Oracle® Retail Merchandising-SIOCS

Implementation Guide

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Oracle Retail Merchandising-SIOCS Implementation Guide,

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Contents

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Preface

This guide outlines the information you need to know about Oracle Retail [Product Name]Cloud Service new or improved functionality in this update, and describes any tasks you might need to perform for the update. Each section includes a brief description of the feature, the steps you need to take to enable or begin using the feature, any tips or considerations that you should keep in mind, and the resources available to help you.

Audience

This document is intended for the users and administrators of the Oracle Retail [Product Name] Cloud Service.

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Oracle Retail Cloud Services and Business Agility

Oracle Retail (Product Name) Cloud Service is hosted in the Oracle Cloud with the security features inherent to Oracle technology and a robust data center classification, providing significant uptime. The Oracle Cloud team is responsible for installing, monitoring, patching, and upgrading retail software.

Included in the service is continuous technical support, access to software feature enhancements, hardware upgrades, and disaster recovery. The Cloud Service model helps to free customer IT resources from the need to perform these tasks, giving retailers greater business agility to respond to changing technologies and to perform more value-added tasks focused on business processes and innovation.

Oracle Retail Software Cloud Service is acquired exclusively through a subscription service (SaaS) model. This shifts funding from a capital investment in software to an operational expense. Subscription-based pricing for retail applications offers flexibility and cost effectiveness.

1 Introduction

This document provides an overview of the integration between Oracle Retail Merchandising[1] and Oracle Retail Store Operations Cloud Service (SIOCS). Merchandising and SIOCS get installed on separate schema on the same database and have direct database integration. This direct method does not require integration middleware and covers most of the integration points between Merchandising and SIOCS[2].

For data flowing from Merchandising to SIOCS, Merchandising has database views for each data entity which are queried periodically by SIOCS for new foundation data, new transactional data and changes to foundation and transactional data. Merchandising has change log tables for each entity which is used by SIOCS to identify and query changed data points.

For transactions owned by SIOCS and required by Merchandising, SIOCS writes new and changed transactions into respective staging tables which are consumed by Merchandising through periodic polling.

Merchandising and SIOCS Integrations

From Merchandising to SIOCS	
Address	Price History
Allocations	Purchase Orders
ASNs[1]	Receiver Unit Adjustments
Codes	Return to Vendor Requests
Delivery Slots	Stores
Differentiator Types	Store Inventory
Differentiators	Transfers
Item Locations	UOM Classes and Conversion
Items	User Defined Attributes
Merchandise Hierarchy	Vendors
Partners	Warehouses

1 Merchandising publishes Advanced Shipping Notification (ASN) for only shipments shipped using Merchandising screens.

From Pricing to SIOCS	
Clearances and Clearance Resets	Price Changes

1 Oracle Retail Merchandising refers to the group of cloud services consisting of Retail Merchandising Foundation Cloud Service (RMFCS), Sales Audit, Retail Pricing Cloud Service (RPCS), Retail Invoice Match Cloud Service (ReIMCS) and Allocation Cloud Service.

2 Transaction flow between Oracle Cloud WMS and Merchandising/SIOCS is still through RIB and requires Retail Integration Cloud Service (RICS) deployment. Additionally, SIOCS integrates with any external warehouse system through RIB.

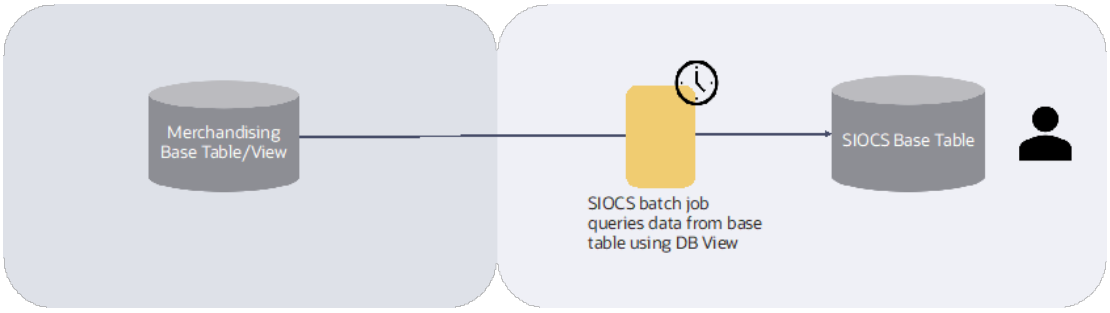
From SIOCS to Merchandising	
Direct Store Delivery Receipts	Return to Vendor
Fiscal Documents	Stock Order Receipt
Inventory Adjustments	Stock Order Status
Inventory Requests	Stock Count Schedule
Outbound ASNs	Stock Count Results
Purchase Order Receipts	

2

Integration Architecture

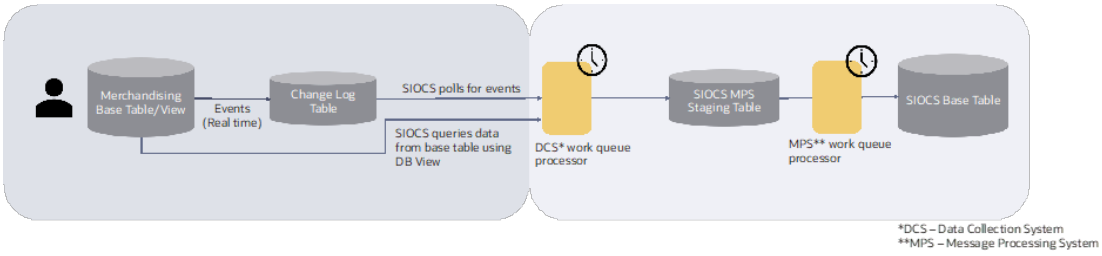
This section explains the different components that are used to make the whole integration work seamlessly.

Merchandising to SIOCS – Initial Data Load



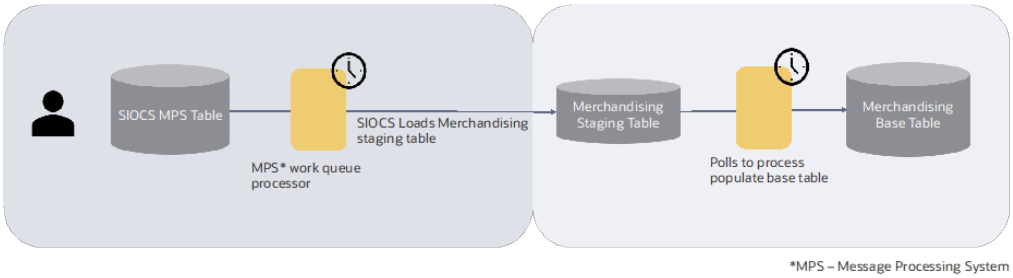
For initial data load and on-demand seeding for new store setup, SIOCS batch processes query MFCS database views. Filter logic in the view called by SIOCS uses business logic that directly loads data into the SIOCS base tables. For further details on initial data seeding, refer to the 'Data Seeding from Merchandising Foundation Cloud Service' chapter of the SIOCS Administration Guide on the Oracle Help Center.

Merchandising to SIOCS – Transactions and Foundation Deltas



For transactions and foundation deltas, Merchandising data is replicated asynchronously into SIOCS. SIOCS queries Merchandising and Pricing database tables/views for data refresh and changes to foundation and transactional data.Identification of changes happens through periodic polling of Integration Change Log (ICL) tables. Events published to the ICL tables follows the same filter criteria as the older integration method (RIB publish). Merchandising database views work as the integration contract.

SIOCS to Merchandising



For sending transactions to Merchandising, SIOCS populates Merchandising import staging tables through asynchronous fire-and-forget publish. Merchandising polls for new messages through batch jobs and processes them through consume business logic that is also used by the service-based integrations. Additionally, there is a user interface-based review mechanism in Merchandising to help troubleshoot integration errors. New messages from SIOCS are not processed during nightly batch when inventory related batches are running because they impact inventory positions. Only Stock Count Schedule and Results are not processed during the entire duration of the nightly batch window.

Integration Components Description

Merchandising

Database Views

- Merchandising has database views that are used to expose Merchandising data for SIOCS to query. Each merchandising entity has a view with a name prefixed with `V_RMS_SIM`. These database views are owned by Merchandising specifically for the use of SIOCS. Read access is provided to SIOCS to call these views via synonyms and is used for both initial data seeding and delta changes.
- The views serve as an integration contract between Merchandising and SIOCS. The view queries filter rows and include columns based on SIOCS's need.
- See details of entities published from Merchandising and used by SIOCS in the appendix.

Integration Change Log (ICL) Tables

- ICL tables are used to capture data changes (insert/update/deletes) in base Merchandising tables. For example, when an item is created or updated, the ICL table for Item contains the item number along with time of change and the type of database operations (insert, update or delete).
- The data change capture to ICL table uses functional filter criteria used previously (RIB publish). For example, the capture of item changes to ICL table happens only after an item is approved.

- Merchandising inserts into the ICL tables for incremental changes only. The consuming application (SIOCS) is responsible for deleting processed records from these tables.
- SIOCS processes the data based on ICL record create time and the type of database operation (insert, update or delete).
- Merchandising database triggers insert into the ICL tables. An entry for SIOCS is made when SIOCS and Merchandising are configured to use the direct database integration method.

The following is the typical ICL table structure:

Column Name	Datatype	Mandatory	Comments
ICL_ID	RAW(16)	yes	Default value - `SYS_GUID`
ICL_CONSUMER	VARCHAR2(10)	yes	`SIOCS`, and so on; one record for each target app that needs the change
ICL_CHANGE_TYPE	VARCHAR2(1)	yes	`I` (insert), `U` (update), `D` (delete)
ICL_TABLE_NAME	VARCHAR2(30)	yes	Merchandising source table that changed; for example: `ADDR`, `ITEM_MASTER`
ICL_CREATE_TIMESTAMP	TIMESTAMP(6) WITH TIME ZONE	yes	The timestamp in `DBTIMEZONE` when the record was created in this ICL table.
ICL_CREATE_ID	VARCHAR2(254)	yes	User ID of the user who created the record in this ICL table.
ICL_TRANSACTION_ID	VARCHAR2(120)	yes	Transaction ID of the transaction in which the record was committed in the source table. It's populated through `dbms_transaction.local_transaction_id`.
ICL_PROCESSED_IND	VARCHAR2(1)	yes	Indicates whether the record has been processed by the consuming application. The consuming application updates this to `I` (in-progress) or `Y` (processed). Default value is `No`.

Column Name	Datatype	Mandatory	Comments
<ENTITY SPECIFIC COLUMNS>			Source table to identify the entity that has changed. For example: for item_master, this will contain ITEM. For orders, the table will contain ORDER_NO, ITEM, LOCATION. Not all key columns in an ICL table are populated. Key columns are populated depending on the entity that was changed.

Import Tables

Merchandising has import tables that are populated by SIOCS with data to be interfaced to Merchandising. These tables are data entity specific and have a prefix SIM_RMS. They have specific columns that are published by SIOCS in addition to standard columns to be used for traceability, error handling and metadata driven processing.

Consume Jobs

These jobs poll the SIM RMS import tables for entries ordered by timestamp and can be scheduled as required by the retailer. These jobs prepare the data for processing. Successful processing moves data into import history tables.

SIOCS

Import Tables

SIOCS ICL Staging Tables
ICLS_CLEARANCE
ICLS_ITEM_LOC
ICLS_ITEM_LOC_CFA
ICLS_PRICE_CHANGE

Consume Jobs

ICL table data is managed and consumed by DCS work types. When a record is removed from the ICL tables, it is written to the MPS_STAGED_MESSAGE table or supporting ICLS table. Then, the MPS work types activate and do final processing of the MPS message.

Data Collection System (DCS) Work Types – Data collection system work types is a series of worker threads based on data categories that manage the collection of ICL

table and input into the message processing system. These work types are administrated by the DCS Work Type screen (See the *EICS Administration Guide*).

Message Processing System (MPS) Work Types – Message processing system work types are a series of worker threads based on data categories that manage the processing of business data messages in the staged message table. These work types can be administrated by the MPS Work Type screen (See the *EICS Administration Guide*).

MPS Staged Messages – Stages messages are stored within the `mps_staged_message` table and processed using MPS work types. This screen allows the user to monitor and manage a singular staged message. (See the *EICS Administration Guide*).

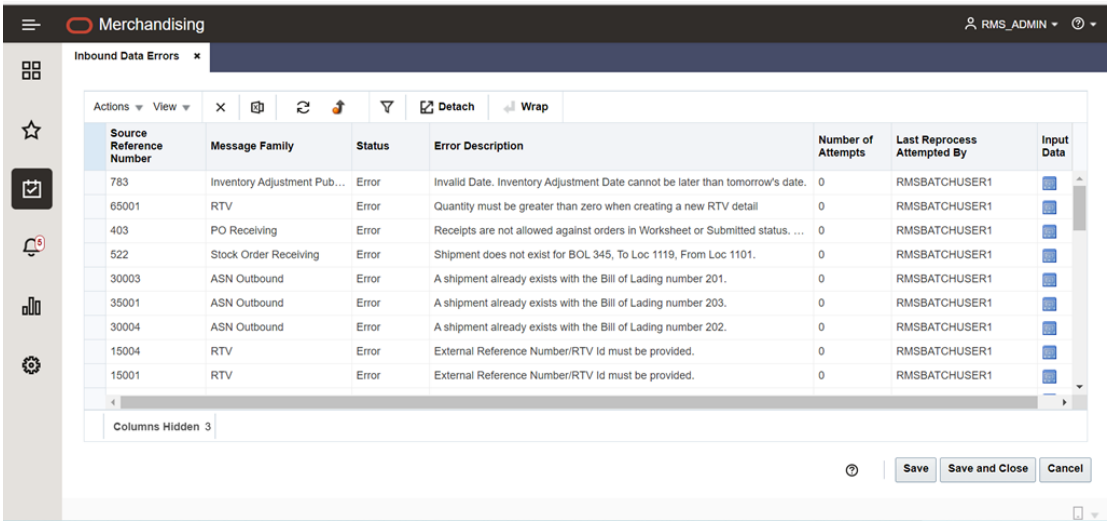
3
Integration Errors

Merchandising

For data flow from SIOCS to Merchandising, a user interface-based review mechanism in Merchandising called Inbound Data Errors is available to help troubleshoot integration errors.

The error handling for this integration is at an individual transaction level and only the bad transactions are rejected. Such rejected transactions are available in the Inbound Data Errors screen. In this screen, post review of the error, the user has the choice of:

- Keep it in error status to be reviewed later (No action)
- Fix the underlying data that caused the error. For example: status errors or code config mismatch. Then retry the transaction processing through an asynchronous process.
- Ignore the error in cases when no data fix is possible and needs to be handled externally. For example, manually adjusting inventory



SIOCS

Monitoring of integration occurs in four main places in SIOCS:

Integration Dashboard – This application screen displays information about the current state of integration flows (See the *EICS Administration Guide*).

DCS Work Types – This application screen displays information about DCS work types responsible for integration and contain an error state and message on any DCS work type that has experienced a system error that prevents the thread from processing (See the *EICS Administration Guide*).

MPS Work Types – This application screen displays information about MPS work types responsible for integration and contain an error state and message on any MPS work type that has experienced a system error that prevents the thread from processing (See the *EICS Administration Guide*).

MPS Staged Messages – This application screen displays information about integration MPS staged messages and contains the process status of specific data and any potential errors that occurred processing that data. (See the *EICS Administration Guide*).

4
Integration Configurations

Merchandising System Configuration

Direct database integration method between Merchandising and SIOCS is governed by the following indicators. It is advisable that before requesting to turn this integration on, ensure you have a discussion with your implementation partner and Oracle on how to best plan for this effort. Refer to **Document 2963593.1** for details on the process for initiating the integration configuration change request.

- **SIOCS ICL Indicator**[1] – Indicates whether SIOCS gets data from the Merchandising applications through ICL (integration change log) tables. If set to Yes (`Y`), integration through RIB is disabled and ICL tables are populated. It is defaulted to `N`. This should be set in sync with the corresponding indicator in SIOCS as part of implementation. There is no user interface option for this and can be managed through a service request to Oracle.
- **Inbound Data History Months** – Specifies the number of months the archived inbound transactions will remain in the import history tables and can be set through the System Options screen. All history dated later than this is automatically removed by a batch process.
- **Inbound Data Unprocessed Error Days** –Specifies the number of days the inbound data error records are retained in the inbound staging and error logging tables and can be set through the System Options screen.

SIOCS System Configuration

To use the direct database integration method, a few restricted system configuration values need to be updated through a service request to Oracle. Please refer to **Document 2963593.1** to know more about integration configuration change request procedure.

[1] SIOCS_ICL_IND in PRODUCT_CONFIG_OPTIONS table

A

Appendix - Interface Details

Merchandising to SIOCS

Interface	Change Log Table	Merchandising View/s	SIOCS Staging Table
Address	ICL_RMS_ADDR	V_RMS_SIM_ADDR	MPS_STAGED_MESSAGE
Allocations	ICL_RMS_ALLOC	V_RMS_SIM_ALLOC_HEADER V_RMS_SIM_ALLOC_DETAIL	MPS_STAGED_MESSAGE
ASNs	ICL_RMS_SHIPMENT	V_RMS_SIM_SHIPMENT V_RMS_SIM_SHIPSKU	MPS_STAGED_MESSAGE
Clearances and Clearance Resets	RPM_ICL_PRICE_EVENT_PAYLOAD	RPM_SIM_CLEARANCE_V	MPS_STAGED_MESSAGE ICLS_CLEARANCE
Codes		V_RMS_SIM_CODE_HEAD V_RMS_SIM_CODE_DETAIL	
Delivery Slots		V_RMS_SIM_DELIVERY_SLOT	
Differentiator Types	ICL_RMS_DIFF_TYPE	V_RMS_SIM_DIFF_TYPE	MPS_STAGED_MESSAGE
Differentiators	ICL_RMS_DIFF_IDS	V_RMS_SIM_DIFF	MPS_STAGED_MESSAGE
Item Locations	ICL_RMS_ITEM_LOC ICL_RMS_REPL_ITEM_LOC	V_RMS_SIM_ITEM_LOC V_RMS_SIM_ITEM_LOC_CFA_EXT V_RMS_SIM_REPL_ITEM_LOC V_RMS_SIM_STORE_ITEM	MPS_STAGED_MESSAGE ICLS_ITEM_LOC ICLS_ITEM_LOC_CFA

Interface	Change Log Table	Merchandising View/s	SIOCS Staging Table
Items	ICL_RMS_ITEM_MASTER	V_RMS_SIM_ITEM_MASTER	MPS_STAGED_MESSAGE
	ICL_RMS_ITEM_IMAGE	V_RMS_SIM_ITEM_MASTER_CFA_EXT	
	ICL_RMS_ITEM_SUPPLIER	V_RMS_SIM_ITEM_MASTER_TL	
	ICL_RMS_ITEM_SUPP_CTRY	V_RMS_SIM_ITEM_IMAGE	
	ICL_RMS_ITEM_SUPP_CTRY_DIM	V_RMS_SIM_ITEM_SUPPLIER	
	ICL_RMS_ITEM_SUPP_MANU_CTRY	V_RMS_SIM_ITEM_SUPP_CFA_EXT	
	ICL_RMS_ITEM_SUPP_UOM	V_RMS_SIM_ITEM_SUPP_COUNTRY	
	ICL_RMS_ITEM_TICKET	V_RMS_SIM_ITEM_SUPP_CTRY_DIM	
	ICL_RMS_RELATED_ITEM	V_RMS_SIM_ITEM_SUPP_MANU_CTRY	
	ICL_RMS_RELATED_ITEM	V_RMS_SIM_ITEM_SUPP_UOM	
		V_RMS_SIM_RELATED_ITEM_DETAIL	
		V_RMS_SIM_RELATED_ITEM_HEAD	
		V_RMS_SIM_PACKITEM	
		V_RMS_SIM_RELATED_ITEM_HEAD	
		V_RMS_SIM_RELATED_ITEM_DETAIL	
Merchandise Hierarchy	ICL_RMS_DEPS	V_RMS_SIM_MERCH_HIER	MPS_STAGED_MESSAGE
	ICL_RMS_CLASS		
	ICL_RMS_SUBCLASS		
Partners	ICL_RMS_PARTNER	V_RMS_SIM_EXTERNAL_FINISHER	MPS_STAGED_MESSAGE
Price Changes	RPM_ICL_PRICE_EVENT_PAYLOAD	RPM_SIM_PRICE_CHANGE_V	MPS_STAGED_MESSAGE
			ICLS_PRICE_CHANGE
Price History	NONE	V_RMS_SIM_PRICE_HIST	MPS_STAGED_MESSAGE
			ICLS_CLEARANCE
Purchase Orders	ICL_RMS_ORDER	V_RMS_SIM_ORDHEAD	MPS_STAGED_MESSAGE
		V_RMS_SIM_ORDHEAD_CFA_EXT	
		V_RMS_SIM_ORDLOC	
		V_RMS_SIM_ORDLOC_CFA_EXT	

Interface	Change Log Table	Merchandising View/s	SIOCS Staging Table
Receiver Unit Adjustments	ICL_RMS_RCV_UNIT_ADJ	V_RMS_SIM_RCV_UNIT_ADJ	MPS_STAGED_MESSAGE
Return to Vendor Requests	ICL_RMS_RTV	V_RMS_SIM_RTV_HEAD V_RMS_SIM_RTV_DETAIL V_RMS_SIM_RTV_HEAD_CFA_EXT	MPS_STAGED_MESSAGE
Stores	ICL_RMS_STORE	V_RMS_SIM_STORE	MPS_STAGED_MESSAGE
Store Inventory		V_RMS_SIM_STORE_ITEM_SOH	
Transfers	ICL_RMS_TRANSFER	V_RMS_SIM_TSFDETAIL V_RMS_SIM_TSFHEAD V_RMS_SIM_TSFHEAD_CFA_EXT V_RMS_SIM_TSFZONE V_RMS_SIM_ORDCUST_DETAIL	MPS_STAGED_MESSAGE
UOM Classes and Conversion		V_RMS_SIM_UOM_CLASS V_RMS_SIM_UOM_CONVERSION	
User Defined Attributes	ICL_RMS_UDA ICL_RMS_UDA_ITEM_DATE ICL_RMS_UDA_ITEM_FF ICL_RMS_UDA_ITEM_LOV	V_RMS_SIM_UDA V_RMS_SIM_UDA_ITEM_DATE V_RMS_SIM_UDA_ITEM_FF V_RMS_SIM_UDA_ITEM_LOV V_RMS_SIM_UDA_VALUES	MPS_STAGED_MESSAGE
Vendors	ICL_RMS_SUPPLIER	V_RMS_SIM_SUPS V_RMS_SIM_SUPS_CFA_EXT V_RMS_SIM_PARTNER_ORG_UNIT	MPS_STAGED_MESSAGE
Warehouses	ICL_RMS_WH	V_RMS_SIM_WH	MPS_STAGED_MESSAGE

SIOCS to Merchandising

Entity	Merchandising Import Table	Merchandising Consume Job
Direct Store Delivery Receipts	SIM_RMS_DSD_RECEIPT SIM_RMS_DSD_RECEIPT_DETAIL	SIM_RMS_IMPORT_DSD_RECEIPT_ADHOC_JOB

Entity	Merchandising Import Table	Merchandising Consume Job
Fiscal Documents	SIM_RMS_FDG_DTL	SIM_RMS_FDG_ADHOC_JOB
	SIM_RMS_FDG_ETT	
	SIM_RMS_FDG_EXT	
	SIM_RMS_FDG_HDR	
	SIM_RMS_FDG_REF	
	SIM_RMS_FDG_TEXT	
Inventory Adjustments	SIM_RMS_INV_ADJ	SIM_RMS_IMPORT_INV_ADJ_ADHOC_JOB
Inventory Requests	SIM_RMS_INVENTORY_REQUEST	SIM_RMS_IMPORT_INVENTORY_REQUEST_ADHOC_JOB
	SIM_RMS_INVENTORY_REQUEST_DETAIL	
Outbound ASNs	SIM_RMS_ASNOUT	SIM_RMS_IMPORT_ASNOUT_ADHOC_JOB
	SIM_RMS_ASNOUT_DISTRO	
	SIM_RMS_ASNOUT_CARTON	
	SIM_RMS_ASNOUT_ITEM	
PO Receipts	SIM_RMS_PO_RECEIPT	SIM_RMS_IMPORT_PO_RECEIPT_ADHOC_JOB
	SIM_RMS_PO_RECEIPT_DETAIL	
Return to Vendor	SIM_RMS_RTV	SIM_RMS_IMPORT_RTV_ADHOC_JOB
	SIM_RMS_RTV_DETAIL	
	SIM_RMS_RTV_CFA	
Stock Order Receipts	SIM_RMS_STOCK_ORDER_RECEIPT	SIM_RMS_IMPORT_STOCK_ORDER_RECEIPT_ADHOC_JOB
	SIM_RMS_STOCK_ORDER_RECEIPT_DETAIL	
Stock Order Status	SIM_RMS_STOCK_ORDER_STATUS	SIM_RMS_IMPORT_STOCK_ORDER_STATUS_ADHOC_JOB
	SIM_RMS_STOCK_ORDER_STATUS_DETAIL	
Stock Count Results	SIM_RMS_STOCK_COUNT_RESULT	SIM_RMS_IMPORT_STOCK_COUNT_RESULT_JOB
	SIM_RMS_STOCK_COUNT_RESULT_DETAIL	SIM_RMS_IMPORT_STOCK_COUNT_RESULT_CYCLE_JOB
Stock Count Schedule	SIM_RMS_STOCK_COUNT_SCHEDULE	SIM_RMS_IMPORT_STOCK_COUNT_SCHEDULE_ADHOC_JOB
	SIM_RMS_STOCK_COUNT_SCHEDULE_STORE	
	SIM_RMS_STOCK_COUNT_SCHEDULE_PROC	

The Merchandising import jobs should be scheduled using POM scheduler to run at regular frequency throughout the day. To avoid data conflicts, the import jobs related to inventory will not process data during the Merchandising nightly batch duration.

In addition to the specific entity jobs mentioned in the table above, the following two jobs purge history tables and clean up old ignored errors:

1. SIM_RMS_PURGE_JOB

2. SIM_RMS_HISTORY_PURGE_JOB

B

Appendix – RICS Changes to Avoid Duplicate Processing

In a hybrid integration topology where SIOCS and Merchandising are integrated using direct database integration and RICS is used to integrate with external systems such as Oracle Warehouse Management Cloud Service, there may be scenarios where the same transaction that is processed using the direct database integration can also be processed through the RIB.

To avoid duplicate transaction processing, RIB messages have been extended to include a new field to identify the source application. SIOCS populates this field with a value of 'SIM' whereas Merchandising populates this field with a value of ‘RMS’ when they publish to RIB. This field helps to identify the source application for the message and, in a direct database integration configuration between Merchandising and SIOCS, Merchandising discards RIB messages with source application of ‘SIM’. Similarly, SIOCS discards RIB messages with source application of ‘RMS’.