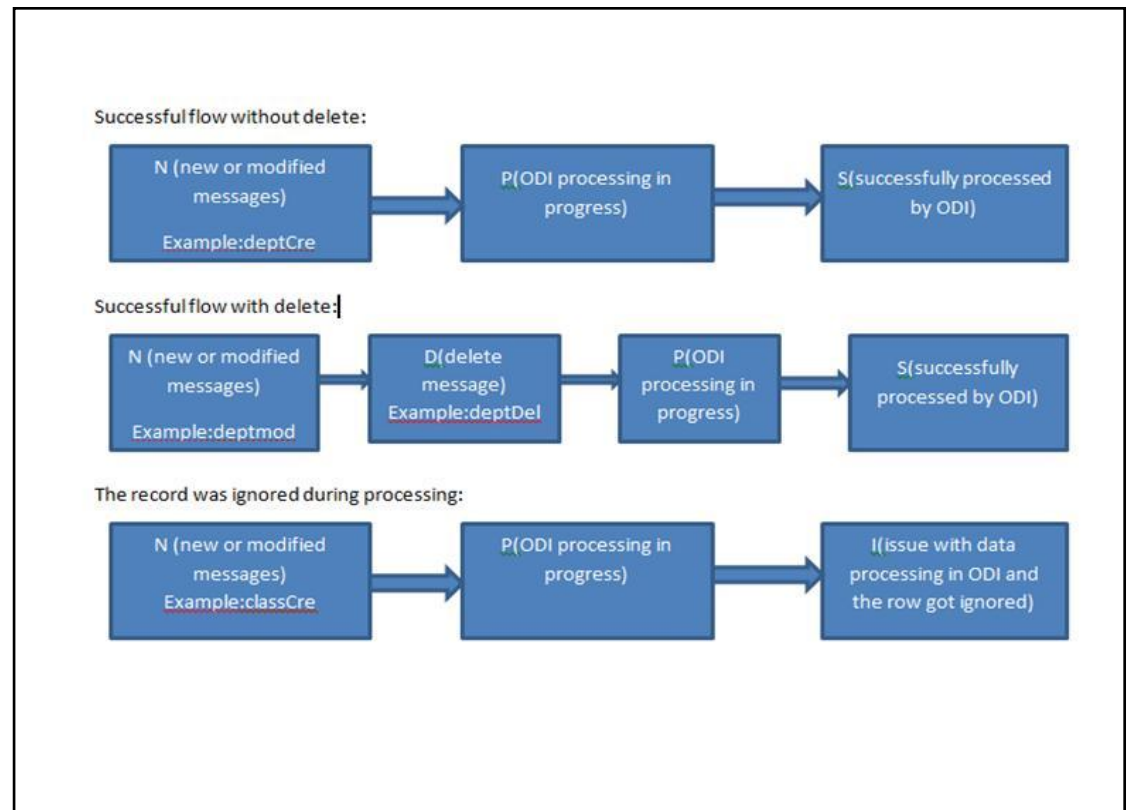
- Store: RXMDI_STORE, RXMDI_STORE_ADDRESS
- Merchandise Hierarchy: RXMDI_MERCH_HIER
- Items: RXMDI_ITEM_HDR, RXMDI_ITEM_IMAGE, RXMDI_ITEM_LOC, RXMDI_RELATED_ITEM, RXMDI_RELATED_ITEM_DTL, RXMDI_DIFF, RXMDI_DIFF_GRP, RXMDI_DIFF_GRP_DTL
- Warehouse: RXMDI_WH, RXMDI_WH_ADDR

The tables in staging closely resemble the BDI Interface Inbound tables. The staging tables have two additional control columns (rxmdi_control and last_update). The Controller/Flag in rxmdi_control is used to determine the life-cycle of a record.

The following are the different states for rxmdi_control:

- N: New (for created/modified)
- D: Deleted
- P: Processed (Processed by ODI)
- S: Success
- I: Ignored

The possible life-cycles for the rxmdi_control states are shown in the following figure:



Note: The records in RXM Staging schema that are marked for Delete ('D' in rxmdi_control status column) are not processed by ODI.

It is the responsibility of the retailer to establish the business process for handling deletes, by either adding an ODI job to physically remove the record from the tables, or implement a purge procedure.

Staging DDL

rxmdi_store

```

CREATE TABLE rxmdi_store (
  store_id          NUMBER(10,0)          NOT NULL, -- Unique ID of the
store.
  store_type        VARCHAR2(6), -- This will indicate whether a
particular store is a franchise or company store.
  store_name        VARCHAR2(150), -- Contains the name of the store
which, along with the store number, identifies the store.
  store_name_10     VARCHAR2(10), -- Contains a ten character
abbreviation of the store name.
  store_name_abbr   VARCHAR2(3), -- Contains a three character
abbreviation of the store name.
  store_name_sec    VARCHAR2(150), -- Secondary name of the store.
  store_class_id    VARCHAR2(1), -- Contains the code letter indicating
the class of which the store is a member. Valid values are A through E.
  store_class_desc  VARCHAR2(250), -- Contains the name of the store
class.
)
  
```

manager	VARCHAR2(120),	-- Contains the name of the store
manager.		
open_date	TIMESTAMP,	-- Contains the date on which the store
opened.		
close_date	TIMESTAMP,	-- Contains the date on which the store
closed.		
acquire_date	TIMESTAMP,	-- Contains the date on which the store
was acquired.		
remodel_date	TIMESTAMP,	-- Contains the date on which the store
was last remodeled.		
fax_number	VARCHAR2(20),	-- Contains the fax number for the
store.		
phone_number	VARCHAR2(20),	-- Contains the phone number for the
store.		
email	VARCHAR2(100),	-- Holds the email address for the
location.		
total_sq_feet	NUMBER(8,0),	-- Contains the total square footage
of the store.		
selling_sq_feet	NUMBER(8,0),	-- Contains the total square footage
of the stores selling area.		
linear_distance	NUMBER(8,0),	-- Holds the total merchandisable
space of the location.		
vat_region	NUMBER(4,0),	-- Contains the number of the Value
Added Tax region in which this		store is contained.
vat_incl_ind	VARCHAR2(1),	-- Indicates whether or not Value
Added Tax will be included in the		retail prices for the store. Valid values are Y
or N.		
stock_holding_ind	VARCHAR2(1),	-- This column indicates whether the
store can hold stock. In a non-multichannel		environment this will always be Y.
channel_id	NUMBER(4,0),	-- In a multichannel environment this
will contain the channel with which the		store is associated. Valid values can be
found on the channels table.		
channel_name	VARCHAR2(120),	-- Contains the name of the channel.
store_format_id	NUMBER(4,0),	-- Contains the number indicating the
format of the store. Valid values are		found on the store format table.
store_format_name	VARCHAR2(60),	-- Contains the name of the store
format.		
mall_name	VARCHAR2(120),	-- Contains the name of the mall in
which the store is located.		
district	NUMBER(10,0),	-- Contains the number of the
district in which the store is a member.		
transfer_zone	NUMBER(4,0),	-- Contains the transfer zone in which
the store is located. Valid values are		located on the tsfzone table.
transfer_zone_desc	VARCHAR2(120),	-- Contains the name of the Transfer
Zone.		
default_wh	NUMBER(10,0),	-- Contains the number of the
warehouse that may be used as the		default for creating crossdock masks. This
determines which stores are associated		with or sourced from a warehouse. Will hold
only virtual warehouses in a multi-channel		environment.
stop_order_days	NUMBER(3,0),	-- Contains the number of days before
a store closing that the store will		stop accepting orders.
start_order_days	NUMBER(3,0),	-- Contains the number of days before
the store_open_date that the store will		begin accepting orders.
currency_code	VARCHAR2(3),	-- This field contains the currency
code under which the store operates.		
store_lang_iso_code	VARCHAR2(6),	-- This column identifies the language
to be used for the given store.		
tran_no_generate	VARCHAR2(6),	-- Contains the level at which unique
POS transaction numbers are generated.		If the store has one sequence
number that is used for all registers,		then the value in this column will be S
(Store) otherwise it will be R (Register).		
duns_number	VARCHAR2(9),	-- This field holds the Dun and
Bradstreet number to identify the store.		

```

    sister_store          NUMBER(10,0), -- This field will hold a store
number which will be used to relate the current store to the historical data of an
existing store.
    tsf_entity_id        NUMBER(10,0), -- This is the Id of the transfer
entity this store belongs to. A transfer entity is a group of locations that are a
part of single legal entity and share same accounting set of books.
    org_unit_id          NUMBER(15,0), -- Column will contain the
organizational unit ID value.
    auto_rcv             VARCHAR2(1), -- This column will indicate whether
the client is allowing automatic receipt for the store. Valid Values are Y (Yes),
N (No), D (System Default). Default value should be D.

    remerch_ind          VARCHAR2(1), -- Identifies stores that are
undergoing a significant remerchandising effort. Used only when AIP is integrated
with RMS.
    wf_customer          NUMBER(10,0), -- Numeric Id of the customer.
    timezone             VARCHAR2(64), -- Indicates the time zone of the
store. For example, America/New_York.
    customer_order_loc_ind VARCHAR2(1), -- This Column determines whether the
location is customer order location or not.
    rxmdi_control        VARCHAR2(20),
    last_update          TIMESTAMP,
CONSTRAINT rxmdi_store_p PRIMARY KEY (store_id)
);

```

rxmdi_store_addr

```

CREATE TABLE rxmdi_store_addr (
    store_id          NUMBER(10,0)          NOT NULL DEFERRABLE INITIALLY
DEFERRED, -- Contains the unique ID of the store. Data will always be present in
this field.
    addr             NUMBER(11)            NOT NULL, -- This column
contains a unique number used to distinguish between different addresses.
    addr_type        VARCHAR2(2)           NOT NULL, -- Contains the
code used to identify the address type. Common examples include 01 (Business), 02
(Postal), 03 (Returns), 04 (Order), 05 (Invoice) and 06 (Remittance). Data will
always be present in this field.
    addr_type_desc   VARCHAR2(20), -- Contains the code used to
identify the address type. Common Common examples include Business, Postal,
Returns, Order, Invoice and Remittance. Description data is only sent in the
primary integration language of the system.
    primary_addr_ind VARCHAR2(1)           NOT NULL, -- Indicates
whether the address is the primary address for the address type. Valid values are
Y and N.
    add_1            VARCHAR2(240)         NOT NULL, -- Contains the
first line of the address. This information is required.
    add_2            VARCHAR2(240), -- This column contains the second
line of the address.
    add_3            VARCHAR2(240), -- This column contains the third
line of the address.
    city             VARCHAR2(120)         NOT NULL, -- Contains the
name of the city that is associated with the address. This information is
required.
    county           VARCHAR2(250), -- This column holds the county
name for the location.
    state            VARCHAR2(3), -- This column contains the state
abbreviation for the address.
    country           VARCHAR2(3)          NOT NULL, -- Contains the ISO
3166-1 country code associated with the address. This information is required.
    post_code        VARCHAR2(30), -- This column contains the zip code
for the address.
    jurisdiction_code VARCHAR2(10), -- This column contains the name of
the contact for the supplier at this address.

```

```

        contact_name          VARCHAR2(120), -- This column contains the name of
the contact for the supplier at this address.
        contact_phone         VARCHAR2(20), -- This column contains the phone
number of the contact person at this address.
        contact_fax           VARCHAR2(20), -- This column contains the fax
number of the contact person at this address.
        contact_email          VARCHAR2(100), -- This column contains the email
address of the partner or suppliers representative contact.
        rxmdi_control          VARCHAR2(20),
        last_update            TIMESTAMP,
        CONSTRAINT rxmdi_store_addr_p PRIMARY KEY (store_id, addr) DEFERRABLE INITIALLY
DEFERRED
);

```

rxmdi_store_site

```

CREATE TABLE rxmdi_store_site(
    store_id          NUMBER(10) NOT NULL,
    site_id           VARCHAR2(40),
    catalog_id        VARCHAR2(40),
    price_list_id     VARCHAR2(40),
    sale_list_id      VARCHAR2(40),
    file_name         VARCHAR2(40),
    folder_id         VARCHAR2(40),
    CONSTRAINT rxmdi_store_site_p PRIMARY KEY(store_id)
);

```

rxmdi_wh

```

CREATE TABLE rxmdi_wh (
    wh_id              NUMBER(10,0)          NOT NULL,--
Contains the number which uniquely identifies the warehouse.The wh table stores
all warehouses in the system.Both virtual and physical warehouses will be stored
on this table.The addition of the new column, physical_wh, helps determine which
warehouses are physical and which are virtual.All physical warehouses will have a
physical_wh column value equal to their wh number.Virtual warehouses will have a
valid physical warehouse in this column.
    wh_name            VARCHAR2(150)          NOT NULL,
Contains the name of the warehouse which, along with the warehouse number,
identifies the warehouse.
    wh_name_secondary  VARCHAR2(150),-- Secondary name of the warehouse.
    email              VARCHAR2(100),-- Holds the email address for the
location
    vat_region         NUMBER(4,0),-- warehouse is located.
    org_hier_type       NUMBER(4,0),-- Contains the organization type that
will be used in reporting purposes for the warehouse. The type comes from the
organizational hierarchy.Valid values are:1 = Company 10 = Chain 20 = Area 30 =
Region 40 = District 50 = Store
    org_hier_value     NUMBER(10,0),-- Contains the code associated with the
specific organizational hierarchy type. Valid values include the company number,
chain number, area number, etc.
    currency_code      VARCHAR2(3)           NOT NULL, -- This field contains
the currency code under which the warehouse operates.
    physical_wh        NUMBER(10,0), -- This column will contain the number
of the physical warehouse that is assigned to the virtual warehouse.
    primary_vwh        NUMBER(10,0), -- This field holds the virtual
warehouse that will used as the basis for all transactions for which only a
physical warehouse and not a virtual warehouse has not been specified.
    channel_id         NUMBER(4,0), -- This column will contain the channel
for which the virtual warehouse will be assigned.
    stockholding_ind   VARCHAR2(1)          NOT NULL,-- This column will
indicate if the warehouse is a stock holding location. In a non-multichannel
environment, this will always be Y. In a multichannel environment it will be N
for a physical warehouse and Y for a virtual warehouse.

```

break_pack_ind VARCHAR2(1), -- Indicates whether or not the warehouse is capable of distributing less than the supplier case quantity. Valid values are : Y or N.

redist_wh_ind VARCHAR2(1), -- Indicates that the warehouse is a Re-Distribution warehouse. Used as a location on Purchase Orders in place of actual locations that are unknown at the time of Purchase Order creation and approval. This value allows the Redistribution Report to identify orders requiring redistribution. A Warehouse with this indicator will not be limited in any RMS transactions. Valid values are Y or N.

delivery_policy VARCHAR2(6),-- Contains the delivery policy of the warehouse. Next Day indicates that the if a location is closed, the warehouse will deliver on the next day. Next Valid Delivery Day indicates that the warehouse will wait until the next scheduled delivery day before delivering. Valid values come from the DLVY code on code_head/code_detail.

restricted_ind VARCHAR2(1) , -- Indicator used to restrict virtual warehouses from receiving stock during an inbound type transaction (ex. positive SOH inventory adjustment, PO over-receipt) when stock needs to be prorated across virtual warehouses within a physical warehouse because a virtual warehouse in the physical warehouse has not been identified for the transaction. The indicator will restrict the virtual warehouse from receiving stock unless all the valid virtual warehouses determined by the system are restricted, then the stock will be distributed across those restricted virtual warehouses. This indicator will only be used in a multi-channel environment. It is always set to No in a single channel environment.

protected_ind VARCHAR2(1), -- Indicator used to determine if the virtual warehouse is affected last in transactions where inventory is removed or affected first in short-shipment type transactions where inventory is being added. The indicator will be used in any outbound or inventory removal type transactions (ex. RTVs, negative SOH inventory adjustments, etc.) when the system has to distribute the transaction quantity across virtual warehouses within a physical warehouse either because a virtual warehouse has not been specified or couldnt be derived or if a virtual warehouse doesnt have enough stock to cover the transaction quantity and stock needs to be pulled from other virtual warehouse within the physical warehouse. The indicator will also be used for inbound type transactions where there is some sort of short-shipment ex. a short-shipment for a PO). The indicator will determine which virtual warehouses will have their order quantity fulfilled first with the receipt quantity. Note that this indicator does not guarantee that stock will not be pulled from the virtual warehouse, it is only used to ensure that the virtual warehouse is affected last. This indicator will only be used in a multi-channel environment. It is always set to No in a single channel environment.

forecast_wh_ind VARCHAR2(1) , -- This indicator determines if a warehouse is forecastable. The intent of this indicator is to restrict the information being sent to RDF against which to generate forecasts.

rounding_seq NUMBER(10,0), -- This column determines which virtual warehouses within a physical warehouse should be rounded together as well as determining which virtual warehouse receives the additional stock or decreased stock due to rounding. This value will be a virtual warehouse number. All warehouses will the same rounding seq number will be rounded together with the warehouse that equals the rounding seq receiving any extra stock.

repl_ind VARCHAR2(1) , -- This indicator determines if a warehouse is replenishable.

repl_wh_link NUMBER(10,0),-- This field holds the replenishable warehouse that is linked to this virtual warehouse. This link implies that the virtual warehouse is included in the net inventory calculations for the replenishable warehouse.

repl_src_ord NUMBER(1,0), -- This field contains the order from which the inventory is sourced from the linked warehouses.

ib_ind VARCHAR2(1) ,-- This field indicates if the warehouse is an investment buy warehouse.

```

    ib_wh_link          NUMBER(10,0), -- This field contains the investment
buy warehouse that is linked to the virtual warehouse. This link implies that the
virtual warehouse is included in the net inventory calculations for the investment
buy warehouse.
    auto_ib_clear        VARCHAR2(1) ,-- This indicator determines if the
investment buys inventory should be automatically transferred to the turn
(replenishable) warehouse when an order is received by the turn warehouse.
    duns_number          VARCHAR2(9),-- This field holds the Dun and Bradstreet
number to identify the warehouse
    duns_loc             VARCHAR2(4), -- This field holds the Dun and
Bradstreet number to identify the location
    tsf_entity_id        NUMBER(10,0), -- ID of the transfer entity with which
this warehouse is associated. Valid values are found on the TSF_ENTITY table. A
transfer entity is a group of locations that share legal requirements around
product management.
    finisher_ind         VARCHAR2(1),-- Yes/No value which indicates if this
virtual warehouse is an internal finisher.
    inbound_handling_days NUMBER(2,0) , -- Warehouse inbound handling days are
defined as the number of days that the warehouse requires to receive any item and
get it to the shelf so that it is ready to pick.
    org_unit_id          NUMBER(15,0), -- this column will hold the oracle
organizational unit id value.
    vwh_type             VARCHAR2(6), -- This attribute will be included in the
location downloads to AIP.
    org_entity_type       VARCHAR2(1), -- This is the new column that will
specify if the warehouse is a legal entity (Importer, Exporter) or a regular
warehouse. Valid values are: R - regular warehouse (including finisher); M -
importer; X - exporter. Default value is R.
    rxmdi_control        VARCHAR2(20), -- This column indicates the status of
the current row data. Possible values are 'N'- New, 'P' - In Process, 'E' - Error,
S - Success, I- Ignored.
    last_update          TIMESTAMP, -- This column contains the timestamp of
when the data in the row has been updated.
    CONSTRAINT rxmdi_wh_p PRIMARY KEY (wh_id)
);

```

rxmdi_wh_addr

```

CREATE TABLE rxmdi_wh_addr (
    wh_id          NUMBER(10,0)          NOT NULL DEFERRABLE INITIALLY
DEFERRED,-- Contains the unique ID of the wh. Data will always be present in this
field.
    addr           NUMBER(11)            NOT NULL, -- This column contains a
unique number used to distinguish between different addresses.
    addr_type      VARCHAR2(2)           NOT NULL, -- Contains the code used to
identify the address type. Common examples include 01 (Business), 02 (Postal), 03
(Returns), 04 (Order), 05 (Invoice) and 06 (Remittance). Data will always be
present in this field.
    addr_type_desc VARCHAR2(20),-- Contains the code used to identify the
address type. Common Common examples include Business, Postal, Returns, Order,
Invoice and Remittance. Description data is only sent in the primary integration
language of the system.
    primary_addr_ind VARCHAR2(1)          NOT NULL, -- Indicates whether the
address is the primary address for the address type. Valid values are Y and N.
    add_1          VARCHAR2(240)         NOT NULL,-- Contains the first line of
the address. This information is required.
    add_2          VARCHAR2(240),-- This column contains the second line of
the address.
    add_3          VARCHAR2(240), -- This column contains the third line of
the address.
    city           VARCHAR2(120)         NOT NULL, -- Contains the name of the
city that is associated with the address. This information is required.

```

```

        county          VARCHAR2(250),-- This column holds the county name for the
location.
        state           VARCHAR2(3),-- This column contains the state abbreviation
for the address.
        country         VARCHAR2(3)          NOT NULL,-- Contains the ISO 3166-1
country code associated with the address. This information is required.
        post_code       VARCHAR2(30), -- This column contains the zip code for the
address.
        jurisdiction_code VARCHAR2(10), -- Identifies the jurisdiction code for the
country-state relationship.
        contact_name     VARCHAR2(120),-- This column contains the name of the
contact for the supplier at this address.
        contact_phone    VARCHAR2(20), -- This column contains the phone number of the
contact person at this address.
        contact_fax      VARCHAR2(20),-- This column contains the fax number of the
contact person at this address.
        contact_email    VARCHAR2(100),-- This column contains the email address of
the partner or suppliers representative contact.
        rxmdi_control    VARCHAR2(20), -- This column indicates the status of the
current row data. Possible values are 'N'- New, 'P' - In Process, 'E' - Error, S -
Success, I- Ignored.
        last_update      TIMESTAMP, -- This column contains the timestamp of when
the data in the row has been updated.
        CONSTRAINT rxmdi_wh_addr_p PRIMARY KEY (wh_id, addr)DEFERRABLE INITIALLY
DEFERRED
);

```

rxmdi_diff

```

CREATE TABLE rxmdi_diff(
        diff_id          VARCHAR2(10)          NOT NULL, -- Contains the unique ID of
the diff. Data will always be present in this field.
        diff_desc        VARCHAR2(120)          NOT NULL,-- Contains the type code for
the diff. All diffs belong to one and only one type.
        diff_type        VARCHAR2(6)           NOT NULL, -- This field will hold a
value of the types of differentiators contained in this differentiator group,such
as S -size, C -color, F -flavor, E -scent, P -pattern. Valid values are stored in
the DIFF_TYPE table.
        diff_type_desc   VARCHAR2(120)          NULL, -- Contains the description of
the diff. Data will always exist in this field.
        industry_code    VARCHAR2(10)          NULL,-- Optionally can hold the unique
code used by industry standards to identify the differentiator. For example, in
the US, the National Retail Federation defines a standard Color and Size Codes
that gives retailers, vendors and manufacturers a common language for product
color and size identification for EDI purposes. For example, mens pants size
combination 32x32 has a NRF code number 10492.
        industry_subgroup VARCHAR2(10)          NULL,-- Optionally can hold a sub-
grouping code used by industry standards to further identify the differentiator.
For example, in the US, the National uses a subgroup for colors (e.g. purple is
defined as 500; dark purple represents a range from 501 - 509, medium purple
represents a range from 510 - 519, bright purple represents a range from 520 -
529, etc.).
        rxmdi_control    VARCHAR2(20)          NULL,-- Controller/Flag for RXMDI to
determine state of record
        last_update      TIMESTAMP              NULL,--Timestamp of when the row is
updated
        CONSTRAINT rxmdi_diff_p PRIMARY KEY(diff_id)
);

```

rxmdi_diff_grp

```

CREATE TABLE rxmdi_diff_grp (

```



```

diff_group_id          VARCHAR2(10)          NOT NULL,-- This field will hold a
unique number id for the differentiator group. Data will always be present in
this field.
diff_group_desc        VARCHAR2(120)          NOT NULL, -- Description of the
differentiator group (for example: Mens Shirt Sizes, Womens Shoe Sizes, Girls
Dress Sizes, Shower Gel Scents, Yogurt Flavors, etc.). Description data is only
sent in the primary integration language of the system.
diff_type_id           VARCHAR2(6)           NOT NULL,-- This field will hold a
value of the types of differentiators contained in this differentiator group,
including but not limited to: S (size), C (color), F (flavor), E (scent), P
(pattern).
diff_type_desc         VARCHAR2(120)          NULL, -- Contains the description
of the differentiator type. For Example: Size, Color, Flavor, Scent, Pattern.
Description data is only sent in the primary integration language of the system.
rxmdi_control          VARCHAR2(20)           NULL,-- Controller/Flag for RXMDI to
determine state of record
last_update            TIMESTAMP              NULL,--Timestamp of when the row is
updated
CONSTRAINT diff_grp_p PRIMARY KEY(diff_group_id)
);

```

rxmdi_diff_grp_dtl

```

CREATE TABLE rxmdi_diff_grp_dtl(
diff_group_id          VARCHAR2(10)          NOT NULL,-- This field will hold a
unique id for the differentiator group. Data will always be present in this
field.
diff_id                VARCHAR2(10)          NOT NULL,-- This field will hold a
unique id for the diff that is a member of this diff group. Data will always be
present in this field.
rxmdi_control          VARCHAR2(20)           NULL,-- Controller/Flag for RXMDI
to determine state of record
last_update            TIMESTAMP              NULL,--Timestamp of when the row is
updated
CONSTRAINT pk_diff_grp_dtl PRIMARY KEY(diff_group_id,diff_id)
);

```

rxmdi_item_hdr

```

CREATE TABLE rxmdi_item_hdr(
item                   VARCHAR2(25)          NOT NULL,
item_parent            VARCHAR2(25)          NULL,
item_grandparent       VARCHAR2(25)          NULL,
pack_ind               VARCHAR2(1)           NULL,
simple_pack_ind         VARCHAR2(1)           NULL,
item_level             NUMBER(1,0)           NULL,
tran_level             NUMBER(1,0)           NULL,
inventory_ind          VARCHAR2(1)           NULL,
diff_1_level           VARCHAR2(6)           NULL,
diff_1_type            VARCHAR2(6)           NULL,
diff_1                 VARCHAR2(10)          NULL,
diff_2_level           VARCHAR2(6)           NULL,
diff_2_type            VARCHAR2(6)           NULL,
diff_2                 VARCHAR2(10)          NULL,
diff_3_level           VARCHAR2(6)           NULL,
diff_3_type            VARCHAR2(6)           NULL,
diff_3                 VARCHAR2(10)          NULL,
diff_4_level           VARCHAR2(6)           NULL,
diff_4_type            VARCHAR2(6)           NULL,
diff_4                 VARCHAR2(10)          NULL,
dept                   NUMBER(4,0)           NULL,
unique_class           NUMBER(10,0)          NULL,
class                  NUMBER(4,0)           NULL,
unique_subclass        NUMBER(10,0)          NULL,

```

```

        subclass                NUMBER(4,0)          NULL,
        status                   VARCHAR2(1)          NULL,
        description               VARCHAR2(250),
        secondary_item_desc       VARCHAR2(250),
        short_desc                VARCHAR2(120),
        brand_name                VARCHAR2(30),
        merchandise_ind           VARCHAR2(1),
        primary_ref_item_ind       VARCHAR2(1),
        cost_zone_group_id        NUMBER(4,0),
        standard_uom              VARCHAR2(4),
        uom_conv_factor            NUMBER(20,4),
        package_size              NUMBER(12,4),
        package_uom               VARCHAR2(4),
        store_order_multiple      VARCHAR2(1),
forecast_ind                     VARCHAR2(1),
        currency_code             VARCHAR2(3),
        original_unit_retail       NUMBER(20,4),
        mfg_rec_retail             NUMBER(20,4),
        retail_label_type          VARCHAR2(6),
        retail_label_value         NUMBER(20,4),
        item_aggregate_ind         VARCHAR2(1),
        diff_1_aggregate_ind       VARCHAR2(1),
        diff_2_aggregate_ind       VARCHAR2(1),
        diff_3_aggregate_ind       VARCHAR2(1),
        diff_4_aggregate_ind       VARCHAR2(1),
        item_number_type           VARCHAR2(6) NOT NULL,
        format_id                 VARCHAR2(6),
        prefix                     NUMBER(2,0),
        rec_handling_temp          VARCHAR2(6),
        rec_handling_sens          VARCHAR2(6),
        perishable_ind             VARCHAR2(1),
        waste_type                 VARCHAR2(6),
        waste_pct                  VARCHAR2(6),
        default_waste_pct          NUMBER(12,4),
        constant_dim_ind           VARCHAR2(1),
        contains_inner_ind         VARCHAR2(1),
        sellable_ind               VARCHAR2(1),
        orderable_ind              VARCHAR2(1),
        pack_type                  VARCHAR2(1),
        order_as_type              VARCHAR2(1),
        item_service_level         VARCHAR2(6),
        gift_wrap_ind              VARCHAR2(1),
        ship_alone_ind             VARCHAR2(1),
        item_form_ind              VARCHAR2(1),
        catch_weight_ind           VARCHAR2(1),
        catch_weight_type          VARCHAR2(1),
        catch_weight_order_type    VARCHAR2(6),
        catch_weight_sale_type     VARCHAR2(6),
        catch_weight_uom           VARCHAR2(4),
        deposit_item_type          VARCHAR2(6),
        container_item             VARCHAR2(25),
        deposit_in_price_per_uom   VARCHAR2(6),
        soh_inquiry_at_pack_ind    VARCHAR2(1),
        notional_pack_ind          VARCHAR2(1),
        comments                   VARCHAR2(2000),
        rxmdi_control              VARCHAR2(20),
        last_update                TIMESTAMP,
        CONSTRAINT rxmdi_item_hdr_p PRIMARY KEY (item)
);

```

rxmdi_item_image

```
CREATE TABLE rxmdi_item_image (
```

```

        item                VARCHAR2(25)                NOT NULL,-- This field contains the
unique alphanumeric identifier for the item, the image is for.
        image_name          VARCHAR2(120)                NOT NULL,-- This field contains the name
of the image of the item.
        image_addr          VARCHAR2(255)                NOT NULL, -- This field contains the
actual path where the file of the image of the item is stored.
        image_desc          VARCHAR2(40)                 NULL,-- This field contains the
description associated with the image of the item.
        image_type          VARCHAR2(6)                 NULL, -- This field contains the type of
the image of the item. Valid values are defined as member of IITD code type.
        primary_ind         VARCHAR2(1)                 NULL, -- This field will indicate
whether this record is the primary image of the item or not. Valid values are
Y(es) and N(o) only.Default to N value if left blank or set as NULL.
        display_priority    NUMBER(4,0)                 NULL, -- This field will specify the display
sequence order of images associated to the item per priority.
        rxmdi_control       VARCHAR2(20)                NULL,
        last_update        TIMESTAMP                    NULL,
        CONSTRAINT rxmdi_item_image_p PRIMARY KEY (item,image_name)
);

```

rxmdi_item_loc

```

CREATE TABLE RXMDI_ITEM_LOC (
    loc_type                VARCHAR2(1)                NOT NULL, -- Describes the
type of location. Valid values include S (store), W (warehouse) and E (external
finisher). Data will always be present in this field.
    location                NUMBER(10,0)                NOT NULL, -- Numeric ID of
location. The intersection of location and item is a distinct entity. Data will
always be present in this field.
    item                    VARCHAR2(25)                NOT NULL, -- ID of item.
The intersection of location and item is a distinct entity. Data will always be
present in this field.
    item_parent             VARCHAR2(25), -- ID identifies the item/group at
the level above the item. This value must exist as an item in another row on the
item_master table.
    item_grandparent        VARCHAR2(25), -- identifies the item/group two
levels above the item. This value must exist as both an item and an item parent in
another row on the item_master table.
    currency_code           VARCHAR2(3), -- This field contains the currency
code under which the store/wh operates.
    initial_unit_retail     NUMBER(20,4), -- Contains the unit retail price in
the standard unit of measure for the item/location combination. This field is
stored in the local currency.
    selling_unit_retail     NUMBER(20,4), -- Contains the unit retail price in
the selling unit of measure for the item/location combination. This field is
stored in the local currency.
    selling_uom             VARCHAR2(4), -- Contains the selling unit of
measure for an items single-unit retail.
    taxable_ind             VARCHAR2(1), -- Indicates if item is taxable at
the store.
    local_item_desc         VARCHAR2(250)                NOT NULL, -- Contains the
local description of the item. This may be the same as the primary description of
the item, a regional description of the item (e.g. jimmies vs sprinkles in the US
or roll vs bap vs cob vs bun in the UK), or a value in a local language (e.g.
Overlay dress true black knit at US stores vs Lagenkleid - Strick, tiefschwarz at
stores in Germany). The intent is that this string is appropriate to print
description on signage/receipts at this location.
    local_short_desc        VARCHAR2(120), -- Contains the local short
description of the item.
    ti                      NUMBER(12,4), -- Number of shipping units (cases)
that make up one tier of a pallet.
    hi                      NUMBER(12,4), -- Number of tiers that make up a
complete pallet (height).

```

store_order_multiple	VARCHAR2(1),	-- This column contains the multiple in which the item needs to be shipped from a warehouse to the location.
status	VARCHAR2(1),	-- Current status of item at the store.
daily_waste_pct	NUMBER(12,4),	-- Average percentage lost from inventory on a daily basis due to natural wastage.
measure_of_each	NUMBER(12,4),	-- Size of an each in terms of the uom_of_price. For example 12 oz. Used in ticketing.
measure_of_price	NUMBER(12,4),	-- Size to be used on the ticket in terms of the uom_of_price.
uom_of_price	VARCHAR2(4),	-- Unit of measure that will be used on the ticket for this item.
primary_variant	VARCHAR2(25),	-- This field is used to address sales of PLUs (i.e. above transaction level items) when inventory is tracked at a lower level (i.e. UPC). This field will only contain a value for items one level higher than the transaction level.
primary_cost_pack	VARCHAR2(25),	-- This field contains an item number that is a simple pack containing the item in the item column for this record.
primary_supplier	NUMBER(10,0),	-- Numeric identifier of the supplier who will be considered the primary supplier for the specified item/loc.
primary_origin_country	VARCHAR2(3),	-- Contains the identifier of the origin country which will be considered the primary country for the specified item/location.
receive_as_type	VARCHAR2(2),	-- This column determines whether the stock on hand for a pack component item or the buyer pack itself will be updated when a buyer pack is received at a warehouse.
inbound_handling_days	NUMBER(2,0),	-- This field indicates the number of inbound handling days for an item at a warehouse type location.
source_method	VARCHAR2(1),	-- This value will be used to specify how the adhoc PO/TSF creation process should source the item/location request.
source_wh	NUMBER(10,0),	-- This value will be used by the ad-hoc PO/Transfer creation process to determine which warehouse to fill the stores request from.
uin_type	VARCHAR2(6),	-- This column will contain the unique identification number (UIN) used to identify the instances of the item at the location.
uin_label	VARCHAR2(6),	-- This column will contain the label for the UIN when displayed in SIM.
capture_time_in_proc	VARCHAR2(6),	-- This column will indicate when the UIN should be captured for an item during transaction processing.
ext_uin_ind	VARCHAR2(1),	-- EXT_UIN_IND This Yes/No indicator indicates if UIN is being generated in the external system.
intentionally_range_ind	VARCHAR2(1),	-- This column determines if the location is ranged intentionally by the user for replenishment/selling or incidentally ranged by the RMS programs when item is not ranged to a specific location on the transaction.
costing_location	NUMBER(10,0),	-- Numeric identifier of the costing location for the franchise store. This field may contain a store or a warehouse.
costing_loc_type	VARCHAR2(1),	-- This field holds the type of costing location in the costing location field.
launch_date	TIMESTAMP,	-- Holds the date that they item should first be sold at the location.
qty_key_options	VARCHAR2(6),	-- Determines whether the qty key on a POS should be used for this item at the location.
manual_price_entry	VARCHAR2(6),	-- Determines whether the price can/should be entered manually on a POS for this item at the location.
deposit_code	VARCHAR2(6),	-- Indicates whether a deposit is associated with this item at the location.
food_stamp_ind	VARCHAR2(1),	-- Indicates whether the item is approved for food stamps at the location. This value will be downloaded to the POS.

```

    wic_ind                VARCHAR2(1), -- Indicates whether the item is
approved for WIC at the location. This value will be downloaded to the POS.
    proportional_tare_pct   NUMBER(12,4), -- Holds the value associated of the
packaging in items sold by weight at the location.
    fixed_tare_value        NUMBER(12,4), -- Holds the value associated of the
packaging in items sold by weight at the location.
    fixed_tare_uom          VARCHAR2(4), -- Holds the unit of measure value
associated with the tare value. The only processing RMS does involving the fixed
tare value and UOM is downloading it to the POS.
    reward_eligible_ind     VARCHAR2(1), -- Holds whether the item is legally
valid for various types of bonus point/award programs at the location.
    natl_brand_comp_item    VARCHAR2(25), -- Holds the nationally branded item
to which you would like to compare the current item.
    return_policy           VARCHAR2(6), -- Holds the return policy for the item
at the location. Valid values for this field belong to the code_type RETP.
    stop_sale_ind           VARCHAR2(1), -- Indicates that sale of the item
should be stopped immediately at the location (i.e. in case of recall etc).
    elect_mtk_club          VARCHAR2(6), -- Holds the code that represents the
marketing clubs to which the item belongs at the location.
    report_code             VARCHAR2(6), -- Code to determine which reports
the location should run.
    req_shelf_life_on_selection NUMBER(4,0), -- Holds the required shelf life for
an item on receipt in days.
    ib_shelf_life           NUMBER(4,0), -- This column will hold the
Investment Buyspecific shelf life for the item/location
    store_orderable_ind     VARCHAR2(1), -- STORE_REORDERABLE_IND Indicates
whether the store may re-order the item. This field is required to be either= Y -
yes or N - no. The field will default to N. No RMS processing is based on the
value in this field.
    rack_size               VARCHAR2(6), -- Indicates the rack size that
should be used for the item. This field is not required. Valid values for the
field can be found and defined in the code_type RACK.
    full_pallet_item        VARCHAR2(1), -- Indicates whether a store must
reorder an item in full pallets only.
    in_store_market_basket  VARCHAR2(6), -- Holds the in store market basket
code for this item/location combination. Valid values for the field can be found
in the code_type STMB.
    storage_location        VARCHAR2(7), -- Holds the current storage location
or bin number for the item at the location. No RMS processing is based on the
value in this field.
    alt_storage_location     VARCHAR2(7), -- Holds the preferred alternate
storage location or bin number for the item at the location.
    returnable_ind          VARCHAR2(1), -- This field will contain a value of
Yes when the item can be returned to the location
    refundable_ind          VARCHAR2(1), -- This field will contain a value of
Yes when the item is refundable at the location.
    backorder_ind           VARCHAR2(1), -- This field will contain a value of
Yes when the item can be back ordered to the location
    merchandise_ind         VARCHAR2(1), -- Indicates if the item is a
merchandise item (Y, N).
    rxmdi_control           VARCHAR2(20),
    last_update             TIMESTAMP,
    CONSTRAINT rxmdi_item_loc_p PRIMARY KEY (item, location)
);

```

rxmdi_merch_hier

```

CREATE TABLE rxmdi_merch_hier(
    hierarchy_level          VARCHAR2(10)                NOT NULL, -- This
information identifies the level of the merchandise hierarchy that is described by
this record. Value is always DIVISION, GROUP, DEPT, CLASS, SUBCLASS. This field
can not be null.

```

```

    hierarchy_id          VARCHAR2(20)          NOT NULL, --Prefix plus
Id. Example for department 3 hierarchyId will be d3 . For department 1 and class 2
hierarchyId will be d1c2
    hierarchy_node_id     NUMBER(10,0)          NULL, -- This
information identifies the the node of the merchandise hierarchy that is described
by this record. This field can not be null. HierarchyNodeId is only unique within
an HierarchyLevel (meaning it is possible, for example, that there is both a
DIVISION 1 and a GROUP 1 in the full merchandise hierarchy).
    hierarchy_node_name   VARCHAR2(150)         NULL, -- Name of the
merchandise hierarchy entity. Description data is only sent in the primary
integration language of the system.
    parent_level          VARCHAR2(10)          NOT NULL, -- Level of
the merchandise hierarchy above the current node. Both ParentLevel and ParentId
are should be evaluated to correctly traverse the hierarchy
    parent_node_id        NUMBER(10,0)          NULL, -- Id of the
level of the merchandise hierarchy above the current node. Both ParentLevel and
ParentNodeId are should be evaluated to correctly traverse the hierarchy.
    grandparent_merch_display_id  VARCHAR2(20)    NULL, -- Only
populated for SUBCLASS entities. For subclasses, this column will hold the
department ID used for display purposes in RMS (department is the grandparent of
subclass). Note that in RMS, dept, class and subclass display IDs are combined to
form a composite unique key. Every department can have a class 1. Every class in
Department 1000 can have a subclass 1. Looking only at the display ids, all three
values are required for uniqueness. Node that for subclasses, the HierarchyNodeId
is unique. It is a non-displayed, unique value that emilinate the need for a
composite key.
    parent_merch_display_id  VARCHAR2(20)        NULL, -- Only
populated for CLASS and SUBCLASS entities. For classes, this column holds the
department ID used for display purposes in RMS (department is the parent of class)
For subclasses, this column holds the class ID used for display. Note that in
RMS, dept, class and subclass display IDs are combined to form a composite unique
key. Every department can have a class 1. Every class in Department 1000 can
have a subclass 1. Looking only at the display ids, all three values are required
for uniqueness. Node that for subclasses and classes, the HierarchyNodeId is
unique. It is a non-displayed, unique value that emilinate the need for a
composite key.
    merch_display_id       VARCHAR2(20)          NOT NULL, -- Only
populated for DEPARTMENT, CLASS and SUBCLASS entities. For departments, this
column holds the department display id. For subclasses, this column holds the
subclass display id. Note that in RMS, dept, class and subclass display IDs are
combined to form a composite unique key. Every department can have a class 1.
Every class in Department 1000 can have a subclass 1. Looking only at the display
ids, all three values are required for uniqueness.
    purchase_type          NUMBER(1)             NULL, -- Contains a
code which indicates whether items in this department are normal merchandise,
consignment stock or concession items. Valid values are: 0 = Normal Merchandise, 1
= Consignment Stock, 2 = Concession Items
    rxmdi_control          VARCHAR2(20)          NULL,
    last_update            TIMESTAMP             NULL,
    CONSTRAINT rxmdi_merch_hier_p PRIMARY KEY (hierarchy_level, hierarchy_id)
);

```

rxmdi_rltd_itm

```

CREATE TABLE rxmdi_rltd_itm (
    relationship_id        NUMBER(20,0)          NOT NULL, -- Unique
identifier for each relationship header. Data will always exist in this field.
    item                  VARCHAR2(25)          NOT NULL, -- Item for
which the relationships are defined. Data will always exist in this field.
    relationship_name      VARCHAR2(255)         NOT NULL, -- Description
of the relationship. Data will always exist in this field.

```

```

relationship_type          VARCHAR2(6)          NOT NULL, -- Describes the
type of relationship.Valid values include: CRSL (Cross Sell), SUBS (Substitution),
UPSL (Up-sell).
mandatory_ind              VARCHAR2(1)          NOT NULL, -- This field
indicates whether the relationship should be mandatory. For example, an item like
a laptop may have a mandatory cross sell relationship. The related items could be
different power cords for the US, UK, Mainland Europe, India, etc. When the laptop
is sold, it should be mandatory that one of the related power cords also be
selected. Generally, only cross sell relationships are mandatory. Substitution
and upsell relationships can be defined as mandatory, but in those cases, the
definition of mandatory is at the discretion of the client and generally means
that substitution or upsell must, as business process, be offered to consumers.
rxmdi_control              VARCHAR2(20),
last_update                TIMESTAMP,
CONSTRAINT rxmdi_rltd_itm_p PRIMARY KEY (relationship_id)
);

```

rxmdi_rltd_itm_dtl

```

CREATE TABLE rxmdi_rltd_itm_dtl (
relationship_id            NUMBER(20,0)          NOT NULL DEFERRABLE
INITIALLY DEFERRED, -- Unique identifier for each relationship header. Data will
always exist in this field.
related_item              VARCHAR2(25)          NOT NULL, -- Item id
of the related item. This is the item that should be Cross Sold, Substituted, or
Up Sold when the item on the parent record is sold.
priority                 NUMBER(4,0), -- Applicable only in case of
relationship type SUBS. In case of multiple related substitute items, this column
could be used (optional) to define relative priority.
start_date               TIMESTAMP, -- From this date related item can
be used on transactions.
end_date                 TIMESTAMP, -- Till this date related item can
be used on transactions. A value of null means that it is effective forever.
rxmdi_control            VARCHAR2(20),
last_update              TIMESTAMP,
CONSTRAINT rxmdi_rltd_itm_dtl_p PRIMARY KEY (relationship_id,
related_item) DEFERRABLE INITIALLY DEFERRED
);

```

RIB XSD to RXMDI Staging Scheme Mapping

In the following tables, RIB XSD is in the left column and the RXMDI Staging schema is in the right column.

StoreDesc	rxmdi_store
store	store_id
store_type	store_type
store_name	store_name
store_name10	store_name_10
store_name3	store_name_abbr
store_class	store_class_id
store_mgr_name	manager
store_open_date	open_date
store_close_date	close_date
acquired_date	acquire_date

StoreDesc	rxmdi_store
fax_number	fax_number
email	email
total_square_ft	total_sq_feet
selling_square_ft	selling_sq_feet
linear_distance	linear_distance
stockholding_ind	stock_holding_ind
channel_id	channel_id
store_format	store_format_id
mall_name	mall_name
district	district
transfer_zone	transfer_zone
description	transfer_zone_desc
default_wh	default_Wh
stop_order_days	stop_order_days
start_order_days	start_order_days
currency_code	currency_code
lang	store_lang_iso_code
duns_number	duns_number
org_unit_id	org_unit_id
timezone_name	timezone
	rxmdi_control
	last_update

AddrDesc	rxmdi_store_addr
addr	addr
addr_type	addr_type
primary_addr_ind	primary_addr_ind
add_1	add_1
add_2	add_2
add_3	add_3
city_id	city
country_id	county
state_name	state
country_name	country

AddrDesc	rxmdi_store_addr
post	post_code
jurisdiction_code	jurisdiction_code
contact_name	contact_name
contact_phone	contact_phone
contact_fax	contact_fax
contact_email	contact_email
	rxmdi_control
	last_update

WhDesc	rxmdi_wh
wh	wh_id
wh_name	wh_name
email	email
currency_code	currency_code
physical_wh	physical_wh
channel_id	channel_id
stockholding_ind	stockholding_ind
break_pack_ind	break_pack_ind
redist_wh_ind	redist_wh_ind
delivery_policy	delivery_policy
duns_number	duns_number
duns_loc	duns_loc
org_unit_id	org_unit_id
	rxmdi_control
	last_update

AddrDesc	rxmdi_wh_addr
addr	addr
addr_type	addr_type
primary_addr_ind	primary_addr_ind
add_1	add_1
add_2	add_2
add_3	add_3

AddrDesc	rxmdi_wh_addr
city_id	city
country_id	country
state_name	state
country_name	country
post	post_code
jurisdiction_code	jurisdiction_code
contact_name	contact_name
contact_phone	contact_phone
contact_fax	contact_fax
contact_email	contact_email
	rxmdi_control
	last_update

ItemHdrDesc	rxmdi_item_hdr
item	item
item_parent	item_parent
item_grandparent	item_grandparent
pack_ind	pack_ind
simple_pack_ind	simple_pack_ind
item_level	item_level
tran_level	tran_level
inventory_ind	inventory_ind
diff_1	diff_1
diff_1_type	diff_1_type
diff_2	diff_2
diff_2_type	diff_2_type
diff_3	diff_3
diff_3_type	diff_3_type
diff_4	diff_4
diff_4_type	diff_4_type
dept	dept
class	Class
subclass	subclass
status	status

ItemHdrDesc	rxmdi_item_hdr
item_desc	description
short_desc	short_desc
brand	brand_name
merchandise_ind	merchandise_ind
primary_ref_item_ind	primary_ref_item_ind
cost_zone_group_id	cost_zone_group_id
standard_uom	standard_uom
uom_conv_factor	uom_conv_factor
package_size	package_size
package_uom	package_uom
store_ord_mult	store_order_multiple
forecast_ind	forecast_ind
mfg_rec_retail	mfg_rec_retail
retail_label_type	retail_label_type
retail_label_value	retail_label_value
item_number_type	item_number_type
format_id	format_id
prefix	prefix
handling_temp	rec_handling_temp
handling_sensitivity	rec_handling_sens
perishable_ind	perishable_ind
waste_type	waste_type
waste_pct	waste_pct
default_waste_pct	default_waste_pct
const_dimen_ind	constant_dim_ind
contains_inner_ind	contains_inner_ind
sellable_ind	sellable_ind
orderable_ind	orderable_ind
pack_type	pack_type
order_as_type	order_as_type
item_service_level	item_service_level
gift_wrap_ind	gift_wrap_ind
ship_alone_ind	ship_alone_ind
item_xform_ind	item_form_ind

ItemHdrDesc	rxmdi_item_hdr
catch_weight_ind	catch_weight_ind
deposit_item_type	deposit_item_type
container_item	container_item
deposit_in_price_per_uom	deposit_in_price_per_uom
soh_inquiry_at_pack_ind	soh_inquiry_at_pack_ind
notional_pack_ind	notional_pack_ind
comments	comments
Not available	rxmdi_control
Not available	last_update

ItemLocDesc	rxmdi_item_loc
loc_type	loc_type
loc	location
item	item
	item_parent
	item_grandparent
	currency_code
unit_retail	initial_unit_retail
selling_unit_retail	selling_unit_retail
selling_uom	selling_uom
taxable_ind	taxable_ind
local_item_desc	local_item_desc
local_short_desc	local_short_desc
	ti
	hi
	store_order_multiple
status	status
	daily_waste_pct
	measure_of_each
	measure_of_price
	uom_of_price
	primary_variant
	primary_cost_pack
primary_supp	primary_supplier

ItemLocDesc	rxmdi_item_loc
primary_cntry	primary_origin_country
receive_as_type	receive_as_type
	inbound_handling_days
source_method	source_method
source_wh	source_wh
uin_type	uin_type
uin_label	uin_label
capture_time	capture_time_in_proc
ext_uin_ind	ext_uin_ind
ranged_ind	intentionally_range_ind
	costing_location
	costing_loc_type
	launch_date
	qty_key_options
	manual_price_entry
	deposit_code
	food_stamp_ind
	wic_ind
	proportional_tare_pct
	fixed_tare_value
	fixed_tare_uom
	reward_eligible_ind
	natl_brand_comp_item
	return_policy
	stop_sale_ind
	elect_mtk_club
	report_code
	req_shelf_life_on_selection
	ib_shelf_life
	store_orderable_ind
	rack_size
	full_pallet_item
	in_store_market_basket
	storage_location

ItemLocDesc	rxmdi_item_loc
	alt_storage_location
returnable_ind	returnable_ind
	refundable_ind
	backorder_ind
	merchandise_ind
	rxmdi_control
	last_update

ItemImageDesc	rxmdi_item_image
item	item
image_name	image_name
image_addr	image_addr
	image_desc
image_type	image_type
primary_ind	primary_ind
display_priority	display_priority
	rxmdi_control
	last_update

DiffDesc	rxmdi_diff
diff_id	diff_id
diff_desc	diff_desc
diff_type	diff_type
	diff_type_desc
industry_code	industry_code
industry_subcode	industry_subgroup
	rxmdi_control
	last_update

DiffGrpHdrDesc	rxmdi_diff_grp
diff_group_id	diff_group_id
diff_group_desc	diff_group_desc
diff_group_type	diff_type_id

DiffGrpHdrDesc	rxmdi_diff_grp
	diff_type_desc
	rxmdi_control
	last_update

DiffGrpDtlDesc	rxmdi_diff_grp_dtl
diff_group_id	diff_group_id
diff_id	diff_id
	rxmdi_control
	last_update

RelatedItemDesc	rxmdi_rltd_itm
relationship_id	relationship_id
item	item
relationship_name	relationship_name
relationship_type	relationship_type
mandatory_ind	mandatory_ind
	rxmdi_control
	last_update

RelatedItemDtl	rxmdi_rltd_itm_dtl
related_item	related_item
priority	priority
effective_date	start_date
end_date	end_date
	rxmdi_control
	last_update

department:MrchHrDeptDesc class:MrchHrClsDesc subclass:MrchHrScIsDesc	rxmdi_merch_hier
For department: DEPARTMENT For class: CLASS For subclass: SUBCLASS	hierarchy_level
Field introduced by RXM for creating primary key. It is a unique identifier comprising all three display IDs plus prepended prefix. Example: For department 3: d3 For department 3, class 1: d3c1 For department 3, class 1 & subclass 4: d3c1s4	hierarchy_id
	hierarchy_node_id
	hierarchy_node_name
For department: GROUP For class: DEPARTMENT For subclass: CLASS	parent_level
	parent_node_id
For subclass: dept (example 123)	grandparent_merch_display_id
For class: dept For subclass: class	parent_merch_display_id
For department: dept For class: class For subclass: subclass	merch_display_id
purchase_type	purchase_type
	rxmdi_control
	last_update

The fields not mapped and left empty are not available in the RIB XSD.

The following two attributes are created in the RXMDI Staging Schema tables for managing the life-cycle of a record:

- rxmdi_control: Controller/Flag
- last_update: Timestamp at which the record was last updated

RXMDI EAR

The RXMDI EAR includes the Incremental binaries containing Camel Processors (JPA) to process and persist incoming RIB Messages. It is included in the RXMDI release package and consists of the following components:

- RIB Application Plugin JAR: This is the entry point for incoming RIB Messages from the RIB-RXM adapter.
- RXMDI WAR: This consists of the web application components like web.xml and applicationContext.xml.

-
- JPA Artifacts: This includes the Entity definition XMLs and are included in the RXMDI WAR.
 - Incremental JAR: This contains all the Camel Processors and other Business Logic required for processing and persisting incoming RIB Messages.

Extensibility

- SQL queries are externalized. The queries can be customized.
- In the Camel Context XML, the existing route can be changed, new routes can be added and processors can be updated.
- Additional Message Families and Message Types can be subscribed to by adding them to injectors.xml, persistence.xml, and web.xml.
- Processors can be customized with different criteria.
 - New Entities can be created to extend already existing Entities.

Java Batch

Overview

Java Batch is used to call the ODI Web Service which invoke ODI Scenarios through the ODI Java EE Agent. The Java EE Agent is installed during the installation and configuration of the ODI. ODI Scenarios are imported during ODI setup.

RXM Batch Job Admin

The screenshot displays the Oracle RXM Batch Job Admin web interface. The top navigation bar includes tabs for 'Batch Summary', 'Manage Batch Jobs', 'Manage Configurations', and 'System Logs'. The main content area is divided into two sections: 'All Jobs Definition' and 'Job Executions'.

All Jobs Definition Table:

Job Name	Family	Job Description	Execution Count	Action
ClearancePrice_FF_XMLJob	ClearancePrice	Clearance Price FF to XML Job	6	Launch View Executions
DefOrg_Fnd_ImporterJob	DefOrg	DefOrg_Fnd Importer Job	0	Launch View Executions
Def_Fnd_ImporterJob	Def	Def_Fnd Importer Job	2	Launch View Executions
InvoiceMh_Tx_ImporterJob	InvoiceMh	InvoiceMh_Tx Importer Job	1	Launch View Executions
InvoiceMh_Tx_StagingRdmJob	InvoiceMh	InvoiceMh_Tx Staging to Rdm Job	0	Launch View Executions
ItemKor_Fnd_ImporterJob	ItemKor	ItemKor_Fnd Importer Job	6	Launch View Executions
ItemKor_Fnd_ImporterJob	ItemKor	ItemKor_Fnd Importer Job	0	Launch View Executions
ItemLoc_Fnd_ImporterJob	ItemLoc	ItemLoc_Fnd Importer Job	4	Launch View Executions
MerchKor_Fnd_ImporterJob	MerchKor	MerchKor_Fnd Importer Job	3	Launch View Executions
MerchKor_Fnd_StagingRdmJob	MerchKor	MerchKor_Fnd Staging to Rdm Job	0	Launch View Executions

Job Executions Table:

Job Name	Instance Id	Execution Id	Job Parameters	Start Time	End Time	Duration	Status
ProductShu_StagingRdmJob	57	57	xmltoxls job-adminresourcebatch			0 Hours 0 Minutes 0 Seconds	COMPLETED
ProductShu_StagingRdmJob	51	51	xmltoxls job-adminresourcebatch			0 Hours 0 Minutes 0 Seconds	COMPLETED
ProductShu_StagingRdmJob	46	46	xmltoxls job-adminresourcebatch	Mon Oct 17 13:17:37	Mon Oct 17 13:17:47	0 Hours 0 Minutes 10 Seconds	COMPLETED

The RXM Batch Job Admin Console is a web-based User Interface (deployed as a WAR) that allows the launching of different kinds of jobs.

The Job Admin Console uses Java Batch. The Java Batch job xmls are used to invoke corresponding ODI scenarios which then transform the data.

The Job Admin Console houses jobs which:

- Transform data from BDI to RXMDI Staging (that is, Importer Jobs).
- Transform data from RXMDI Staging to RXM (these include Direct Load SQL as well as XML file generation).
- Transform Regular and Clearance Price data from flat files to RXM (through Flat file to DB and then XML file generation).
- Transform Promotion data from flat files to RXMDI Staging (through Flat File to DB) followed by Staging to RXM (through Direct Load SQL).

Additional jobs can be added by configuring new Job xmls, including them in the WAR, and then redeploying the WAR. The new Job xmls must have corresponding ODI scenarios which they will invoke.

Job XMLs

The following example shows a typical Job XML is written using Java Batch's Job Specification Language (JSL):

Java Batch Job XML

```
<?xml version="1.0" encoding="UTF-8"?>

<job id="Diff_Fnd_ImporterJob" xmlns="http://xmlns.jcp.org/xml/ns/javaee"
version="1.0" >
  <!-- Set the common properties for ODI Batchlet at the Job level. These
properties
can be overridden by setting a value at the Batchlet level -->
  <properties>
    <property name="description" value="Diff_Fnd Importer Job"/>
  </properties>
  <step id="determineDataset" next="stepDecider1">
    <batchlet ref="oracle.retail.commerce.batch.DatasetBatchlet">
      <properties>
        <property name="sourceSchemaJNDI" value="jdbc/BDIInterface" />
        <property name="stagingSchemaJNDI" value="jdbc/RXMDISTaging" />
        <property name="interfaceModule" value="Diff_Fnd" />
      </properties>
    </batchlet>
  </step>
  <decision id="stepDecider1" ref="oracle.retail.commerce.batch.StepDecider">
    <next on="COMPLETED" to="invokeODIStep"/>
    <stop on="STOPPED" exit-status="STOPPED"/>
    <fail on="FAILED" exit-status="STOPPED"/>
  </decision>
  <step id="invokeODIStep" next="stepDecider2">
    <batchlet ref="oracle.retail.commerce.batch.ODIBatchlet">
      <properties>
        <property name="providerUrl"
value="http://<hostname>:<port>/oraclediagent/OdiInvoke" />
        <property name="odiAgentCredentialKey" value="odiAgent" />
        <property name="workRep" value="WORKREP" />
        <property name="targetName" value="DIFF_BDI_STAGING" />
        <property name="targetVersion" value="001" />
        <property name="targetContext" value="PROD" />
        <property name="scenario" value="true" />
        <property name="projectCode" value="DATAIMPORT" />
      </properties>
    </batchlet>
  </step>
  <decision id="stepDecider2" ref="oracle.retail.commerce.batch.StepDecider">
    <next on="COMPLETED" to="auditStep"/>
    <next on="STOPPED" to="auditStep"/>
    <next on="FAILED" to="auditStep"/>
  </decision>
  <step id="auditStep">
    <batchlet ref="oracle.retail.commerce.batch.AuditBatchlet">
      <properties>
        <property name="stagingSchemaJNDI" value="jdbc/RXMDISTaging" />
      </properties>
    </batchlet>
    <end on="COMPLETED"/>
  </step>
</job>
```

Main Components include:

- Schemas: sourceSchemaJNDI, stagingSchemaJNDI. These must match the data sources set up in the WebLogic domain where ODI is set up and RXMDI is deployed.
- Batchlets: Depending on the Job, different Batchlets may be used in the JSL such as the DatasetBatchlet, ODIBatchlet, and AuditBatchlet.
- Decider: Depending on the complexity of a Job, a Decider is also configured such as the StepDecider.

Configurations include:

- providerURL: The Endpoint for the OdiInvoke Web Service. Typically, this is deployed to a Managed Server secured through HTTPS (TLS).
- odiAgentCredentialKey: The Credential Store Framework (CSF) key for the ODI Agent credentials.
- workRep: The ODI work repository name for the ODI Agent.
- targetName: The name of the ODI Scenario or Load Plan.
- targetVersion: The target version of the ODI Scenario or Load Plan.
- targetContext: The context for executing the ODI Scenario or Load Plan.
- Scenario: The flag for target type. True if ODI Scenario, false if ODI Load Plan.

There is also an odiInvoke.properties where the Endpoint of the ODIInvoke Web Service can be configured. The values in the Job XMLs will override the value in the odiInvoke.properties.

Batchlets and Deciders

Batchlet

A Batchlet is a type of batch step that can be used for any type of background processing.

Decider

A Decider receives control as part of a decision element in a job. It is used to direct execution flow during job processing. It returns an exit status that updates the current job execution's exit status.

RXMDI Job Admin WAR

The RXM Batch Job Admin Console is built using the BdiEdgeAppJobAdminPak16.0.0ForRxm16.0.0 tool. This tool will deploy the war automatically. The BdiEdgeAppJobAdminPak16.0.0ForRxm16.0.0 tool is available as part of the RXMDI release package. The configurable components of this WAR include the Java Batch jar containing Batchlets and Deciders and the Job Xml Batch Jobs.

Extensibility

- Batchlets and Deciders are written in Java and can be extended. New Batchlets and Deciders can also be written and the JSL can be updated to use the new Batchlets and Deciders.
- If a new ODI Scenario is created, then a new Job XML can be created with configurations to match the new ODI Scenario.
- Any new Batchlets and Deciders can be compiled and added to the Java Batch jar and added to the WAR.

- Job XMLs can be updated or new Job XMLs can be added to the WAR. The WAR can then be redeployed to reflect the new changes.

Oracle Data Integrator

The Oracle Data Integrator (ODI) is an Extract, Load, and Transform tool. ODI is used to transform data from Database Tables to Database Tables, Database Tables to XML Files and Flat Files to Database Tables.

Components

ODI Java EE Agent and ODI Standalone Collocated Agent

- The Java EE Agent is invoked by Java Batchlets through the ODI Web Service. The agent in turn invokes the ODI Scenarios which perform the transformation.
- The Standalone Collocated Agent is used to encrypt passwords used in Physical Topologies.

ODI Scenarios

- Scenarios are compiled artifacts that perform transformations.
- Scenarios use Logical Topologies.

Logical Topologies

- Logical Topologies are associated with Physical Topologies through a Context.

Context

- A Context not only associates Logical Topologies with Physical Topologies, but also specifies the ODI Agent to be used.

Physical Topologies

- Physical Topologies represent real resources such as DB Schema, XML File, and so on.

Java Batchlets

- Batchlets are a part of the RXM Batch Job Admin Console.
- They are used to call the ODI Web Service which invoke ODI Scenarios through the ODI Java EE Agent.

Packaging

- Scenarios, Logical Topologies, and Context are included in the RXMDI release package.
- Since Physical Topologies represent real resources, they will need to be created. Instructions for creating these are included in the RXMDI release package.

Extensibility

- The ODI Studio is the development tool to create packages, update mappings, and so on, using the ODI Designer.
- The updates made in ODI Studio can then be compiled into a new Scenario or used to update an existing Scenario.
- If a new Scenario is created, then a new Java Batch Job XML can be added to invoke the new Scenario. An update to an existing Scenario will be invoked by the corresponding Java Batch Job XML.

Transformations

Database Tables to Database Tables

ODI uses Direct SQL Load to transform data from one DB schema directly into another DB schema.

Feeds that Use this Type of Transformation

- All feeds from BDI to RXMDI Staging.
- Inventory, Store, Store Address, Warehouse, and Warehouse Address data from RXMDI Staging to RXM Production.
- Promotion data from RXMDI Staging to RXM Publishing.

Process

1. Using ODI Studio, the relevant tables are reverse engineered for both Source and Target DBs.
2. A mapping is performed between the Source and Target DB tables.
3. Any transformation required is done as part of the mapping to massage data.

Extensibility

1. For custom solutions, DB tables can once again be reverse engineered so customizations are visible to ODI.
2. Mappings/Transformations can then be updated.
3. Scenarios can be regenerated based on the changes or new Scenarios can be created with a corresponding Java Batch Job XML.

Database Tables to XML Files

ODI transforms data from DB schema into an XML file.

Feeds that use this type of transformation

- Regular and Clearance Price data is transformed from RXMDI Staging work tables into a priceList XML file that can be imported into RXM's Business Control Center (BCC) using the StartSQLImport Utility provided by Oracle Commerce from where it is published to RXM's production server.
- Merchandise Hierarchy and Product SKU data is transformed from RXMDI Staging tables into a productCatalog XML file that can be imported into BCC using the

StartSQLImport Utility provided by Oracle Commerce from where it is published to RXM's production server.

Process

1. Using ODI Studio, the relevant Source DB tables are reverse engineered as well as the XML XSDs.
2. A mapping is performed between the Source DB tables and the XSDs.
3. Any transformation required is done as part of the mapping to massage data.

Extensibility

- For custom solutions, DB tables and XSDs can be reverse engineered so customizations are visible to ODI.
- Mappings/Transformations can be updated.
- Scenarios can be regenerated based on the changes or new Scenarios can be created with a corresponding Java Batch Job XML.

Flat Files to Database tables

ODI transforms data from Flat Files into a DB schema.

Feeds that use this type of transformation

Regular and Clearance Price data is transformed from flat files provided by RPM into RXMDI Staging work tables which are then converted into a priceList XML file as part of a different ODI Scenario. This file can be imported into BCC using StartSQLImport Utility provided by Oracle Commerce from where it is published to RXM's production server.

- Promotion data is transformed from flat files provided by RPM into RXMDI Staging work tables which are then loaded into the RXM Publishing schema as part of a different ODI Scenario. Using a timed Scheduler, they are then processed via the PromotionImportExport API provided by Oracle Commerce and imported into BCC from where it is published to RXM's production server.
-

Process

- Using ODI Studio, the relevant flat files are reverse engineered as well as the target DB tables.
- Then a mapping is performed between the flat files and the target DB tables.
- Finally, any transformation required is done as part of the mapping to massage data.

Extensibility

- For custom solutions, flat files and DB tables can be reverse engineered so customizations are visible to ODI.
- Mappings/Transformations can be updated.
- Scenarios can be regenerated based on the changes or new Scenarios can be created with a corresponding Java Batch Job XML.

Promotion and Pricing Integration

The RXMDI component integrates Oracle Retail Price Management (RPM) flat files into Oracle Commerce (including some RXM extensions). It is built upon the Oracle Data Integrator (ODI) application.

Promotion Integration

Pre-requisite: For promotion flat files, Location(loc_id) should exist in RXMDI_STORE_SITE table's column STORE_ID.

The RXMDI ODI scenario expects RPM flat files containing promotional information to arrive in a directory that can be read by ODI. The default location is C:/ODI/RXMDI/RPM/SOURCE.

The ODI scenario is to be scheduled to run on an interval. It will scan the directory for incoming files (*.dat).

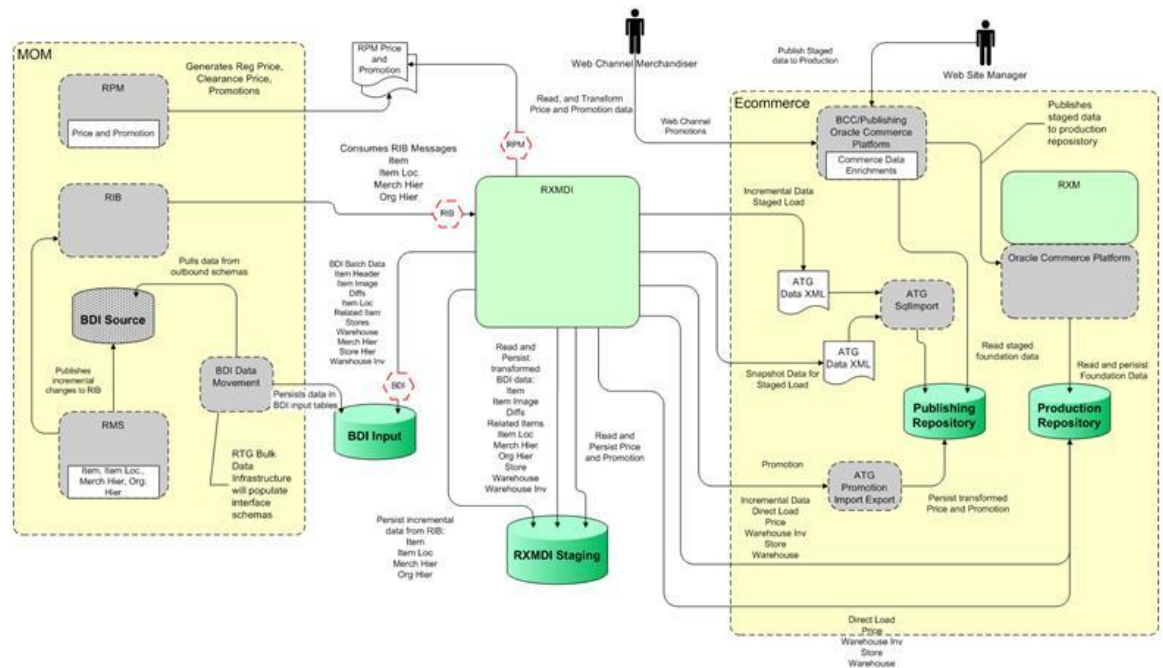
Upon finding file names that match external site IDs that have already been imported by ODI (in the format, RPMPC_[timestamp]_[site_id]_S.dat), those files will be one-at-a-time read and processed. The files are processed in timestamp order.

After processing, promotion flat files will be renamed to PRMPC_INPROGRESS_S.dat.

The files are read into the ODI working table's area and then ODI maps that data into the RXMDI_PROMO tables that are inside the Publishing schema (as defined by RXM). ODI performs some minor transformation upon insertion into Publishing.

In the Publishing stack, RXM has provided a new SingletonScheduledService component at /retail/commerce/integration/promotion/PromotionImportService. This service is configured to scan the RXMDI_PROMO tables once a day at 4am. However, this config can be changed easily. If records are found that have null in the IMPORT_SESSION_ID column, those records are read and processed.

The service uses a /retail/commerce/integration/promotion/PromotionImportService to transform the data and then feeds the objects to the Oracle Commerce PromotionImportExport API. This API is provided by Oracle Commerce to import promotions into projects for review and publishing within the Business Control Center (BCC). A business user then logs into BCC to embellish and promote projects to Production.



Promotion Commerce Enhancements

A repository is defined for ODI to put the promotions into for staging. The component is at /retail/commerce/integration/promotion/PromotionIntegrationRepository.

The PromotionImportService scans this repository for new promotions.

The promotion item descriptor is enhanced to support additional IDs, such as externalPromoId, and a deleted flag. Both support input from RPM. The IDs will match RPM IDs and when RPM sends a DEL message, the matching promotion will be marked as "enabled" = false and "deleted" = true.

Note: RPM overlapping promotions are not supported by this version of RXM.

Pricing Integration

Prerequisites:

- For processing pricing flat files, Location(loc_id) should exist in RXMDI_STORE_SITE table's column STORE_ID.
- Price List ID and Sales List ID should be created in BCC and those generated IDs should be inserted into RXMDI_STORE_SITE table before processing pricing flat file.

The pricing integration works in a similar way to the promotion integration with some differences. RPM is still expected to produce flat files *.dat. The flat file name should be of the format <event type>_<date in YYYYMMDDHH24MISS format>_<loc id>_<loc type>.dat (For example: REGPC_20160810121204_2222_S.dat). After processing, flat file will be moved to SOURCE/archive folder and priceLists.xml will be moved from it's source folder to SOURCE/processed folder.

Those flat files are picked up by ODI in the same directory as promotions. ODI processes the flat files into a working area. However, instead of pushing the data into a Publishing staging area, ODI transforms the data into XML files to be later processed by Oracle Commerce's startSQLImport program manually.

Clearance prices are put into the salePriceList instead of the regular priceList.

Pricing Commerce Enhancements

The /atg/commerce/pricing/priceLists/priceLists.xml definition includes an externalPriceId to identify prices through RPM IDs and a priceType property to identify clearance prices. Additionally, support is available for clearance endDate since it comes from RPM in a separate ClearanceReset entity.

Job Mapping

BDI/RIB

Note: In the case of RIB, the first step is irrelevant. The data is pushed through RIB directly into the RXMDI Staging schema.

Feed Type	First Step (BDI Interface – RXMDI Staging)	Second Step (RXMDI Staging – RXM)	Target	Comments
Inventory	INVAvailWH_Tx IMporter Job	InvAvailWh_Tx Staging to RXM Job	RXM Production DB	
Store	<ul style="list-style-type: none"> Store_Fnd Importer Job StoreAddr_Fnd Importer Job 	Store Staging to RXM Job	RXM Production DB	
Item	<ul style="list-style-type: none"> MerchHier_Fnd Importer Job ItemHdr_Fnd Importer Job ItemLoc_Fnd Importer Job Item Image_Fnd Importer Job Related Item_Fnd Importer Job Related Item_Fnd Importer Job Diff_Fnd Importer Job DiffGrp_Fnd Importer Job 	Warehouse	<ul style="list-style-type: none"> Wh_Fnd Importer Job WhAddr_Fnd Importer Job 	Warehouses Staging to RXM Job
Organization				Commerce does not support OrgHier Out of the box
Hierarchy				

Pricing and Promotions

Feed Type	Source	Flat File to XML	Destination	Additional Comments
Regular Price	Flat File provided by RPM	Regular Price FF to XML Job	Generates XML (priceList.xml) which needs to be imported into BCC using SQLImport utility.	This data can be pushed to RXM Production DB through BCC.
Clearance Price	Flat File provided by RPM	Clearance Price FF to XML Job	Generates XML (priceList.xml) which needs to be imported into BCC using SQLImport utility.	This data can be pushed to RXM Production DB through BCC.
Promotions	Flat File provided by RPM	Promotion FF to RXM Job	RXM Publishing DB.	Commerce Scheduler pushes data to RXM Production DB.

Packaging and Deployment

RXMDI includes the following artifacts as part of the RXMDI release package:

- RXMDI EAR:
 - RIB Application Plugin JAR
 - RXMDI WAR
 - JPA Artifacts
 - Incremental JAR
- RXM Batch Job Admin WAR:
 - Job XMLs -> ODI Scenarios
 - Java Batch JAR
- ODI:
 - Scenarios, Logical Topologies, and Context are included.
 - Since Physical Topologies represent real resources, they will need to be created. Instructions for creating these are included.
- DB:
 - RXMDI Staging Schema DDL
 - RIB Error Hospital Schema DDL