Oracle Fusion Cloud Transportation and Global Trade Management

Integrating with Oracle Integration Cloud Guide

Release 26B

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Author: Oracle Transportation and Global Trade Management Product Team

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2 Overview

Logistics Adapter

This document describes configuring Transportation and Global Trade Management Cloud to integrate with another product using the Integration Cloud Service (OIC).

The Logistics adapter included with OIC can be used to create an OIC Connection to a specific Transportation and Global Trade Management Cloud instance of version 6.4.2 or later. The OIC Connection can then be used to create an Integration which calls Transportation and Global Trade Management Cloud web services, as well as exposes a web service that Transportation and Global Trade Management Cloud can call. See *Oracle Integration Cloud*, for more information.
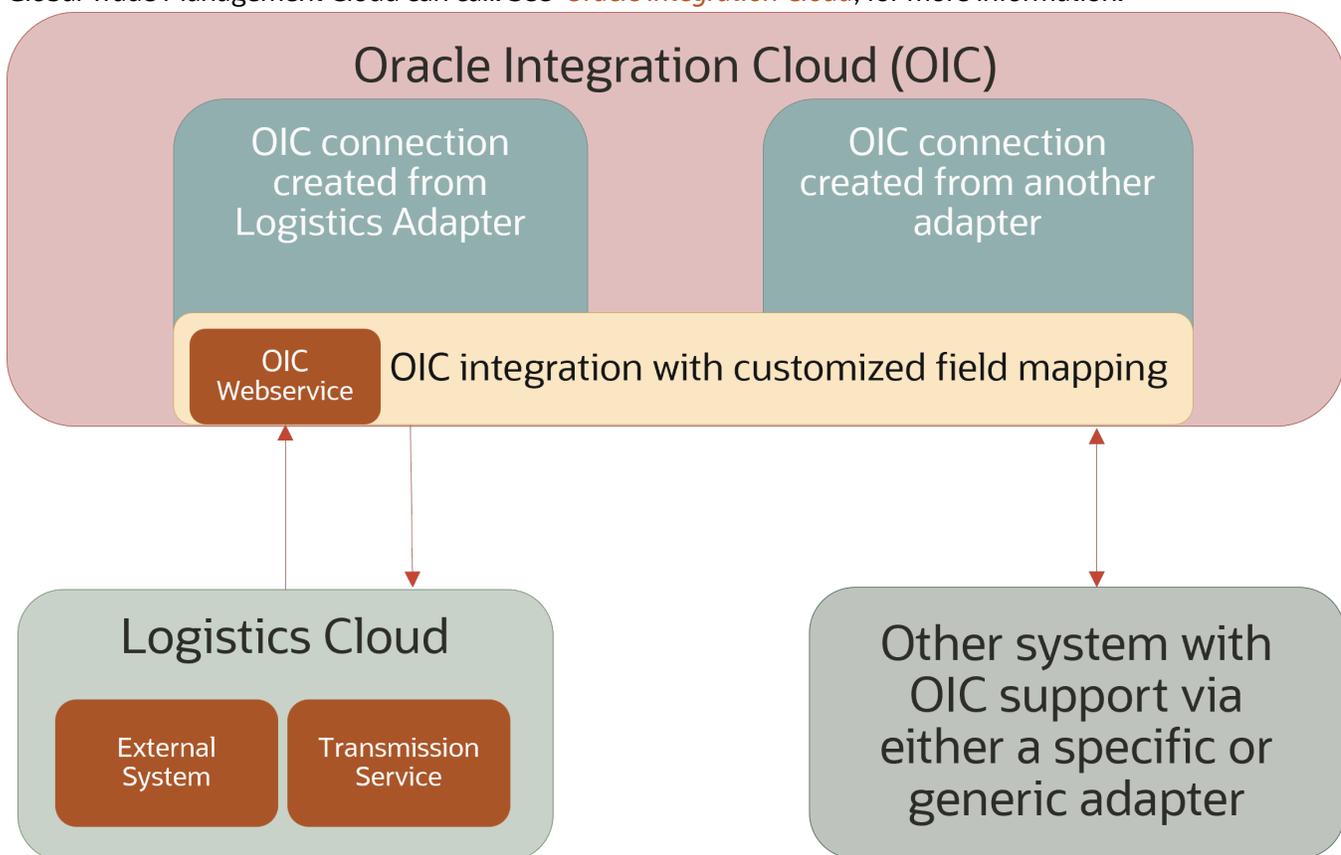
Also included in this document is a description of a sample integration between Transportation and Global Trade Management Cloud and Supply Chain Cloud using OIC. The sample integration can be obtained from *KB131599: Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC*. Transportation and Global Trade Management also includes an FA domain (named for Fusion Applications) which accompanies the sample flow and provides examples of possible data setup and automation.

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OIC Gen 3 Migration

When migration to OIC Gen3, a couple of items need to be considered.

- "Basic Routing" pattern in OIC is deprecated previously and will not be supported from Gen3. If any of the integrations use the "Basic Routing" pattern, they need to be converted to Orchestration or other supported patterns. This can be done using the "Convert" action in most cases.

- Starting from Gen3, OIC integrations do not declare the policy information in the WSDL. To support this and any external WSDLs which do not declare an attached policy but need to be accessed via a WSDL URL, a property called "glog.integration.webservice.enforceUNT" was introduced in OTM. This needs to be set to true to ensure that the username and password are sent in an outbound SOAP message as the standard Web Service Security Username Token. The corresponding Web Service record must also have the "Use Web Service Security" option set on.

Additional Resources

- Sample integrations can be downloaded from *KB131599: Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC*.

- *Integration Cloud Service documentation*.

- Detailed help for *Integration Cloud Service*.

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3 Configuration

Authentication

Transportation and Global Trade Management Cloud requires authentication in order to call its web services. In general, a user should be created in Transportation and Global Trade Management Cloud with the INTEGRATION role. This user must then be configured on the Connection created in OIC.

Domain

Data in Transportation and Global Trade Management Cloud generally resides in a "domain." This could be a single domain for an entire implementation, or multiple domains segregated by business unit, customer, or other criteria. Transportation and Global Trade Management Cloud domains may not correlate to the upstream system, so the domain will need to be specified in the OIC Mapping inbound to Transportation and Global Trade Management Cloud. For example, *ORDER123* in Supply Chain Cloud could come into Transportation and Global Trade Management Cloud as *MY_DOMAIN.ORDER123*.

External Systems and Web Services (Outbound from Transportation and Global Trade Management Cloud)

Sending data from Transportation and Global Trade Management Cloud to another system via OIC can be done by calling the OIC Web Service for the desired integration in OIC. An External System should be created in Transportation and Global Trade Management Cloud pointing to the OIC endpoint, which can be obtained from an activated integration in OIC. It is also highly advisable to use Out XML Profiles to limit the amount of data sent to OIC to improve performance. The Transportation and Global Trade Management Cloud FA domain includes two sample External System Records, OM OIC SERVICE and WSH OIC SERVICE as examples. Also included are sample out XML profiles, OM_ORDER, WSH_SHIPMENT, WSH_SHIP_UNITS, GTM_OM_RESPONSE, and GTM_SHIPPING_RESPONSE.

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4 Sample Integrations
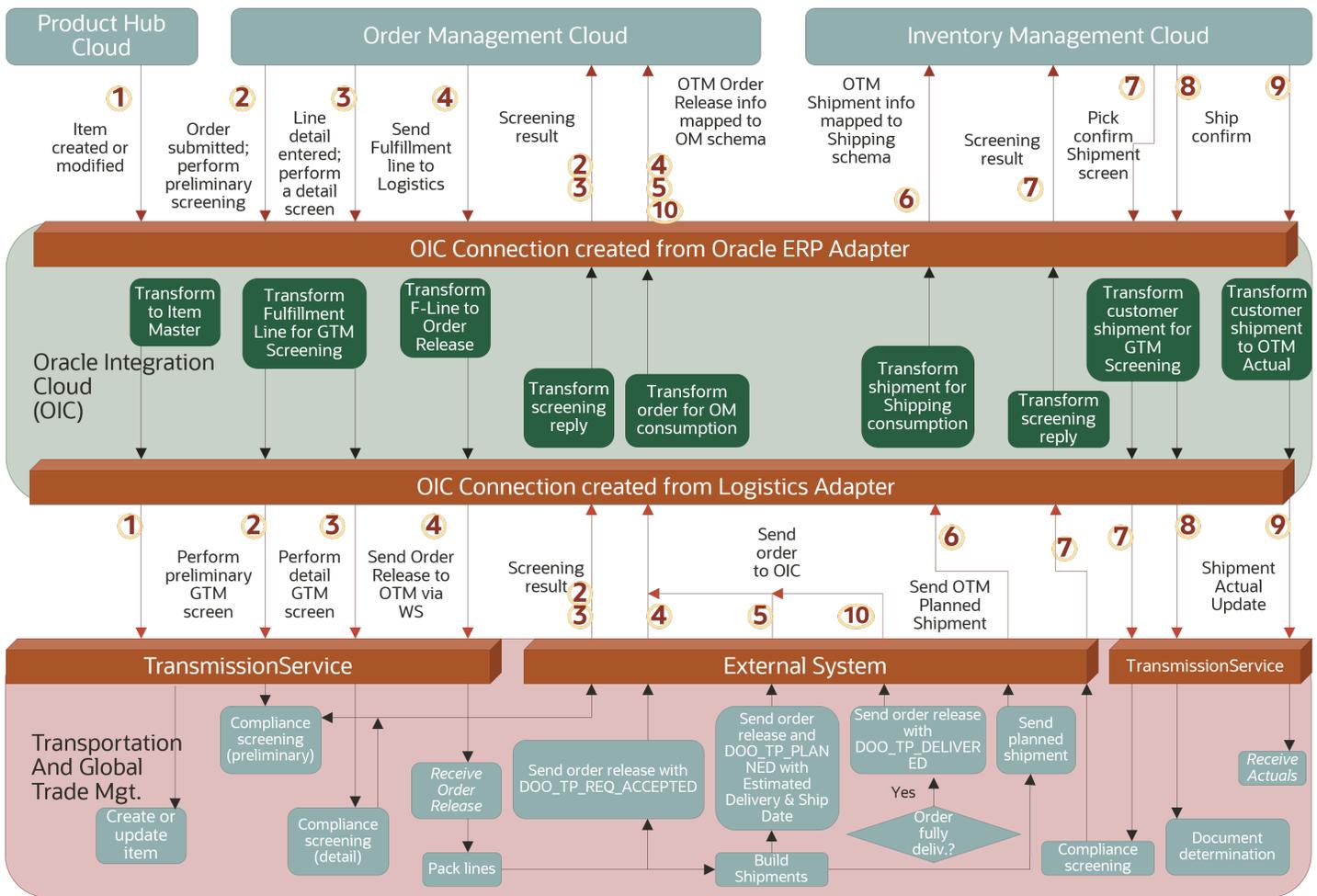
Fusion Applications Integrations

Overview

Sample OIC integrations can be obtained from *Oracle Marketplace* or from *KB131599: Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC* that show one possible way an integration might be built among Transportation and Global Trade Management Cloud, Product Hub Cloud, Order Management Cloud, and Inventory Management Cloud (Shipping). After importing the sample integrations, implementers will have to configure:

1. Connection information in OIC for the source and target systems (i.e. WSDL)
2. Authentication as described above for OIC to call Transportation and Global Trade Management Cloud Web services
3. External Systems and Web services as described above for Transportation and Global Trade Management Cloud to call OIC

Implementers will also have to configure automation as described below. This chapter outlines the automation in Transportation and Global Trade Management Cloud that could be used with this flow as well as the sample data (i.e. Automation Agents) in the FA domain that should be copied to the implementation domain.

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The diagram below illustrates the flow of the sample integration.

Transportation and Global Trade Management Cloud includes a domain named "FA" (named for "Fusion Applications (Supply Chain Cloud))" which is designed to work with this flow and includes the data and automation configuration.

Static Data Assumptions

The sample integration assumes certain implementation specific data will reside in Transportation and Global Trade Management Cloud. This may include:

Units of Measure

The above sample flow (*Overview*) assumes unit of measure codes match one-to-one between Supply Chain Cloud and Transportation and Global Trade Management Cloud. If units of measure differ (i.e. LB vs. lbs), one option is to map them as a Lookup in OIC.

Qualifiers

The FA domain in Transportation and Global Trade Management Cloud includes reference and remark qualifiers to store some of the information coming from Order Management Cloud. For example, there are Order Release Reference Qualifiers for FA.ORDER NUMBER, FA.ORDER LINE NUMBER, FA.FULFILLMENT LINE NUMBER and Remark Qualifiers for FA.PACKING INSTRUCTIONS and FA.SHIPPING INSTRUCTIONS.

Custom Status

The FA domain in Transportation and Global Trade Management Cloud includes custom statuses FA.SENT TO FA INV and FA.SHIP CONFIRM to handle change requests coming from Order Management Cloud. These statuses are used to find the state of the shipment, letting the sample workflow agents handle the change request accordingly.

Custom Events

The FA domain in Transportation and Global Trade Management Cloud includes custom events FA.OR ON SHIPMENT MODIFIED, FA.SHIPMENT ON ORDER MODIFIED, and FA.ORDER RELEASE CONSTRAINTS MODIFIED to handle change requests coming from Order Management Cloud. These custom events are used in the sample workflow to demonstrate one way of handling the change requests.

Currency

The above sample flow assumes currency codes match one-to-one between Supply Chain Cloud and Transportation and Global Trade Management Cloud. Transportation and Global Trade Management Cloud includes both 2-character and 3-character country codes and can be configured to work with either. An OIC lookup table can also be used to translate one code to another.

Locations, Contacts, Service Providers

Locations, Contacts, and Service Providers should be pre-seeded in Transportation and Global Trade Management Cloud, but Locations and Contacts will also be created and updated as part of the compliance screening.

IncoTerms

IncoTerms should be pre-seeded in GTM to sync FOB point coming from Order Management Cloud.

Internal Organization Structure

The Internal Legal Entity, Business Units and Inventory Organizations should be pre-seeded as parties in GTM to sync those coming from Order Management Cloud. Carriers need to be pre-seeded as parties in GTM too if the decision is to send them to GTM from Order Management Cloud. The FA domain includes a LEGAL ENTITY involved party qualifier.

Sample Integration

The number in parenthesis in each section below corresponds to the steps listed in the following diagram:

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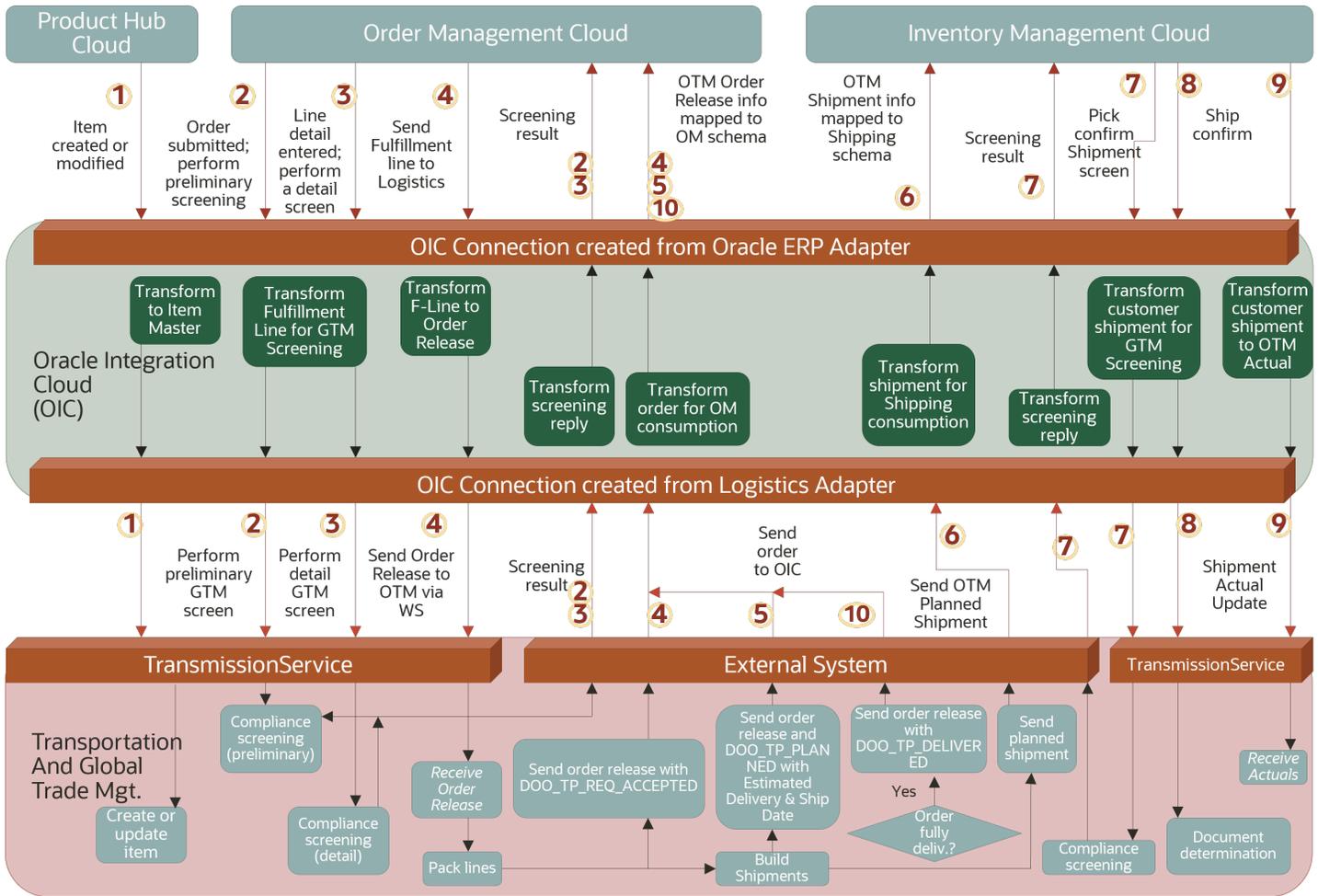
(1) Item Master Synchronization

An item is sent into Transportation and Global Trade Management Cloud from Product Hub Cloud via OIC. GTM creates/updates the item. Sample integrations PIM_CREATE_GTM and PIM_UPDATE_GTM illustrate one example of how this could be done.

(2) Receive, Acknowledge and Process Compliance Screening for Sales Order Pre-Booking

An order is sent into Transportation and Global Trade Management Cloud from Order Management Cloud via OIC. GTM acknowledges the receipt of the request. GTM creates the transaction in GTM and performs the screening based on the services configured by the user. Once the compliance screening processing is complete, the system will build

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the compliance status response structure and send it to OIC. The FA domain has a sample agent, DOO-GTM - PRE-BOOKING listening to the transaction creation in pre-booking stage of sales order and sends the response to OIC. This sample agent is where the desired configuration can be added. Sample integration OM_GTM illustrates one way that the screening could be performed, and GTM_OM illustrates an example of the corresponding response.

(3) Receive, Acknowledge and Process Compliance Screening for Order Fulfillment Line

An order fulfillment line is sent into Transportation and Global Trade Management Cloud from Order Management Cloud via OIC. GTM acknowledges the receipt of the request. GTM creates/updates the trade transaction and performs the configured screening. Suggested screening services are Restricted Party List, Sanctioned Countries and Control Screening. The FA domain includes a sample agent, DOO-GTM - POST-BOOKING, which listens to the transaction creation/modification in post-booking stage of sales order and sends the response to OIC. Similar to (2) above, the OM_GTM and GTM_OM illustrate one way the screening and response might be accomplished.

(4) Receive, Acknowledge and Process Pick Confirm Shipment Lines

Orders are sent to Transportation and Global Trade Management Cloud from Order Management Cloud (via OIC) and must be processed into an order that can be planned. This can be done using the PUBLIC *ORDER RELEASE – INSERT* agent or another agent.

When an order is created in Transportation and Global Trade Management Cloud, an acknowledgment can be sent back to Order Management Cloud. The FA domain includes a *SEND ORDER RECEIVED TO FA* agent as an example. The Release interface is sent into OIC and its payload used to create the proper response to forward to Order Management Cloud. The OM_OTM integration illustrates one example of how the order release might be created, and OTM_OM illustrates one way the acknowledgment could be sent.

(5) Send Pickup and Delivery Dates Back to Order Management Cloud for Fulfillment Lines

Orders can be planned into shipments via an Automation Agent or a scheduled process to run the *BuildBuySideShipments* process based on a saved query selecting the orders to be planned. The saved query might select orders with a new and unscheduled status. When an order is initially planned into a shipment, and as stop times are updated throughout its lifecycle, the estimated pickup and delivery dates can be updated on the order, if desired, to send back to Order Management Cloud. The sample flow assumes the following has been configured in Transportation and Global Trade Management Cloud:

1. Parameters RECALC ORDER EARLIEST EST PICKUP DATES and RECALC ORDER LATEST EST DELIVERY DATES are set to True in order to enable calculating these fields on the Order Release. The FA domain includes a Parameter Set FA_DEFAULT with these set.
2. Properties: `glog.workflow.topic.OrderLatestEstDeliveryDateSync.suppresslifetime=false` and `glog.workflow.topic.OrderEarliestEstPickupDateSync.suppresslifetime=false`. These properties should be added to the *CUSTOM* property included with Transportation and Global Trade Management Cloud.
3. Agent listening to ORDER - EARLIEST EST PICKUP DATE CHANGE and ORDER - LATEST EST DELIVERY DATE CHANGE (restrictions: INTERNAL) and send integration to OIC. The FA domain includes a SEND ORDER DATES TO FA to show one example on how this might be configured. Similar to the above, this sends the Release interface, which includes the estimated pickup and delivery dates.

The OTM_OM integration illustrates one example of how the date estimates might be sent from Transportation and Global Trade Management Cloud back to Order Management Cloud.

(6) Sending Shipment Information to Inventory Management Cloud (Shipping)

When shipments are created in Transportation and Global Trade Management Cloud, the shipment information must be sent to Inventory Management Cloud (Shipping). The FA domain includes a SEND PLANNED SHIPMENT TO FA

INV agent as an example of how this could be configured. The OTM_WSH integration illustrates one way the planned shipment might be mapped from Transportation and Global Trade Management Cloud to Inventory Management Cloud.

> **Note:** At the time of this publishing, the mapping of Order Release Destination to Initial Destination (`Release/`
> `ShipToLocationRef/LocationRef/LocationGid/Gid/Xid` to `ShipmentRequestOrderLine/InitialDestinationLocationId`)
> may cause the transmission to fail as the locations received from Order Management are actually Party Site IDs, and Inventory Management expects a Location ID here. This is slated to be fixed in a future version. In the meantime, this mapping can be removed (may affect pick release in Inventory Management), or could be configured with a lookup table to translate Party Site ID to a Location ID.

(7) Receive, Acknowledge and Compliance Screening for Pick Confirm Shipment Line

A pick confirm shipment line is sent into Transportation and Global Trade Management Cloud from Inventory Management Cloud (Shipping) via OIC. GTM acknowledges the receipt of the request. GTM creates/updates the trade transaction and performs the screening configured by the user. Suggested screening services are Restricted Party List, Sanctioned Countries and Control Screening. The FA domain has a sample agent, WSH-GTM - READY-TO-SHIP listening to the transaction creation in ready-to-ship stage of shipment and sends the response to OIC. The WSH_SCREENING_GTM integration illustrates one example of how this screening might be performed, and the GTM_SCREENING_WSH integration illustrates an example of the corresponding response.

(8) Receive, Acknowledge and Compliance Screening for Ship Confirm Customer Shipment

A Ship Confirm Customer Shipment is sent into Transportation and Global Trade Management Cloud from Inventory Management Cloud (Shipping) via OIC. GTM acknowledges the receipt of the request. GTM creates the trade transaction and performs the screening configured by the user. Suggested screening service is Documents Determination. GTM doesn't send back any screening results to Inventory Management Cloud. The FA domain has a sample agent, WSH-GTM - SHIPMENT-ADVICE listening to the transaction creation related to shipment advice where appropriate actions to generate documents can be added. The WSH_SA_GTM integration illustrates one example of how this might be done.

(9) Receive Shipment Actual

The shipment as it was actually shipped in Inventory Management Cloud is sent into Oracle Transportation and Global Trade Management Cloud. These are sent as individual ship units updating the shipment. The WSH_OTM integration illustrates one example of how actual updates might be mapped from Inventory Management Cloud into Oracle Transportation and Global Trade Management Cloud.

The ship units sent from Inventory Management Cloud may differ significantly from those that were originally planned by Transportation and Global Trade Management Cloud. Ship units sent from Inventory Management Cloud will have a Received Ship Unit Count = 1. When all actual updates have been sent, Inventory Management Cloud will send an update setting "Attribute 20" to 'Y' to indicate all actuals have been sent. The FA domain includes a sample agent SHIPMENT COMPLETE which listens for shipment modification events, and if the shipment is "complete" (Attribute 20='Y'), the WSH_SHIP_COMPLETE_OTM integration will be called. This integration immediately calls back into Transportation and Global Trade Management Cloud with a transmission that deletes all of the original planned ship units, leaving only the actual ones sent from Inventory management Cloud.

(10) Send POD to Order Management Cloud for Fulfillment Lines

When all shipments for an order have been delivered, notification of delivery can be sent back to Order Management Cloud. Agent action SET ORDER DELIVERED STATUS can be used to evaluate the ENROUTE status of the related shipment(s) and set the order release DELIVERED status. The FA domain includes a SHIPMENT DELIVERED agent to

illustrate how this might be configured. This agent listens for shipment status ENROUTE to move to COMPLETED, and uses Data Type Association SHIPMENT TO ORDER RELEASE to call SET ORDER DELIEVERED STATUS and set the order's DELIVERED status. Another sample agent, SEND ORDER DELIVERY STATUS TO FA has been included in the FA domain which shows an example of how an agent might be configured to send the order to Order Management Cloud when the order's status moves to DELIVERED. The OTM_OM integration illustrates one example of how the proof of delivery might be communicated from Transportation and Global Trade Management Cloud to Order Management Cloud.

Change Management

When a change request comes in from Order Management Cloud after the initial sales order request is received, based on the state of the order release and shipment in Transportation and Global Trade Management Cloud at the time and the nature of the update, the request could be processed in different ways. The FA domain includes a sample agent ORDER MOD - RESEND TO FA OM to illustrate how this might be configured to process the update. Another sample agent, SEND PLANNED STATUS TO FA OM has been included in FA domain which shows an example of how an agent might be configured to send the planned status to Order Management Cloud when the shipment that is associated with the updated order status is PLANNED.

The change request from Order Management Cloud should be communicated to Inventory Management Cloud if the shipment is not yet confirmed by the later. The FA domain includes a sample agent SHIPMENT MOD - RESEND TO FA INV to illustrate how this might be configured to communicate the update. If a shipment is deleted because of the nature of the change, sample agent SHIPMENT DELETE - SEND TO FA INV in the FA domain illustrates an example of how an agent might be configured to communicate the delete message to the Inventory Management Cloud.

Backorder/Partial Ship

When Inventory Management Cloud (WSH) performs a partial ship and there is no backordered event coming into Oracle Transportation and Global Trade Management Cloud (OTM) from Order Management Cloud (OM), a transportation planner could manually enter partial ship info in OTM by creating a new Order Movement for the remaining quantity and either plan a new shipment from the newly created Order Movement or add the new Order Movement to an existing shipment and send that Planned Shipment details to WSH. Below is an example detailing this use case.

1. OM sends an order (e.g. FA.ORDER1) with a quantity of 10 to OTM.
2. OTM plans a shipment from that order and sends the planned shipment (Eg: FA.SHIPMENT1) to WSH with quantity of 10 for execution. An order movement (e.g. FA.OM1) with quantity of 10 will also be automatically created.
3. WSH does a partial ship (e.g. quantity of 6) of the shipment and sends shipment actuals to OTM with a shipped quantity of 6. This will update the existing shipment with quantity of 6.
4. WSH communicates to OTM manually that the remaining quantity of 4 needs to be addressed as in this specific case there won't be a backordered line request coming from OM.
5. OTM planner in this case could create a new order movement (Eg: FA.OM2) for the remaining quantity of 4. Create a new shipment (Eg: FA.SHIPMENT2) from the new order movement with quantity of 4. As a note, the new order movement (FA.OM2) can also be added an existing shipment instead of creating a new shipment if intended.
6. Send the new planned shipment (FA.SHIPMENT2) to WSH for execution.

Alternatively, Inventory Management Cloud publishes a backordered event that can be consumed by OTM and setup a replan workflow.

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Order Management Transportation Prebuilt Integrations with Shipset Functionality

Oracle Supply Chain Management brings exciting synergies between Fusion Order Management (OM) and Oracle Transportation Management (OTM). The enhanced Prebuilt integrations between OM and OTM supports shipment sets (shipsets) is one such feature. This section discusses the Oracle Integration Cloud (OIC) prebuilt integration between OM and OTM. Benefits include:

- OM OTM prebuilt integration recipe is available as an OIC3 Project to take advantage of the features available with OIC3 projects. *Learn more about OIC projects here*.

- **Shipset Support**: The recipe provides out of the box support for OM Order fulfillment lines grouped together in shipment sets (shipsets) for better operational efficiency. *Learn more about shipsets here*.

The OM-OTM prebuilt integrations are packaged as an Oracle Integration Cloud Recipe and is available for download from the OIC3 Integration store. The OM-OTM recipe provides out of the box integration of OM Order Fulfillment lines to OTM Transmission objects containing Order Release lines for shipping by OTM.

The prebuilt integrations recipe can be accessed from the OIC Home page:

1. Click the **Browse store** button.
2. Click the **Open Input Search** icon.
3. Search for "**Oracle Order Management — Oracle Transportation Management | Sync order releases**", without the quotes.
4. Click **Get**.

The recipe is structured as an OIC3 Project consisting of integrations, connections, and a lookup.

- **Integrations**
  - OM_OTM
  - OTM_OM

- **Connections**
  - LOGISTICS_CONNECTION
  - SCM_CONNECTION

- **Lookups**
  - OM_Logistics_Reference

You need to configure the SCM connection (for OM) and Logistics connection (for OTM) and activate the integration. This will get the new OM OTM integration for transportation planning up and running.

Once the integrations are activated, the OM trigger connection listens for transportation planning events from OM. These are mapped into Transmission objects to OTM for creation of OTM OrderRelease and OrderReleaseLine for fulfillment. The integration also gets transport acknowledgment and confirmation when OTM is ready, and these are updated in the OM Order appropriately for an end-to-end view of order fulfillment. This design is illustrated here.

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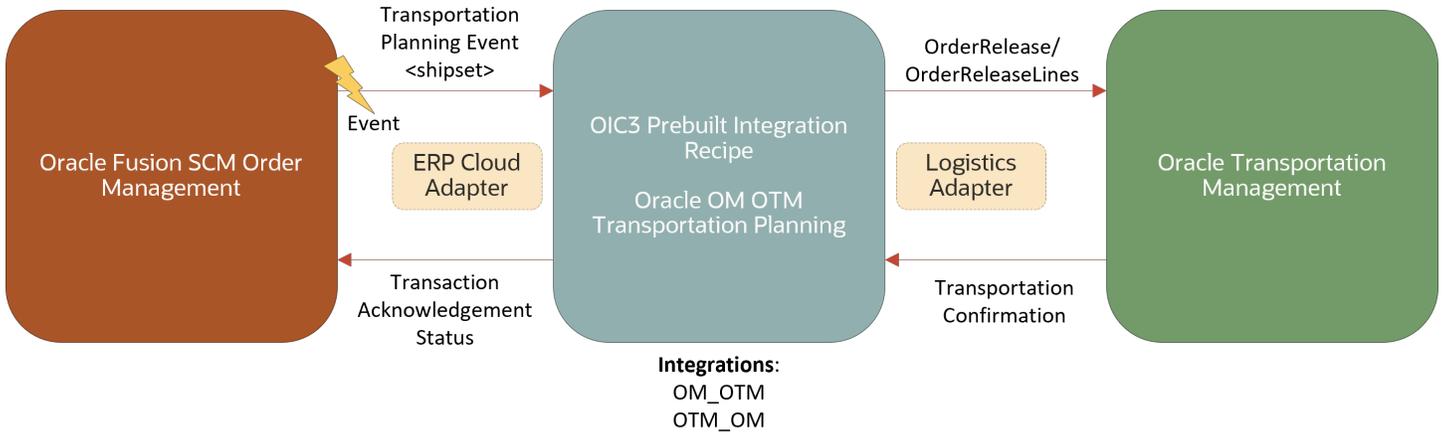
Note: Download the latest OM-OTM prebuilt integrations from the OIC Integration store accessible from the OIC Home page. Use this latest version instead of the OM_OTM and OTM_OM Integrations available in the KB article:

- *KB131599 Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC*

Shipment Sets

A shipment set (shipset) is a set of order lines that Order Management ships together as one group. All these lines ship on the same date, but they might ship across more than one package, depending on packing requirements. Note that shipsets are an additional functionality, and the integration does continue to process OM orders which are fulfilled as individual fulfillment lines without shipset grouping.

The OIC prebuilt integration maps the OM Order order lines/fulfillment lines to OTM order release and release lines. The following diagrams show the structure of OM orders for scenarios with shipsets and without shipsets and how they're mapped during OTM transmission.

Order without a Shipset
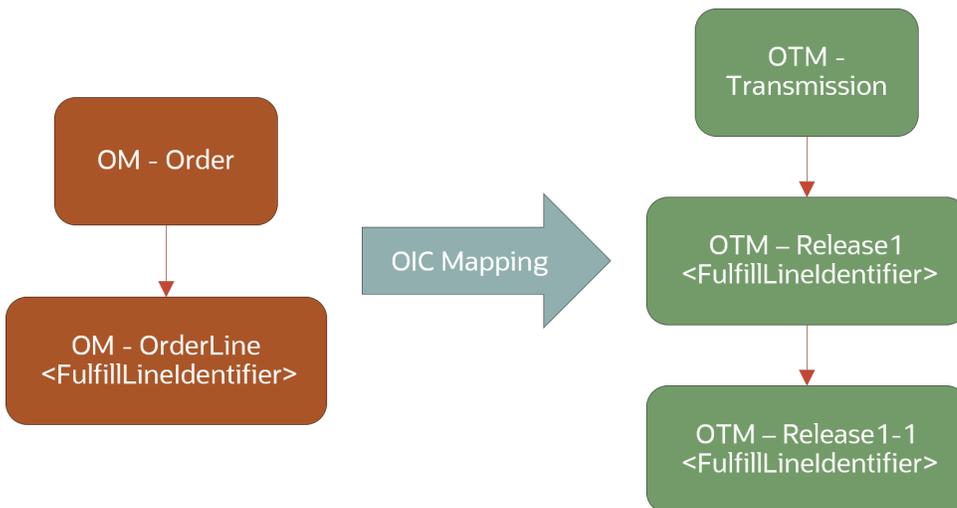
Order with a Shipset
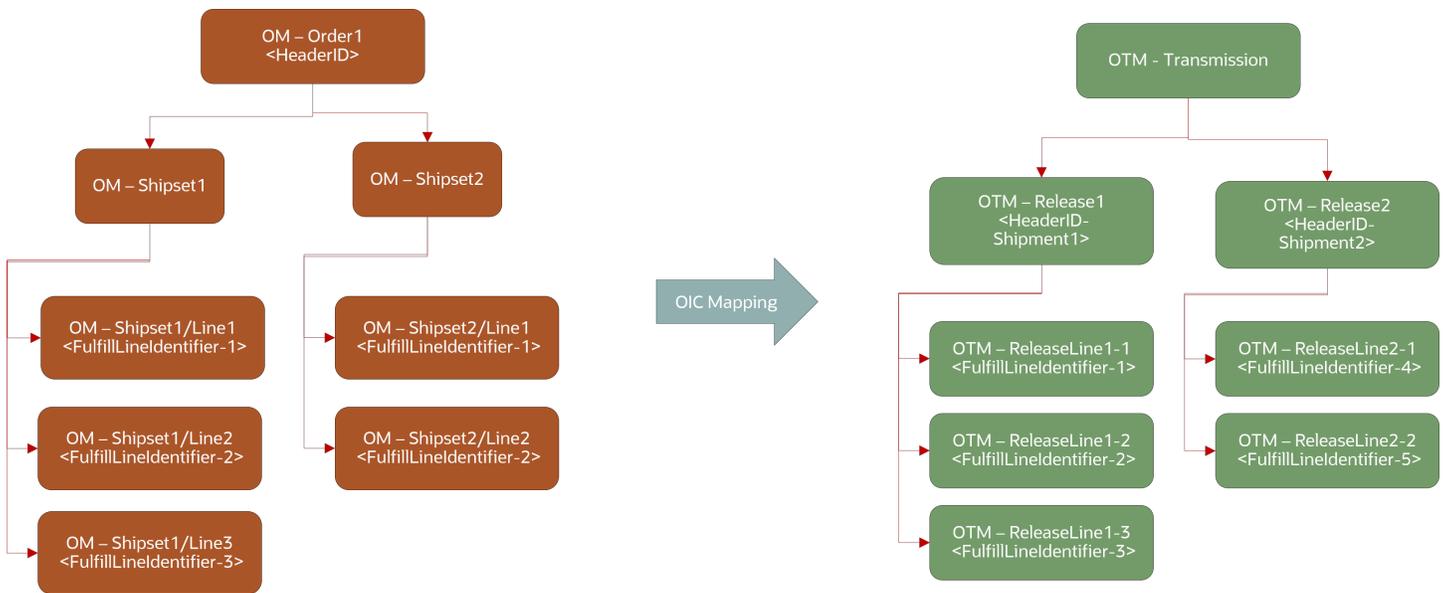
Observability

The integration instances can be monitored at runtime from OIC observability.

1. From the OIC Home Page, click the **Show/hide navigation menu** icon
2. Click the **Observability** option.
3. Click the **Instances** option.

There you can see the primary identifiers, instance ID, statuses, and durations. For orders with shipsets, the business identifiers help track the integration instances by shipset names.

Warehouse Management System Integrations

The Oracle Warehouse Management Cloud to Oracle Transportation and Global Trade Management Cloud Integration Guide includes an overview and setup details for the Oracle Warehouse Management Cloud Integration to Oracle Transportation and Global Trade Management Cloud Integration. You can find this guide in My Oracle Support in *KB104569: Sample Integration Between Oracle Warehouse Management Cloud and Oracle Transportation and Global Trade Management Cloud*.

5 Known Issues

Sending Shipment Information to Inventory Management Cloud

There is a potential issue with the OTM_WSH mapping to Initial Destination. Please see the *(6) Sending Shipment Information to Inventory Management Cloud (Shipping)* section for more information.