Oracle Fusion Cloud Transportation and Global Trade Management

Administration Guide

Release 26A

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Get Help in the Applications

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2 Introduction

Basic Configuration

The purpose of this document is to help you get started with implementing and using the Transportation and Global Trade Management Cloud Services. More detailed documentation on particular topics is available in the form of online help and documents. See the *Oracle Fusion Cloud Transportation and Global Trade Management Getting Started Guide* for system requirements, and basic information on accessing your Cloud Service and managing users.

Additional Documentation

- *Oracle Help Center*
- *KA171: Information Center: Transportation and Global Trade Management*
- *KB153929: Oracle Transportation and Global Trade Management Documentation Resources*
- *KB98190: Key Differences between Oracle Transportation and Global Trade Management On-Premises and Cloud*

3 Configuring the Application

Customer-defined Properties

Much of the configuration of Oracle Transportation and Global Trade Management involves managing properties used by the application. Properties are divided between their use in the web-tier (i.e. screen-related properties) and in the application-tier (i.e. business properties). You can view the current value of a property using the App-Tier Properties and Web-Tier Properties accessed via **Configuration and Administration > Technical Support > Diagnostics and Tools > Configuration**. Type the beginning of a property name in the Filter field and click Refresh button to see a list of matching properties and their corresponding values.

Note: Only users with a **DBA.ADMIN** user role have access to this menu option.

Tip: Changes made to properties on this page are lost when the server is restarted.

Property Sets

You can make permanent property changes using the Property Set manager. A property set is a collection of ordered property instructions stored in the database. This page is accessed via **Configuration and Administration > Property Management > Property Sets**.

The **CUSTOM** property set, provided during installation, should be used for simple property changes. This property set will override staged properties in both the web and application tiers. More complex property set hierarchies can be created. For more details, see the *Property Sets help*.

Property Sets contain important settings, which affect the system. For example, the following property can be used to configure automated emails: glog.properties.email.recipients.

See the *glog.properties Properties help* for more details.

Password Properties

Passwords are not stored in property sets. Instead, password values are stored in secure wallets.

Any change to a password property in the Property Set manager is stored in the wallet. Note that all password values are masked on the manager for security reasons.

Units of Measure

Oracle Transportation and Global Trade Management stores all amounts in two units of measure: the actual unit of measure and a storage default unit of measure. The storage default amount is stored in the database “BASE” columns and is used to support querying amounts (i.e. Shipment Total Weight) which have different actual units of measure.

The storage default is designated by an indicator on the unit of measure for each unit of measure type (weight, volume, distance, etc.). The default for storage default uses U.S. standard units of measure.

In most cases, the unit of measure displayed on the user interface is controlled by a user preference. If a user does not have a user preference defined, the unit of measure is controlled by the Display Default indicator on the unit of measure for each unit of measure type. The default for Display Default uses U.S. standard units of measure.

The Display Default and Storage Default settings can be modified by running an action on the corresponding unit of measure. In addition, new units of measure and corresponding conversions can be created. The Unit of Measure page is located at **Configuration and Administration > Power Data > General > Unit of Measure**. This page is only available when you are logged in as DBA.ADMIN. For more information, see the *Unit of Measure help*.

Currency

By default, Oracle Transportation and Global Trade Management uses US Dollars when saving costs to the database. Also by default, Oracle Transportation and Global Trade Management triangulates all currency conversions through US Dollars.

> **Note:** The CSV records in the CURRENCY_EXCHANGE_RATE.csv are provided as samples and must not be used for currency conversions. You must load your own exchange rates using the CSV or Exchange Rate Inbound transmissions.

Example

This example illustrates how Oracle Transportation and Global Trade Management stores a shipment cost record with the currency storage default set to two different currencies.

Total actual cost of the shipment is 1000 JPY. If Oracle Transportation and Global Trade Management's currency storage default is USD (current default in all Oracle Transportation and Global Trade Management installations), Oracle Transportation and Global Trade Management stores this cost as follows:

- Total_actual-cost: 1000
- Total-actual-cost_currency_GID: JPY
- Total_Actual_cost_base: 7.76

If instead Oracle Transportation and Global Trade Management's currency storage default is GBP:

- Total_actual-cost: 1000
- Total-actual-cost_currency_GID: JPY
- Total_Actual_cost_base: 5.31

In the first instance, the rate of 7.76 represents the USD value of 1000 JPY converted at the current rate in Oracle Transportation and Global Trade Management (128.77) while in the second instance the rate of 5.31 represents the GBP value of 1000 JPY converted at the current JPY/GBP rate in the system (188.08).

When to Change Currency Storage Default

There are two scenarios where you would like to change your currency storage default: either you only use one currency other than USD or you use multiple currencies but not USD.

Rates in One Single Currency

If you only have one currency other than USD, you only need to set your currency storage default to the currency you use. For example, Oracle Transportation and Global Trade Management stores a 100 GBP shipment cost as 100 in both the total cost and the total cost base fields so no currency conversion is needed. In the case of multiple currencies, you need to decide what the currency storage default is for your Oracle Transportation and Global Trade Management installation before setting it.

The Storage Default Unit of Measure can be set by running an action on the "Currency" Unit of Measure. The Unit of Measure page is accessed via **Configuration and Administration > Power Data > General > Unit of Measure**. This page is only available when you are logged in with a user that has DBA.ADMIN user access. For more information, see the *Unit of Measure help*.

Oracle Transportation and Global Trade Management still needs currency rates to convert between the currencies you use. You can download rates from the IMF website. (This populates the DEFAULT rate in the CURRENCY_EXCHANGE_RATE table.) Note: All exchange rates from the IMF are against USD. The following instructions are for using a base currency other than USD or to use a source other than the IMF:

- Update the rates you need manually or use a XML or CSV process while again entering your needed rates against your preferred currency. You can do this nightly, monthly, or at any other frequency.
- In the `glog.properties` property file or the `CUSTOM` property set, set `glog.currency.base` to your currency storage default (e.g. EUR). This makes Oracle Transportation and Global Trade Management triangulate through the currency of your choice.

This means that Oracle Transportation and Global Trade Management will have all DEFAULT rates stated against your base currency and triangulate using your base currency.

Country Codes

Oracle Transportation and Global Trade Management can be configured to use 2 or 3 character Country Codes. Both sets of Country Codes are loaded into the Country Code table. However, the user interface needs to be configured to display values from only one of these data sets. It is important to decide which data set will be used up front since there is no facility to change this data on related entities once the data has been used. Configuring the Country Code data set is accomplished using the Database Property Management page accessed via **Configuration and Administration > Property Management > Database Property Management**.

Business Number Generator

The Business Number Generator (BNG) is a Transportation and Global Trade Management mechanism for creating IDs based on a complex set of business rules. Since the IDs are based on a sequence, it is necessary to generate the

IDs one at a time in order to prevent duplicate IDs. For this reason, a process may have to wait for another process to finish generating an ID. This waiting can manifest itself as a performance issue. The impact is even more significant in a scalability environment since the synchronization must be coordinated across application servers. Transportation and Global Trade Management disables unnecessary BNG by default. In unusual circumstances it may be necessary to change this.

The Bill of Lading 'BM' Shipment reference number can be enabled with the following property:

```
glog.shipment.createBMRefnum=true
```

The Oracle Database sequence number generator has less overhead than the BNG and should be used instead of the BNG when possible. The following database sequences can be changed to use BNG by removing the following Properties:

```
glog.server.bngenerator.oracleSequence.xid.S_SHIP_UNIT_XID.DEFAULT=S_SHIP_UNIT_SEQUENCE
glog.server.bngenerator.oracleSequence.xid.SHIPMENT_XID.DEFAULT=SHIPMENT_SEQUENCE
glog.server.bngenerator.oracleSequence.xid.ORDER_MOVEMENT_XID.DEFAULT=ORDER_MOVEMENT_SEQUENCE
glog.server.bngenerator.oracleSequence.xid.SHIP_UNIT_XID.DEFAULT=SHIP_UNIT_GID_SEQUENCE
glog.server.bngenerator.oracleSequence.xid.ORDER_RELEASE_LINE_XID.DEFAULT=ORDER_RELEASE_LINE_GID_SEQ
glog.server.bngenerator.oracleSequence.xid.MONITOR_AGENT_XID.DEFAULT=MONITOR_AGENT_SEQUENCE
```

Refer to the Property Set section for more details on how to remove a Property.

User Interface

The Oracle Transportation and Global Trade Management user interface provides many capabilities for configuring the user experience. The following section describes some of these capabilities and potential pitfalls when using them.

Branding

As it relates to Oracle Transportation and Global Trade Management, the term “branding” refers to the process of changing the look and feel of the application to reflect the you or your client’s brand. Oracle Transportation and Global Trade Management is shipped with configurable images and web interface themes, which gives you the ability to easily change colors and logos viewed on Oracle Transportation and Global Trade Management web pages. For example, you can use your own logos to replace the default Oracle and Oracle Transportation and Global Trade Management logos throughout the application. The Oracle Transportation and Global Trade Management Cloud service supports two forms of branding:

- Themes
- User-defined Images

Themes

An Oracle Transportation and Global Trade Management “theme” is a specific color scheme for the application. A theme also provides the ability to reference user-defined images or logos. The following page allows you to create and modify themes: **Configuration and Administration > Branding > Theme Management**. This page can only be accessed by someone with DBA access.

There are several color schemes available by default:

- Redwood (Default): this is the default color scheme automatically used by OTM/GTM.
- Autumn Red
- Crisp Green

- Dark Blue: This theme does not include a springboard background image.
- Dark Grey
- Midnight Blue
- Sky Blue

Configurable images include:

Login

Variables in this section apply to the **Transportation and Global Trade Management log-in** page.

- **Login Logo**: The image that appears in the lower right-hand corner of the Sign In To Oracle Transportation and Global Trade Management screen. Only used for a global theme.

> **Note:** By default this variable is hidden. To show this variable set the property `glog.webserver.branding.showLoginOptions` to true.

> **Note:** When using a single-sign on server (SSO) such as Transportation and Global Trade Management in the Cloud, this image is not used.

Home

Variables in this section only apply to the **Transportation and Global Trade Management** home page and Unified Global Header.

- **Header Logo**: The image that appears next to the Navigator icon in the Unified Global Header. The default image shipped with OTM is 119 x 25. You can use this size as example of how large your header logo can be.
- **Springboard Background Image**: The image that appears behind the springboard.
- **Branding URL**: The URL used when you click the Header Logo.
- **Springboard Background Color**: The color used as the background color for the application shell. Enter a valid HTML color code or use the browser's color selection tools.
- **Main Font Color**: The font color used for the top level springboard menu items. This color is also used for third level springboard menu items.
- **Springboard Submenu Font Color**: The font color used for the second level springboard menu items.
- **Springboard Submenu Background Color**: The background color used for the second level springboard menu items. The default is white.
- **Header Icon Color**: The color used for the Unified Global Header icons.
- **Header Background Color**: The color used as the background color for the Unified Global Header.
- **Title**: The text displayed next to the Header Logo.

Logout

Variables in this section apply to the Transportation and Global Trade Management log-out page.

- **Logout Logo**: The image that appears after you click the **Sign Out** link to log out of Transportation and Global Trade Management. Only used for a global theme.

> **Note:** When using a single-sign on server (SSO) such as Transportation and Global Trade Management in the Cloud, this image is not used.

For more details, see the *Theme Management: Create Theme help*.

User-Defined Images

User-defined images can be any graphic in .gif or .jpg format. They can be used in email messages, themes, as design elements for a workspace, or be assigned to user-defined fields that get associated with business objects (for example, orders, shipments, etc.). The Set Image action is used to set the image on the corresponding business object. The following page allows you to upload user defined images: **Configuration and Administration > Branding > Upload Mail and User Defined Images**. For more details, see the *Upload Mail and User Defined Images help*.

Finder Page Size

A Finder Page is the Oracle Transportation and Global Trade Management terminology for the standard result page which is returned when running an Oracle Transportation and Global Trade Management finder query. The number of records returned per page is configurable via the “Finder Page Size” user preference. Increasing this from the default value of 25 has a direct impact on the performance of loading this page due to the increased amount of data that needs to be processed and displayed. Values greater than 100 are likely to make the performance unacceptable.

User Favorites

Favorites allow you to limit initial `Find ()` results so that your favorite results are displayed first. For example, you can create a favorite for locations. In that favorite, you specify the top 10 locations which you use on a regular basis. Then, whenever you use the `Find ()` button the system first displays those 10 locations. If you want to find a different location, you are given the option to search for more locations.

Adding Search Fields to Finders (Grid-Flattening)

Grid flattening enables administrators to present "pseudo fields" for search, result, and other manager pages that are configured to the needs of their users. Pseudo fields "flatten" a grid by presenting field labels that are more specific than the default fields. For example, a PO Number field could be added to the order base search page, so users can search for purchase orders directly by their numbers. Grid flattening is used to make it appear as if data from a child database table is on a parent database table. Using grid flattening on search and result pages should be done with caution since the resulting query is more complex and therefore susceptible to slower performance.

Manager Layout Producer Configuration

Manager layout allows you to configure a page by adding or removing fields. The XML document for an object is created by a series of "producers". These producers are associated with objects within Oracle Transportation and Global Trade Management. Each manager in Oracle Transportation and Global Trade Management has an XML document associated with it. When you create a customer-defined manager layout, you can create or remove fields from that manager. The system creates an XML document containing relevant data that is displayed in that manager. However, the XML document may contain data that is no longer needed in a customer-defined manager that has had a lot of

fields removed. By deleting the associated producers from the customer-defined manager the XML document will be smaller, allowing the page to load more quickly. For more details, see the *Manager Layout: Producers help*.

Customizing Visibility of PUBLIC Data

Oracle Transportation and Global Trade Management includes various data by default such as currency codes, country codes, and reference number qualifiers. It may be desirable at times to remove some of this data from drop downs and pick lists, for example, if you only work in a small number of currencies or do not use the PUBLIC qualifiers. This can be accomplished by attaching a VPD predicate to the table for that data. For example, if you want to restrict currencies to only USD and EUR, create or edit the VPD profile for the users who should only see those currencies to include the following:

Table Name: CURRENCY, Predicate: currency_gid in ('USD','EUR')

(Be sure the "Use External Predicate Rule" box is checked.)

Diagnostic Tools

Oracle Transportation and Global Trade Management provides several utilities to help while configuring the system and while the system is running. The following sections describe these utilities.

Application Logging

Oracle Transportation and Global Trade Management provides an embedded logging utility. Application logging is configured on the page **Configuration and Administration > Power Data > General > Log Files**. Application logging provides detailed information about the processes running in the system. The output of the logging is viewed on the following page, which is accessible from all parent menu groups,**Process Management > Logs > System**. For more details, see the *System Log help*.

Although logging is a vital function in Oracle Transportation and Global Trade Management, excessive logging is a very common cause of poor performance. This is particularly true of bulk planning processes. You can review what logging is currently enabled in the system using the page **Configuration and Administration > System Administration > Logging Overview**. You can also temporarily disable all logging by setting the following property:`glog.log.suppressAll=true`

Setting this property can be a quick method of identifying whether logging is the cause of a performance issue.

> **Note:** The **Logging Overview** screen can't be used to display summary information or suppress logging in Log Files of type WEB.

LogIDs with a suffix of “Debug” or “Details” have the potential to log significant amounts of data and should be avoided unless directed to be by Oracle Technical Support. Ad-hoc logs are the most dangerous because they generate logging regardless of the user logged in. On the other hand, User logs only write to the log file when that particular user is logged in and using Oracle Transportation and Global Trade Management. In some scenarios user logs can still have a significant impact on performance, even if that particular user isn'tlogged in. This logging happens because there's a certain amount of overhead in generating a log message. The overhead occurs before Oracle Transportation and Global

Trade Management determines, based on the logged in user that it doesn't need to write the message to the log file. For this reason, having many user logs with detailed logging enabled can have a significant impact on performance.

Note: Log files are limited to a maximum size of 10MB and 20 Backups.

Action Logging

To streamline diagnoses of issues, OTM supports a type of logging called Action Logging. When running a finder/manager action, editing a top-level record or submitting a process control action, you can opt to turn on a log dedicated to that action. While the action runs, all logging needed for diagnostics is written out to a single, specific log file. When the action completes, you can view the focused log and download it for offline analysis.

For more information, see the *About Action Logging help*.

Performance Monitoring

Oracle Transportation and Global Trade Management provides embedded tools which should be used for investigating performance issues. The following tools are located on the menu at **Configuration and Administration > Technical Support**:

- Diagnostics and Tools
- Configuration Collection
- Performance Collection

These tools provide insight into the current transactions in the system, as well as, historical statistics based on previous transactions. They capture data on technical components of the application such as data caches, workflow threads, object locks, and more. Diagnostics and Tools are a set of user interfaces, whereas Configuration Collection and Performance Collection are utilities which capture data in an XML format. Should performance issues occur in the system you may be requested by Oracle Technical Support to monitor and/or capture data from one of these utilities.

Historical Metrics and Notifications

The Oracle Transportation and Global Trade Management Cloud Service captures a broad set of performance metrics. These performance metrics are persisted to the database on an hourly basis and are aggregated by day and week and are referred to as Historical Metrics. The Historical Metrics cover many technical components within the service including User Interface, Integration, Agents, Email and Logging. They also cover Infrastructure Health components including caches, connections, object locks, and memory. These metrics should be used to help identify, diagnose, and resolve application performance issues. See the *Historical Metrics help* for more details.

Metric Collections provide a configurable mechanism for comparing Historical Metrics to a baseline. Email Notifications can be generated based on user defined thresholds. It is also possible to initiate a Diagnostic Logs capture, QDLogs, based on a defined threshold. This will provide additional diagnostic data for analysis by Support and Development. See the *How to Configure Metric Collections help* for more details.

Business Object Caches

The Transportation and Global Trade Management Business Object caches are maintained by Transportation and Global Trade Management. The majority of Transportation and Global Trade Management Business Objects caches use a Least Recently Used (LRU) strategy to maintain the cache. When an LRU cache reaches its maximum, a one-for-one exchange is made for the new object and the least recently used object in the cache. Most static data used by Transportation and Global Trade Management business logic is maintained in one of these caches. The App-tier Caches utility page, located on the menu under Technical Support – Diagnostics and Tools – Caches, can be used to review statistics on these caches.

The size of a Business Object Cache can have a significant impact on performance. The efficiency of a cache is measured by its hit ratio. A low hit ratio is a possible indication of an undersized cache. If a cache has reached its capacity and the hit ratio is low (less than 0.80), performance may be impacted. Increasing the maximum size of this cache may increase system performance. Temporary changes can be made to the cache using the diagnostic screen, but the changes will revert to the default upon restart. To permanently change the size of a cache the appropriate glog.property must be set in a Property Set. For example, the size of the Rate Offering cache is set by the following property:`glog.cache.TRateOfferingCache.capacity=2000`

It is important to note that increasing the size of the cache has the adverse effect of increasing memory usage, so changes should be done incrementally and with thorough testing. Please refer to the Property Sets section of this document for more details on changing property value.

Timeouts

In order to maintain stability of the application, timeouts have been configured. It is important to be aware of these timeouts.

Oracle Cloud SSO Server

- Session Timeout: 8 hours

> **Note:** This setting can be changed in the IDCS web console. When the timeout period is reached, the user will be forced to login to the SSO again.

WebLogic Session Timeout

- Idle Timeout: 8 hours

> **Note:** This setting cannot be changed. If the Oracle Cloud SSO Server timeout is less than this value, the user will timeout according to the Oracle Cloud SSO timeout.

Web Server Requests

Web server request timeout is 5 minutes, and if a request is not able to be completed in 5 minutes an error is given.

SQL Timeouts

> **Note:** Changing these timeouts may destabilize your environment. In the future, the ability to change these timeouts will be restricted.

The following timeouts may currently be modified by setting the glog.sql.query.timeout properties.

- UI Query: 5 minutes
- Agent Query: 5 minutes
- Data Replication Query: 5 minutes
- All other Queries: 10 minutes

The following timeouts may currently be modified by changing the glog.sql.update.timeout properties.

- Direct SQL updates: 10 minutes
- All others SQL: 10 minutes

Thread Tuning

Transportation and Global Trade Management workflow is based on a set of business topics and thread groups. A Topic is the Transportation and Global Trade Management terminology for a particular workflow process. For example, AutoMatchInvoice is a topic. Each Topic is associated with a thread group by a glog.property.

A Thread Group is a set of threads dedicated to processing a set of topics. Each thread group is given a number of threads that can be used to simultaneously process topics. When all threads in a group are busy processing a topic, all additional topics are placed in a queue until a thread becomes available. Transportation and Global Trade Management computes statistics for the amount of time a topic spends waiting to be processed and the amount of time spent processing the topic. These statistics can be reviewed with the Event Diagnostics page available on the DBA Technical Support menu.

A long average wait time and/or a backlog of queued events, accompanied by a short average time to process the topic, may indicate a need to increase the number of threads in a thread group. These thread settings may be maintained in the Property Set Manager in either the "`APP_WORKFLOW_THREADING`" or "`CUSTOM`" Property Set. Thread settings in "`APP_WORKFLOW_THREADING`" take precedence. Each thread group has a corresponding property to control the number of threads

- `glog.workflow.queueThreads.<queuename>`

"`<queuename>`" should be replaced by the name of the queue (i.e. "planningBuild", "transport – Services") and specified in Property Set's "Key" field. The number of threads should be specified in the Property Set "Value" field. Data Queue threads such as INTEGRATION IN are managed differently. See *Integration Data Queues* for more information.

In addition to configuring the number of threads, particular parts of the planning process support multi-threading. The behavior of multi-threading is configurable based on a Batch Size. By default, Cloud is configured with the following Batch Sizes.

- CommitShipmentGraphs - 25
- CommitShipmentGraphsForOrderMovements - 25

- BuildShipmentGraphCollections - 25
- BuildShipmentGraphs - 25
- BuildShipments - 25
- BuildShipmentGraphsForOrderMovements - 25
- FleetAssignment - 25

For details on this topic, see the *glog.workflow Properties help*.

Business Object Metrics

The Transportation and Global Trade Management application captures metrics to track the total number of business objects and as well as counts of the individual key business objects used across the application. A business process called *Collect Business Metrics* is scheduled to run once every day to count the business objects and store these counts. The business process can also be manually invoked via the user interface.

The business object counts are stored in the table OTM_BUSINESS_OBJECT_COUNT, for a period of 3 years. The table has read-only access for users; the counts records cannot be modified or deleted. The counts can be retrieved by querying the table, or viewed in a report. The *Business Object Metrics Report*, displays the total business object counts and the individual business object counts for each of the last 7 days. The *Business Object Metrics Report* can be accessed via the Report Manager and is listed under the Metrics section.

Recurring Processes and Automation Agents

The Recurring Processes and Automation Agents are a Transportation and Global Trade Management mechanism for creating recurring or application event driven processes within the application.

> **Note:** Any user who switches their user role cannot be used in a Recurring Process or be used in an Agent. There is only one current user role per user at a time. Allowing a user who is configured to a Recurring Process or an Agent to change their user role can cause unknown issues while in the execution of the process or agent. Instead, you should create these recurring process or agents to run as a user who does not normally log in or does not change user roles.

> **Note:** Do not change the DBA.ADMIN user's user role. This could cause unknown issues.

4 Configuring Email Notifications

Email Configuration Overview

The Oracle Transportation and Global Trade Management service is capable of sending out a variety of email notifications to users and business partners. For some customers, these notifications are critical business transactions such as Tender Offers. In order to ensure a high level of deliverability, it is important to configure your email From Address using a valid Internet Domain. Oracle Transportation and Global Trade Management supports three methods for sending email. There are advantages and disadvantages with each approach.

- **Common Approved Sender**: This approach uses a From Email Address that is shared among all customers in a given region.
- **External SMTP Host**: This approach routes all email to your own SMTP Host which is external to Oracle Cloud Infrastructure.
- **Custom Email Domain**: This approach uses a From Address that contains your company's domain. When done correctly, this is the most reliable method.

Refer to the corresponding section of this document for details on each approach. Regardless of the method, it is necessary to set the Email From Address, so refer to that section after you have implemented your preferred method.

Configuring the Email From Address

Before sending any email from the Oracle Transportation and Global Trade Management service, it's necessary to configure the Email From Address. It is strongly recommended to us a single Email Address as the From Address. Once you've identified the address that you'll use, you configure that within the service by setting the `glog.workflow.notify.advisor.email=OTMAdvisor@example.com` glog.property in the CUSTOM property set. It is possible to add a more friendly label along with the email address, i.e. `"OTMAdvisor@example.com='Example Company Transportation Administrator'"`. You'll also need to set the email address on the contact associated with the LOGISTICS involved party if using Shipment Tenders.

Note: The following properties that control Email From Addresses automatically default to the same value as "glog.workflow.notify.advisor.email". It isn't necessary to set these properties unless you want to use a different Email From Address.

- glog.properties.log.email.from
- glog.procurement.fromMailAddress
- glog.mail.from
- glog.mail.quota.email
- glog.integration.servlet.TransmissionStageError.errorEmailFrom
- glog.odi.email.from.address

Configuring the Email From Address for BIPublisher for Oracle Analytics Cloud and Oracle Analytics Server

It is possible to email reports directly from BIPublisher. In order to do this, you must specify the Email From Address. After connecting to the BIPublisher Administration URL, click the menu in the top right and select "Administration". Click Delivery Configuration under Delivery. Set the **Email From Address** and **Delivery Notification Email From Address** fields to your chosen Email From Address. Click the **Apply** button.

Using a Common Approved Sender Email Address

Using a Custom Domain is strongly encouraged for high deliverability, however a data center specific common from address can be used in the interim. Although SPF and DKIM are configured for the domain of this common address, Oracle can't guarantee the reliability of email deliverability when using this address. Email reputation of that From Address is shared across all customers using that address. It is also important to understand that Blocked Recipients are common to all customers using the common address. It is also not possible to receive replies to emails sent with these addresses since it isn't a legitimate email address with a corresponding inbox. Oracle strongly recommends that this approach only be used as a temporary solution until a Custom Email Domain is configured.

To use this Common Approved Sender, select the Approved Sender from the list below depending on the region where your service is deployed and begin using it as the Email From Address. Don't try to register Common Approved Senders in the Mail Sender screen. See the *Configuring the Email From Address* section of this document on how to use this address.

Approved Sender Email Addresses by Region

OCI Region	Provided Common Approved Sender Email Address
ap-melbourne-1 Australia Southeast	`noreply@mail.otmgtm.ap-melbourne-1.ocs.oraclecloud.com`
ap-sydney-1 Australia East	`noreply@mail.otmgtm.ap-sydney-1.ocs.oraclecloud.com`
ca-montreal-1 Canada Southeast (Montreal)	`noreply@mail.otmgtm.ca-montreal-1.ocs.oraclecloud.com`
ca-toronto-1 Canada Southeast (Toronto)	`noreply@mail.otmgtm.ca-toronto-1.ocs.oraclecloud.com`
eu-amsterdam-1 Netherlands Northwest	`noreply@mail.otmgtm.eu-amsterdam-1.ocs.oraclecloud.com`
eu-frankfurt-1 Germany Central	`noreply@mail.otmgtm.eu-frankfurt-1.ocs.oraclecloud.com`
me-abudhabi-1 UAE Central	`noreply@mail.otmgtm.me-abudhabi-1.ocs.oraclecloud.com`
me-dubai-1 UAE East	`noreply@mail.otmgtm.me-dubai-1.ocs.oraclecloud.com`
me-jeddah-1 Middle East	`noreply@mail.otmgtm.me-jeddah-1.ocs.oraclecloud.com`
sa-saopaulo-1 Brazil East	`noreply@mail.otmgtm.sa-saopaulo-1.ocs.oraclecloud.com`
sa-vinhedo-1 Brazil Southeast	`noreply@mail.otmgtm.sa-vinhedo-1.ocs.oraclecloud.com`
uk-cardiff-1 UK West	`noreply@mail.otmgtm.uk-cardiff-1.ocs.oraclecloud.com`

OCI Region	Provided Common Approved Sender Email Address
uk-london-1 UK South	`noreply@mail.otmgtm.uk-london-1.ocs.oraclecloud.com`
us-ashburn-1 US East	`noreply@mail.otmgtm.us-ashburn-1.ocs.oraclecloud.com`
us-phoenix-1 US West	`noreply@mail.otmgtm.us-phoenix-1.ocs.oraclecloud.com`

Note: Common Approved Sender Email Addresses aren't supported in the UK and US Government regions.

In order for the Common Approved Sender to work, you must set the Email From address exactly as specified above. Email will not work if you try to use an email alias, i.e. `noreply@mail.otmgtm.us-phoenix-1.ocs.oraclecloud.com="noreply@mycompany.com".`

Note: If you choose to use the Common Approved Sender Email Address, you'll not see the Approved Sender in the user interface and you should not try to register it because it's already registered.

It's possible to register a custom Approved Sender using the region specific Oracle Transportation and Global Trade Management email domains listed above. For example, it's possible to register an Approved Sender with the address `"noreply-mycompany@mail.otmgtm.us-phoenix-1.ocs.oraclecloud.com"`. Using this approach alleviates the need to configure a custom Email Domain with SPF and DKIM. The custom Approved Sender must be registered via the following menu option: **Business Process Automation > Power Data > Mail Management > Mail Senders**. It's strongly recommended that you name your Approved Sender in a way that uniquely distinguishes your From Address using an attribute similar to “mycompany” in the example above.

Configuring a Custom Domain and Sender

Obtaining reliable email delivery requires the implementation of SPF, DKIM, and DMARC. The only way to achieve that in Oracle Transportation and Global Trade Management service is to use an email from address that uses a valid and properly configured Internet Domain. Customer’s often use their company’s domain. It is a best practice to create a mail specific subdomain, perhaps even an OTM mail specific subdomain, i.e. `OTMAdvisor@otm.mail.example.com`. Using a subdomain will make the configuration of SPF, DKIM, and DMARC easier.

Sender Policy Framework (SPF) is an internet standard for email to reduce spamming and other fraudulent emails by specifically identifying which Internet hosts are allowed to originate email for email addresses within a specific domain name. Since spamming and phishing attacks primarily use forged sender email addresses to lure the victims into opening dangerous emails (since they appear to be from trusted friends, colleagues, or businesses), SPF prevents this by allowing receiving email servers to reject emails that come from hosts that should not be originating emails with certain sender email addresses, therefore preserving the trustworthiness of those email addresses' domains.

Terminology

- **Spoofing**: Method of forging another entity's identity (e.g., the "From" address) onto an email in order to get users to open a message.
- **Phishing**: Method of tricking recipients into giving out personal information, such as credit card numbers or account passwords, often by spoofing the origins of the email (e.g., a user's bank, credit card company, or familiar merchant).
- **Approved Sender**: The address used in the "From:" header of the emails you send must be managed as an approved sender via the Email Delivery Service (OCI SDK). The domain name used in the approved sender needs to be configured as a sending domain which requires DNS configuration; see sending domain definition below. An approved sender is a regional resource with an associated Oracle Cloud ID (*OCID*).
- **DomainKeys Identified Mail (DKIM)**: DomainKeys Identified Mail is a cryptographic signature-based type of email authentication. DKIM requires email senders' computers to generate "public/private key pairs" and then publish the public keys into their Domain Name System (DNS) records. The matching private keys are stored in a sender's outbound email servers, and when those servers send out email, the private keys generate message-specific "signatures" that are added into additional, embedded email headers. ISPs that authenticate using DKIM look up the public key in DNS and then can verify that the signature was generated by the matching private key. This ensures that an authorized sender actually sent the message, and that the message headers and content weren't altered in any way during their trip from the original sender to the recipient.
- **DKIM Selector**: A DKIM selector is a short name for a DKIM private/public key pair within a given sending domain. It's also the first component of the DNS name used to publish the DKIM public key. Each sending domain must have at least one unique DKIM selector per region used.
- **Domain-based Message Authentication, Reporting & Conformance (DMARC)**: DMARC standardizes how email receivers perform email authentication using both of the well-known SPF and DKIM mechanisms. It allows a sender to indicate within its DNS record that its email is protected by SPF and/or DKIM. If neither of those authentication methods pass, the sender can specify the actions a receiver should take (i.e. quarantine or reject the message). DMARC helps senders experience consistent authentication results for their messages at AOL, Gmail, Hotmail, Yahoo! and any other email receiver implementing DMARC.
- **Return Path**: The return path is an SMTP email source address used to process the bounces that occur with your emails. The return path is where mailbox providers send the bounces. The default Email Delivery return path domain is `<region-short-code>1.rp.oracleemaildelivery.com`. Configuring the return path can improve: Deliverability & Reputation, Addressbook addition & other allow-listing mechanisms, DMARC alignment (SPF), consistent branding.
- **Sender Policy Framework (SPF)**: SPF is an IP-based process that enables the verification of a sender's IP address by cross-checking the domain in the email address listed in the visible "Mail From" line of an email against the published record a sender has registered in the Domain Name System (DNS). An SPF record consists of a list of computer servers or IP addresses that senders indicate are "authorized" to send email for that domain. By publishing an SPF record for a domain, that domain is declaring which IP addresses are authorized to send out email claiming to be from that domain .
- **Sending Domain**: the DNS domain name used in the From header when sending email. This domain should have an MX or A record (a CNAME can be used but is not as good) and should accept mail for `postmaster@domain` and `abuse@domain` without bouncing. For more details, see *MAAWG best practices* for sending domains document.
- **Suppressions**: If you send to an email address that fails (due to a hard bounce, repeated soft-bounce, or spam/abuse complaint), Email Delivery may process the bounce message and create a suppression. Subsequent attempts to send to that address will be accepted by Transportation and Global Trade Management (counting against your limits) but dropped by Email Delivery. See *Managing Delivery Failure* for more details on this topic.

Configuring Mail Domains

It's required to register a mail domain before creating an Approved Sender. Mail domains are managed in OTM: **Business Process Automation > Power Data > Mail Management > Mail Domains**.

See the *Mail Domains help topic* for details on how to register a mail domain.

> **Note:** Mail domains are accessible across all environments (Production, Test, Development). It's only necessary to register them from one of these environments and then they can be used in all other environments.

Configuring Approved Senders

It's required to register your Email From Address as an "Approved Sender". Within the Oracle Transportation and Global Trade Management service, the Approved Sender is added via the following menu option.

Business Process Automation > Power Data > Mail Management > Mail Senders

It's possible to register a “Wildcard Approved Sender”. Instead of registering every Email From Address individually, you can now register a special Approved Sender of the format “@mydomain.com”, where mydomain is your Custom Email Domain that has been properly configured with SPF and DKIM for Oracle mail. Don't try to register the Wildcard Approved Sender until you've correctly configured SPF and DKIM. Once SPF, DKIM and the Wildcard Approved Sender are configured, you can send email from any email address that matches the format of “@mydomain.com”. This is a very useful feature if you're using multiple Email From Addresses where you're expecting responses to the emails.

> **Note:** Mail domains are accessible across all environments (Production, Test, Development). It's only necessary to register them from one of these environments and then they can be used in all other environments.

Using Reply To as an Alternative to Wildcard Approved Senders

There are several business processes within Oracle Transportation and Global Trade Management that vary Email From addresses to help communications. For example:

- **Tenders**: When a shipment is tendered, emails to service providers use the LOGISTICS involved party on the shipment as a from address. This allows the service provider to respond directly to the planner when accepting the offer.
- **Domain Based Senders**: Via Domain Settings, each security domain can be assigned a distinct From Address Contact ID. Email sent out by users in these domains use the from address on the Contact rather than the property-based common from address.

Depending on your implementation, it might be straightforward to add all LOGISTICS or domain-based mail senders as Approved Senders, or use a few common mail domains as Wildcard Approved Senders. In an environment with planners across multiple email domains, however, this can be difficult.

An option is to map some or all of these From addresses to the reply-to address of the email, and use a single, property-based address as the from address. The Mail Delivery service, along with secure mail technologies such as SPF, DKIM

and DMARC, check only the from address and its mail domain. This protects mailboxes and recipients from malicious mail senders. The reply-to address, however, isn't validated.

While using reply-to in place of a from address avoids Approved Sender and mail domain security requirements, it does have some disadvantages:

- Most mail browsers display, sort and base rules on the From address. Recipients with folder or spam rules can't build them up based on the reply-to address. All email from the system will be viewed as coming from a single from address.
- When opening up an email whose planner is a reply-to address, a service provider recipient will not see that planner as the from address. The planner is included as a Reply To field in the standard mail content, along with an HTML link to reply to that contact, and the browser Reply To will respond to the planner. But the addressing on the mail header can be misleading.
- Standard stylesheets provided by Oracle have been updated to include the Reply To field in the body of the email. Any custom stylesheets made for email may or may not include this field, depending on how they were developed.

To use the reply-to functionality, the following properties are available:

- `glog.mail.useReplyTo.default=[true|false]`
- `glog.mail.useReplyTo.All=[true|false]`
- `glog.mail.useReplyTo.<Use Case>=[true|false]`

where `<Use Case>` is one of: **Diagnostics, Integration, Fax, MailValidation, NotificationContact, NotificationDomain, NotificationInvolvedParty, Report, TenderLogistics** or **TrailerBuildLogistics**. The **All** property enables reply-to mapping for all emails. The `<Use Case>` property allows reply-to mapping to be enabled for one specific use case where they may be many from email address. For example:

- To use reply-to address for all emails:

  `glog.mail.useReplyTo.All=true`
- To use reply-to address for only Tender and Trailer Build communications:

  `glog.mail.useReplyTo.TenderLogistics=true`

  `glog.mail.useReplyTo.TrailerBuildLogistics=true`

When using reply-to addresses, custom mail stylesheets may opt to include the Reply To address in the mail body. A new XML element:

```
<ReplyTo>
 <FirstName/>
 <LastName/>
 <Email/>
</ReplyTo>
```

Is provided at the root of the DOM.

Configuring SPF

Sender Policy Framework (SPF) is an internet standard for email to reduce spamming and other fraudulent emails by specifically identifying which Internet hosts are allowed to originate email for email addresses within a specific domain name. Since spamming and phishing attacks primarily use forged sender email addresses to lure the victims into

opening dangerous emails (since they appear to be from trusted friends, colleagues, or businesses), SPF prevents this by allowing receiving email servers to reject emails that come from hosts that should not be originating emails with certain sender email addresses, therefore preserving the trustworthiness of those email addresses' domains.

SPF works by having the owner of the domain name specifically identify which public Internet hosts are allowed to originate email for addresses in that domain. For example, if the `example.com` domain owner only wanted the host `mx.example.com` to be able to publicly send emails from anyone with a `user@example.com` email address, they could specify that with SPF, so any other computer that attempted to send example.com emails would have their email discarded when the SPF-compliant receiving email server received the forged email.

SPF-compliant receiving email servers look up the sending email address's domain name, and see if an SPF record is specified. If so, the computer attempting to send the email is cross-checked against the list of authorized Internet addresses in the SPF record; if the sending computer is not authorized, the email can be rejected or classified as spam.

Note that SPF is not used within a corporate intranet; it is implemented at the firewall border between a company's intranet and the global Internet. This is why company-originated emails go to the Internet through a specific border public email server (or redundant cloud of servers), and are similarly received by a single publicly-exposed entry point into the company.

Emails supposedly from domains that do not use SPF probably will not be trusted, as the domain owners appear too careless to prevent forgeries in their name.

Transportation and Global Trade Management can send automated emails to many users for many different reasons, and such emails have to have a sender email address. If the sender email address is not left to the standard installation setting for an Oracle Cloud deployment, such emails will appear as forged to the recipients' email server because the email server associated with the Transportation and Global Trade Management application server may not be on the SPF-authorized list for the Internet domain name of the sender email address.

Hence, for every sender email address configured into a Transportation and Global Trade Management deployment, not only do they have to be registered with the Oracle email service (through the registration web page in the Transportation and Global Trade Management web UI), but the Oracle public outbound email servers have to be listed as authorized email originators in the SPF records for the email addresses' domains.

This requires contacting the parties within your organization responsible for maintaining your organization's domain name records, and asking them to add an SPF directive to your domain name's SPF record authorizing the Oracle public email servers to send email on behalf of the configured Transportation and Global Trade Management sender email addresses in that Internet domain.

Oracle has created publicly posted SPF sublists of the Oracle Cloud public outbound email servers that can be conveniently included by reference in your domain name's SPF record.

The SPF is dependent on the geographic region where your service deployed. Refer to the following table to determine the correct SPF record corresponding to your region.

In your DNS setup, create a TXT record and paste the following information into the record based on the sending region:

Configuring SPF

Sending Region	SPF Record
Americas	`v=spf1 include:rp.oracleemaildelivery.com ~all`
Asia/Pacific	`v=spf1 include:ap.rp.oracleemaildelivery.com ~all`
Europe	`v=spf1 include:eu.rp.oracleemaildelivery.com ~all`

Sending Region	SPF Record
All Commercial Regions	`v=spf1 include:rp.oracleemaildelivery.com include:ap.rp.oracleemaildelivery.com include:eu.rp.oracleemaildelivery.com ~all`
Government Regions	• For US Government Cloud with FedRAMP Authorization, see *SPF Record Syntax*. • For US Federal Cloud with DISA Impact Level 5, see *SPF Record Syntax*. • For United Kingdom Government Cloud, see *SPF Record Syntax*.

Note: If your organization is already using the Oracle Cloud to service your email needs, this SPF update should already have been done.

Do not use only the directive above as your entire SPF record unless you are using the Oracle Cloud as your sole email service provider; otherwise, specifying only the Oracle Cloud SPF directive may block your other legitimate email servers. For example:

```
v=spf1 a:mx.example.com include:spf_c.oraclecloud.com -all
```

would specify for the example.com domain that their public email gateway (mx.example.com) and the Oracle Cloud email gateways are permitted to send emails for the example.com domain, and all other hosts should be rejected as probable spam forgers. Consult *Internet RFC 7208* for technical details about specifying the contents of your SPF record.

If your domain has a large quantity it may be necessary or even desirable to create a new domain or subdomain that is specifically intended for Oracle Cloud email, i.e. "mail.example.com". You should use this domain for your Approved Sender, i.e. "`no-reply@mail.example.com`".

Note: All domains should have an SPF record specifying which servers are authorized to send email to the Internet on behalf of their domain. Oracle will be enforcing a policy of requiring customers sending email using the Oracle Cloud to properly list the Oracle Cloud email servers in your domain's SPF record. Failure to do so could cause the Oracle Cloud to be put in a Block List by other email systems, so Oracle will not accept sender email addresses which would be blocked; Oracle will instead check your SPF record and preemptively block emails using sender domains not authorizing the Oracle email gateways before the emails leave the Oracle Cloud.

The status of each sender email address used by the system can be monitored to ensure it has an associated SPF record in the customer's domain. A performance collector, MAIL COMMUNICATIONS, keeps track of every sender email, showing the status of each email address from the perspective of the domain.

You can review your SPF configuration with a public service like *dmarcian*.

Configuring DKIM

In addition to adding the proper SPF record to your email domain, it's necessary to enable DKIM (Domain Keys Identified Mail) to ensure reliable delivery of your mail via Oracle Cloud Infrastructure. Technically speaking, DKIM provides a method for validating a domain name identity that's associated with a mail message through cryptographic authentication. The identity is independent of other email identities, such as the Email's From Address.

DKIM requires creation of a private key for use by your approved sender and provisioning that key in DNS so that your email signature can be verified by recipients.

Detailed instructions for configuring DKIM are found in the *Configuring DKIM help*.

Configuring DMARC

DMARC standardizes how email receivers perform email authentication using both of the well-known SPF and DKIM mechanisms. It's highly recommended to configure DMARC so that you have better control over the verification of emails originating from your domain. You can check the DMARC configuration of your domain using a service like *dmarcian*.

For more detail on DMARC, see the DMARC specification or *other publicly available documentation on the topic*.

Note that DMARC includes alignment checks to ensure the From address domain on an email matches the envelope from field's domain (that is, smtp.mailfrom). When using an email service such as Oracle Mail Delivery, the smtp.mailfrom matches the domain of the service, not necessarily the sender domain. As such, proper DMARC configuration requires the setup of a Custom Return Path. This redirects the envelope from field to a sender-specific subdomain. The Mail Validation screens report a mismatch between DMARC requirements and mail sender domains if the Custom Return Path hasn't been configured.

Configuring a Custom Return Path

As described above, a Custom Return Path is required for full compatibility with DMARC. Mailboxes verifying DMARC may reject emails where the sender domain doesn't have a Custom Return Path configured. Detailed instructions for configuring a Custom Return Path are found in the online help in the *Configuring a Custom Return Path* topic.

Oracle provides the Custom Return Path for DMARC compatibility. Currently, Oracle doesn't support the use of the Custom Return Path to receive bounce-back messages when emails are rejected by mailboxes. Such a configuration would require:

- all recipient mailboxes be configured to bounce back undeliverable mail to sending mail server. Not all mailboxes support this and customers typically do not have access to the mailbox configuration for arbitrary recipients.
- mailbox support for VERP mailboxes. Bounce back messages are sent to specific mailboxes encapsulating the sender and recipient mail domains. Not all mailboxes support VERP configuration.
- recipient suppression to avoid reputation loss. Repeatedly sending email to an invalid address can lead to a loss of internet reputation both to the sending domain and Oracle Mail. Oracle requires the bounce back emails to ensure a suppression of invalid recipient addresses and avoid the loss of reputation.

Managing Suppressions

Outbound Email Delivery may fail at various points in the delivery process and for various reasons:

- Mailboxes may reject email with hard or repetitively soft bounces. This may result in email recipients being suppressed by Email Delivery until the underlying causes of the bounces is resolved.

- Email Delivery may reject emails due to complaints, manual entry or list-unsubscribe requests.
- Transportation and Global Trade Management may block outbound emails not properly registered with Email Delivery or passing Sender Policy Framework (SPF) checks.
- Transportation and Global Trade Management may block outbound emails due to various mail quotas.

If email recipients report they are not receiving emails, a number of monitoring and configuration screens in Transportation and Global Trade Management can aid in determining the underlying cause and correcting the issue.

Monitoring Email Delivery Suppressions

Email delivery failures reported back to Transportation and Global Trade Management can be monitored via:

- **Logging**: The **MailError** log ID shows the From and To address of each failed email. By setting up an ad-hoc log that enables this logging, all such email can be tracked as they fail.
- **Real-time Diagnostics**: The **Mail Failures** screen shows summary information for failed emails. For each From/To address pairing that failed, you can monitor:
  - the number of emails failed due to Email Delivery recipient suppression
  - the number of emails failed due to other address issues
  - whether the sender has been correctly registered as a valid Email Delivery Mail Sender
  - whether Email Delivery is currently suppressing the recipient
- **Historical Diagnostics**: As part of Historical Metrics, the following metric types can be used to track mail suppression over the preceding hours, days and weeks:
  - **MAIL – FAILED** shows a count of general mail failures due to addressing issues
  - **MAIL – SUPPRESSED** sshows a count of mail failures due explicitly to Oracle Mail recipient suppression

  Note that these metrics are collected for three subcomponents: Total, Common Addresses and User Addresses. Common Addresses refer to valid senders pre-authorized for use for all Transportation and Global Trade Management customers. User Addresses refer to senders configured on the Mail Sender screen for your installation and domains.

Resolving Email Delivery Suppression

If emails are failing due to Email Delivery recipient suppression, the underlying cause of Email Delivery Suppression should be determined and resolved (which may be due to an aberrant failure like a hard bounce due to temporary communication issues) Once resolved, you can request Email Delivery remove the mail suppression by clicking **Unsuppress** on the Mail Failures screen. Note that while this will remove the suppression, the removal may be temporary if the underlying cause is not resolved. Email Delivery may simply suppress the recipient address again. If this happens, Transportation and Global Trade Management needs to work with Oracle Cloud Email Operations to determine the cause.

Incorrect SPF configuration can often lead to Email Delivery suppression. It's important to correctly configure your SPF with respect to your e-mail domains and any downstream servers. Use the Mail Sender or Mail Validation screens to verify that your sender is properly configured for SPF verification.

Email Delivery suppression may also be due to excessive mail use. See the Mail Quota section below for guidelines on monitoring your overall, per content and per recipient email use.

Monitoring Transportation and Global Trade Management Email Blocking

Unless using a pre-authorized sender address for outbound emails, customers must register all from addresses to Email Delivery via the Mail Sender screen. The system will block sending of any email to a sender not successfully registered as a Mail Sender. These blocks can be monitored with **MailError** logging. In addition, the system can block outbound

mail that fails SPF checks. This can avoid having Email Delivery suppress all recipients receiving email from an invalid sender and shift the responsibility for SPF validation to Transportation and Global Trade Management.

Resolving Transportation and Global Trade Management Email Blocking

If emails are being blocked by Transportation and Global Trade Management, make sure you have successfully registered your From addresses as valid mail senders on the Mail Sender screen.

Configuring an External SMTP Host

Oracle Transportation and Global Trade Management service supports customers configuring OTM to send email via their own SMTP server. Doing so alleviates the need to configure SPF/DKIM and the need to create an Approved Sender since the email. The disadvantage of this approach is that there is a greater change of instability because the email traffic is routed over the Public Internet. Transportation and Global Trade Management does not have an automatic retry capability with this approach, so intermittent connectivity issues with the external SMTP server will result in emails failing to deliver. Since this traffic traverses the Public Internet, only authenticated SMTP transport with TLS is supported on Port 587.

In order to use this approach, you will first need to open a Service Request to request the outbound IP Address that will be the source of the mail traffic from the Transportation and Global Trade Management instance. You will need to whitelist the source IP address on your SMTP Server.

Once the whitelisting is complete, add the following properties to the CUSTOM Property Set.

- glog.mail.smtp.external.host
- glog.mail.smtp.external.port

For the "host" property, the value must use the following format:

```
[<user>][/{w<key>][@]<host>
```

where:

- **<user>** is the mail server user for authentication.
- **<key>** is a password wallet key that is used to store the mail server user's password in a wallet.
- **<host>** is the SMTP host name.

To set this property in the CUSTOM Property Set:

1. Choose a name for the password wallet key, i.e. "smtp.external".
2. Edit the CUSTOM Property Set and add a new property for the SMTP host using the password wallet key, i.e. "glog.mail.smtp.external.host=myuser/{wsmtp.external@host.<YOUR DOMAIN>.com".
3. Add a new property for the SMTP port, i.e. "glog.mail.smtp.external.port=587".
4. Save the property set.
5. Edit the CUSTOM Property Set again and add a new property where the key is your password wallet key and the value is your password, i.e. "smtp.external=PASSWORD".
6. Save the property set.

On the second save, the password will be properly stored in a wallet, and you should be able to start sending mail.

Note: It is very important that you follow the steps provided exactly. Make sure that you add the "glog.mail.smtp.external.host" property and save the property set before adding the "smtp.external" property. If you added both properties at the same time, it will not work correctly. If needed, delete these two properties and try again.

Managing Mail Quota

In order to prevent abhorrent behavior of one Cloud customer affecting the quality of service of other customers, it is necessary to limit the volume of email that can be sent by any Cloud instance. You can view the quota and current usage metrics in the Oracle Global Trade and Transportation Management user interface.

Configuration and Administration > Technical Support > Performance Collection

Select **Mail Quota** and click **Collect**.

The columns in the report with a "D" show the Daily volumes for the last 28 days.

It is important to understand that there are different types of quotas. There is an **Overall Quota**, an **Attachment Quota**, and a **Per Recipient Quota**.

- **Overall Quota**: Default Limit varies by Pod Size and is based on a rolling 24 hour period.
- - SMALL=35,000
  - MEDIUM=50,000
  - LARGE=100,000
- **Attachment Quota**: Default limit is 5,000 Emails with an Attachment in a rolling 24 hour period.

  Note: With 23B, the Emails with Attachments specific quota is removed.
- **Per Recipient Quota**: Default limit is 1,000 emails per hour to the same recipient.
- **Maximum Hourly Persistent Quota**: Default limit is 3,000 emails per hour. Emails beyond this limit will continue to be sent, but they will not be persisted for Mail Auditing.

The email volume can be monitored with a Performance Collection and with Historical Metrics. It is also possible for you to configure quota warning thresholds. To use this feature, it's first necessary to create Quota Groups. See the *Performance Collection help*, *Historical Metrics help*, and *Mail Quota Thresholds help* for more details on these features.

Email Size Limitations

There are limits on the size of emails that can be sent from the Transportation and Global Trade Management service. For emails with attachments the limit is 10MB. Emails larger than these limits will still be sent, but the content/attachments will be converted to a link that the recipient can click on to retrieve the content.

For emails sent directly from BIPublisher, the email size is limited to 60MB.

Email Validation and Troubleshooting

The Mail Senders and Mail Validation user interfaces provide significant information for validating and troubleshooting issues with configuring the Email From Address. See the following help topics for more details:

- *Mail Validation*
- *Mail Senders*
- *Mail Validation Troubleshooting*

Suppressed mail, blocked mail, and mail that fails to send are persisted in a table. It may be possible to successfully resend these emails at a later time. See the following help topics in the for more details:

- *Saved Mail*
- *Resubmit Saved Mail*

5 Configuring Oracle Analytics and Reporting

Oracle Analytics and Reporting Configuration Overview

Oracle Transportation Management provides Operational Reporting and Analytic Reporting capabilities based on the operational and historical data stored within the service. Oracle Transportation Management is in the process of replacing Oracle Analytics Server with the Oracle Analytics Cloud service. Starting with the 25B release, new customers are provisioned with Oracle Analytics Cloud. Migration for existing customers will follow.

> **Note:** Both new customers and existing customers that have been migrated to Oracle Analytics Cloud will need to perform some configuration before using the service. See the Getting Started with Oracle Analytics Cloud section for more details.

Identify if You're Using Oracle Analytics Server or Oracle Analytics Cloud

While Oracle Analytics Cloud is functionally equal to Oracle Analytics Server, you should identify which product you're using:

- **Oracle Analytics Server**: Oracle Analytics Server is managed by the Oracle Transportation Management team, where it's installed, configured, and deployed as part of the Oracle Transportation Management SaaS solution. Patching activities, including quarterly Critical Patch Updates and one-off patches, are handled by the Oracle Transportation Management team during regular weekly or quarterly release cycles.
- **Oracle Analytics Cloud**: Oracle Analytics Cloud is a cloud-based service managed by the dedicated Oracle Analytics Cloud team. It's provisioned as part of the Oracle Transportation Management SaaS product, and all patching activities, such as Critical Patch Updates and one-off fixes, are maintained and managed by the Oracle Analytics Cloud team.

You can identify whether Oracle Transportation Management is provisioned with Oracle Analytics Server or Oracle Analytics Cloud by navigating to **Settings and Actions (under the username drop-down list) > Analytics Type**.

If your environment is using Oracle Analytics Cloud, follow the instructions in the *Getting Started with Oracle Analytics Cloud* section to start using the service. If your environment is using Oracle Analytics Server, you can skip to the *Common Configuration for Oracle Analytics Server and Oracle Analytics Cloud* section.

Getting Started with Oracle Analytics Cloud

Accessing Oracle Analytics Publisher

The Oracle Analytics Cloud service includes reporting capabilities referred to as “Oracle Analytics Publisher”. You can access Oracle Analytics Publisher from Oracle Transportation and Global Trade Management user interface by navigating to Business Process Automation > Reporting > Oracle Analytics Publisher. Following that navigation brings you out of OTM and into Oracle Analytics Publisher. You can bookmark this URL for direct access.

> **Note:** Before you can start using Oracle Analytics Publisher, you will need to perform some configuration to assign Users to the corresponding Identity Cloud Service groups.

Managing User Roles for Oracle Analytics Cloud

The following section documents the minimum configuration required to start using Oracle Analytics Cloud service. These steps are required for new customers and customers that have been migrated from Oracle Analytic Server.

User Access to Oracle Analytics Cloud is controlled by assigning users to Identity Cloud Service Groups. OTM users who need to view, create, or modify reports or use Analytic Dashboards, will need to be assigned to an Identity Cloud Service Group with the corresponding Oracle Analytics Cloud application role. This can be done manually within the Oracle Cloud console, but you are strongly encouraged to enable the OTM User Synchronization feature, which will avoid the need to manually assign IDCS Groups. If you are migrated from Oracle Analytic Server, you will need to assign the Groups manually to your existing users or enable the synchronization feature and run the “Synchronize Users” action for all users that need access to Oracle Analytics Cloud.

> **Note:** Users can run reports from within OTM without needing access to Oracle Analytics Cloud. Refer to the *Enable Report Generation from within Oracle Transportation Management* section for more details on how to configure this option.

The Oracle Transportation Management Business Intelligence roles in the OTM User Manager are associated with Oracle Analytics Cloud application roles via Identity Cloud Service Groups. Each Business Intelligence Role in OTM is mapped to an Identity Cloud Service Group, which is in turn mapped to an Oracle Analytics Cloud application role.

There is an important difference with how Business Intelligence Roles work with environments of type DEVELOPMENT in Oracle Analytics Cloud. The Oracle Identity Cloud Service is common for all the OTM environments (PRODUCTION, TEST, LNM and DEVELOPMENT) in a customer tenancy. User who have access to multiple DEVELOPMENT environments will have same Business Intelligence roles in all DEVELOPMENT Environments.

Suppose a customer has two Environments of type “DEVELOPMENT”, DEV1 and DEV2. Regardless of which OTM Environment you sign in to assign the user the Business Intelligence Role, they will be assigned to a Group that is common to all Environments of type “DEVELOPMENT”. For example, if a User is assigned the BIADMINISTRATOR role in “DEV1”, they will also have the BIADMINISTRATOR role in “Dev2”. In the Identity Cloud Service console, you will see that the user is assigned to a single Group named “OTMBIAdministrator_DEVELOPMENT”. This behavior is intentional and cannot be modified.

Manually Assigning Users to Groups in the Identity Cloud Service Console

If you are not planning to enable the User Synchronization feature, you will need to manually create the Identity Cloud Service Groups before assigning them to Users. The Identity Cloud Service Groups must follow a particular naming convention, which is a combination of the Role and Environment Type with an underscore between them. The Environment Type will be one of: PRODUCTION, TEST, DEVELOPMENT, or LNM. The Role will be one of the following:

- **OTMBISERVPROV**: This role should only be used to access the Servprov Main Dashboard. This role is only used for TI.
- **OTMBINoAccess**: A user with a business intelligence role of No Access will not be able to access any dashboard.
- **OTMBILSPHost**: This is the only role that can be used with the LSP Host dashboard. Also this role is incompatible with any of the other dashboards listed in the table below. This role is only used for TI.
- **OTMBILSPCustomer**: This is the only role that can be used with the LSP Customer dashboard. Also this role is incompatible with any of the other dashboards listed in the table below. This role is only used for TI.
- **OTMBIAdministrator**: This role mimics the Oracle Analytics role of the same name. This role can be used for TI, GTI. This new role replaces the legacy TI BI role of PRESENTATION SERVER ADMINISTRATOR.
- **OTMBIContentConsumer**: This role mimics the Oracle Analytics role of the same name. This role can be used for TI, GTI. This new role replaces the legacy TI BI roles of EXECUTIVE and OPERATIONAL.
- **OTMBIContentAuthor**: This role mimics the Oracle Analytics role of the same name. This role can be used for TI, GTI. This new role replaces the legacy TI BI role of DEVELOPER.
- **OTMBIKPIManager**: This the only role that can be used to edit target values of metrics from dashboard. This role must be assigned together with one of the other roles. For example, use the BIAuthor or BIConsumer role to give the user access view and/or edit the default dashboard while the KPIMANAGER role provides the ability to edit targets.

For example, to give a user the ability to run Reports in the Production environment, you would need to create a Group in Identity Cloud Service with the name “OTMBIContentConsumer_PRODUCTION" and assign it to the User. In order to create Groups and assign Users to those Groups, you will need to do the following:

1. Sign in to the Oracle Cloud Console.
2. Navigate to **Identity & Security > Identity Domains** on the menu.
3. Select the Domain listed as the "Current Domain".
4. Navigate to the **User Management** tab, and in the **Groups** section, click **Create Group**.
5. Enter a **Group Name** as follows based on the Role and Environment Type:
    - For Production pod type, enter "OTMBIContentConsumer_PRODUCTION".
    - For Development pod type, enter "OTMBIContentConsumer_DEVELOPMENT".
    - For Test pod type, enter "OTMBIContentConsumer_TEST".
6. Navigate to the **User Management** tab, and in the **Users** section, click **Create User**, or modify an existing user.
7. Enter the details and add the group created earlier to the user and click **Create**.

Enable User Synchronization from OTM to IDCS

Transportation and Global Trade Management Cloud supports the ability to synchronize users and some of the user attributes with a properly configured external system for an Oracle Identity Cloud Service (IDCS). The user synchronization works by matching up the Transportation and Global Trade Management Cloud Nickname field to the Oracle Identity Cloud Service User Name field. The additional attributes supported include first name, last name, email address, and if they are a federated user. All of these user attributes fields are required by Oracle Identity Cloud Service for a user.

Create Oracle Identity Cloud Service Confidential Application

To enable the User Synchronization feature or to run Reports directly from OTM, you'll need to create a Confidential Application within the Oracle Cloud Console. This Confidential Application will provide the OAuth credentials that will be used to enable either or both of these features.

Sign in to the Oracle Cloud Console to create a Confidential Application in your Oracle Identity Cloud Service instance.

1. Sign in to the **Oracle Cloud Console**.
2. Navigate to **Identity & Security > Identity Domains** on the menu.
3. Select the **Domain** listed as the "Current Domain".
4. Click the **Integration Applications** tab.
5. Click **Add application**.
6. Select **Confidential Application** and click **Launch workflow**.
7. Enter a **Name** and click **Submit**.
8. Click **OAuth Configuration**.
9. Click **Edit OAuth Configuration**.
10. On **Resource Server Configuration**, select **No resource server configuration**.
11. On **Client Configuration**:
    a. Select **Configure this application as a client now**.
    b. Enter **Client Credentials** as the **Allowed Grant Types**.
    c. Within the **Token Issuance Policy** section, select the **All** button for the Authorized Resources.
    d. Select **Add app roles**.
    e. Within the App roles section click the **Add app roles** button.
    f. From the dialog box select the **User Administrator** and click **Add**.
12. Click **Submit**.
13. Click **Activate** in the Actions menu and **Activate application**.
14. From the **OAuth Configuration** section, record the **Client ID** and **Client Secret**; these are needed for the external system in Transportation and Global Trade Management.

Configure an External System

To enable the User Synchronization feature, you'll need to create an External System. The External System will contain the URL for your Identity Cloud Service and the OAuth Credentials which will authorize Oracle Transportation Management to automatically manage Users/Groups in Identity Cloud Service.

Before starting these steps, you must obtain your Oracle Identity Cloud Service (IDCS) URL.

1. Sign in to the Oracle Cloud Console and navigate to the Oracle Transportation and Global Trade Management Environments screen.
2. Select one of the Environments and click the **Identity Domain** tab.
3. Copy the **Domain URL**.
4. Sign in to your Transportation and Global Trade Management Cloud instance to create an External System.
5. Go to **Business Process Automation > Communication Management > External Systems**.
6. Click the **New** button.
7. Enter an **External System ID**.
8. In the **User Name** field, provide the Client ID from the Confidential Application you created in your Oracle Identity Cloud Service instance.
9. In the **Password** and **Password (Confirm)** fields, provide the Client Secret from the Confidential Application you created in your Oracle Identity Cloud Service instance.
10. In the **Target Namespace** field, select the **None** option.
11. In the **Content Type** field, enter "**application/json**" (without the quotes).

12. Clear the **Transport Through Data Stream** checkbox.
13. In the **Authentication Type** field select the "**OAuth 2.0 - Client Credentials**" option.
14. In the **Authorization Service Authentication Type** field, select "**HTTP Authentication (Basic)**".
15. In the **Authorization Service URL** field, enter your Oracle Identity Cloud Service instance URL with "`/oauth2/v1/token`" appended to the end such that it looks like `https://<YOUR_IDCS_URL_HERE>/oauth2/v1/token`. Use the URL obtained earlier from the Oracle Cloud Console.
16. In the **Application Scope** field enter "**urn:opc:idm:__myscopes__**" (without the quotes).
17. In the **URL** field, enter your Oracle Identity Cloud Service instance URL such that it looks like "**https://<YOUR_IDCS_URL_HERE>**".
18. Click **Finish** button.

Authentication Based on OAuth in BI Publisher SMTP Server

In Oracle Analytics Cloud, BI Publisher lets you add an OAuth-based email server to use OAuth2 authentication for accessing emails via email providers like Google (Gmail) and Microsoft (Office 365/Outlook.com).

You can add an OAuth email server the following ways:

- through xmlpserver administration UI
- through REST API

Adding an OAuth-Based Email Server through the xmlpserver UI

1. Sign in to OTM as an administrator.
2. Navigate to **Business Process Automation > Reporting > Oracle Analytics Publisher**.
3. Click the **My Profile** icon and select **Administration**.
4. In the **Delivery** section, select **Email**, and then click **Add Server**.
5. Enter a **Server Name** of your choice.
6. Enter the SMTP host in the **Host** field. For example, for Microsoft, the host is `smtp.office365.com`.
7. In the **Authentication Type** drop-down list in the **Security** section, select **OAuth2** as the authentication type.
8. Enter other details in the **Security** section, such as Username, Client ID, Client Secret, and Tenant ID.
9. Click **Apply**.
10. Click **Test Connection**. If the connection is successful, you can use the email server added.

Adding an OAuth-Based Email Server through Rest API

1. Import the following curl command with your details:

```
curl --location --request PUT 'https://<OTM host>/api/20210901/system/mail/server' \
--header 'Content-Type: application/json' \
--header 'Authorization: Basic Zm9vLmJhckBvcmFjbGUuY29tOkNIQU5HRU1F' \
--data-raw '{
 "host": "hostname.us.com",
 "port": 123,
 "sender": {
 "displayName": "aName",
 "emailAddress": "aName@example.com"
 },
 "auth": {
 "authType": "OAUTH2_AUTH",
 "oAuth2Details": {
 "username": "theUserName",
 "oAuth2Provider": "MS_OAUTH2",
 "secret": "OAuth2_client_secret",
 "clientId": "oauthClientId",
 "tenant": "ATenatntId"
 }
```

```
 },
 "connectionSecurity": {
 "connectionSecurityType": "NO_CONNECTION_SECURITY"
 }
}'

Response:
 {
 "host": "hostname.us.com",
 "port": 123,
 "sender": {
 "displayName": "aName",
 "emailAddress": "aName@example.com"
 },
 "auth": {
 "authType": "OAUTH2_AUTH",
 "oAuth2Details": {
 "oAuth2Provider": "MS_OAUTH2",
 "username": "theUserName",
 "clientId": "oauthClientId",
 "tenant": "ATenatntId"
 }
 },
 "connectionSecurity": {
 "connectionSecurityType": "NO_CONNECTION_SECURITY"
 }
}
```

2. After running the PUT request, the email server gets added in the **xmlpserver > Administration > Email** screen. An email server named "DV SMTP Server" gets added.

Configure IDCS Properties

As a DBA.ADMIN user role user, navigate to **Configuration and Administration > Property Management > Property Sets**.

1. Find your CUSTOM property set and edit it.
2. Within the Properties grid section, add a new property entry so Transportation and Global Trade Management Cloud knows your External System ID you configured for your Oracle Identity Cloud Service instance.
   a. Provide a **Sequence** number as the next number available.
   b. In the **Instruction** field, select **Set**.
   c. Enter a key of "**glog.security.user.idcs.externalSystem**".
   d. For the **Value**, enter the External System ID you configured for your Oracle Identity Cloud Service instance.
3. If you want auto synchronization enabled, then add another new property entry.
   a. Provide a **Sequence** number as the next number available.
   b. In the **Instruction** field, select Set.
   c. Enter a key of "**glog.security.user.idcs.autosynchronization**".
   d. For the **Value**, enter "**true**" (without the quotes).
4. To synchronize user BI Roles to IDCS Groups from OTM to IDCS, add another property. The group synchronization will work from both the *User Manager* and the *Synchronize Users* action.
   a. Provide a **Sequence** number as the next number available.
   b. In the **Instruction** field, select **Set**.
   c. Enter a key of "**glog.security.groups.idcs.synchronization**".
   d. For the **Value**, enter "**true**" (without the quotes).
5. Provide a **Reason for Change**.
6. Click **Finished**.

There are advanced property settings for the Transportation and Global Trade Management Cloud to Oracle Identity Cloud Service User Synchronization which allow for some flexibility. See the *glog.security.user.idcs* properties for details.

Synchronize User(s) to Assign the User to a Business Intelligence Role

To grant access to Oracle Analytics Cloud to any user by using the *Synchronize Users* action:

1. Sign in as a user with the DBA.ADMIN user role.
   a. Navigate to the **User Manager**.
   b. Search for the created user and edit it.
   c. To use the Synchronize Users action, the following details need to exist on the OTM user record:
      - First Name
      - Last Name
      - Nickname
      - Email Address
      - Select the **Federated User** checkbox if the Oracle IDCS user created during synchronization should be a federated user.
      - Select the **Sync User** checkbox.
      - The Business Intelligence Role should be added to "Business Intelligence Role" (BIADMINISTRATOR, BIAUTHOR, BICONSUMER).

        > **Note:** Add Business Intelligence Roles like, BIADMINISTRATOR, BIAUTHOR, BICONSUMER, as required.

   d. Click **Finished**.
   e. Run the ***Synchronize Users*** action.

Once the action is successful, the user will get mapped to the corresponding Oracle Analytics Cloud Business Intelligence Roles and the user can access Analytics.

Enable Report Generation from within Oracle Transportation Management

To generate reports or documents from within Oracle Transportation Management, you must follow these steps:

> **Note:** If you've already synchronized some users with the User Synchronization feature, the groups might already exist.

1. Create a user manually in the Oracle Cloud console.
   a. Sign in to the Oracle Cloud Console.
   b. Navigate to **Identity & Security > Identity Domains** on the menu.
   c. Select the domain listed as the “Current Domain”.
   d. Navigate to the **User Management** tab, and in the **Groups** section, click **Create Group**.
   e. Enter **Group Name** as follows based on the pod type if one doesn't already exist:
      - For Production pod type, enter "OTMBIContentConsumer_PRODUCTION".
      - For Development pod type, enter "OTMBIContentConsumer_DEVELOPMENT".
      - For Test pod type, enter "OTMBIContentConsumer_TEST".
   f. Navigate to the **User Management** tab, and in the **Users** section, click **Create User**.

g. Enter the details and add the **Group** created earlier to the user and click **Create**.
h. An activation email will be sent to email address provided while creating user. Activate the user by entering the new password.

2. Sign into Oracle Transportation Management as a user with the "DBA Admin" user role and navigate to **Business Process Automation > Power Data > Document Generation > Report Systems**.
3. Change the "DEFAULT" Report System.
   - Edit that record.
   - Add the username and the password created in one of the previous steps.
   - Click **Finished**.

Note: You should create a different user for each Oracle Transportation Management production, test, and development environment.

Note: If your Identity Domain has Multi-Factor Authentication (MFA) enabled for sign-on to OTM Cloud Service, you might encounter the error “Invalid username or password” when trying to run a report from the OTM Report Manager. To resolve this issue please work with your Identity Management team to add a Sign-on Rule to your Sign-On Policy which doesn't enable MFA for the OTM Report User.

Note: If your Identity Domain is Federated, you will need to create a local, non-federated, console user. You will need to associate a valid email address with the user in order to set/reset the password. If you do not receive the Activation Email after creating the user, verify that you have Notifications enabled for the corresponding Identity Domain.

Oracle Analytics Cloud Action Links

In Oracle Analytics Cloud, custom Java scripts which are used for action link in ad hoc queries, are no longer provided by default. These scripts were used to navigate to Oracle Transportation Management from Analytics Reports. Due to this, default "browser invoke" scripts are not available for Oracle Analytics Cloud.

OAC Action Links on Column Value

Note: The following configuration needs to be done before navigating from Oracle Analytics Cloud to Oracle Transportation Management.

1. Go to **Transportation Intelligence > Ad Hoc Query**.
2. Select **Transportation Intelligence** from subject areas.
3. From **Shipment** analysis select **OTM Shipment GID**.
4. Click the **Settings** button, and then select **Column Properties**.
5. Go to the **Interaction** tab. From the **Value** > **Primary Interaction** drop-down list, select **Action Links**.
6. Click the **+** icon, and then create a new action. Click **Navigate to Web Page**.
7. Enter the following URL by replacing the host with theyour Oracle Transportation Management host and click **Define Parameters**. This URL is for navigating to the shipment page. "@{3}" in the URL will be replaced by the shipment ID. The URL format is: `https://<OTM host>/GC3/ShipmentCustManagement?manager_layout_gid=SHIPMENT_VIEW&management_action=view&pk=@{3}`
8. Under Define Parameters click the **+** icon and for the newly added record enter **pk** as prompt.
9. Under **Value Column**, select the option **Column Value** from the drop-down list **Value**.

10. Click the down arrow beside **Column Value**, and select the shipment ID.
11. Click **OK**.
12. Enter **Link Text**, for example, “Navigate to OTM Shipment View”.
13. Click **OK**.
14. Select the checkbox **Do not display in a popup if only one action link is available at runtime** if you want the values to be populated automatically.
15. Click **OK**.
16. Go to the **Results** tab. You'll see hyperlinks in the **Column Value** column where you added the action.
17. Click any of the value and click **Execute**. You'll be redirected to the shipment page.
18. Similarly, you can configure URLs for others based on the column value.

List of Example URLs

NavigateToOTMShipmentUrl

Column: OTM Shipment GID

```
https:// <OTM host>/GC3/ShipmentCustManagement?
manager_layout_gid=SHIPMENT_VIEW&management_action=view&pk=@{3}
```

NavigateToGTMDeclarationtUrl

Column: Declaration GID

```
https:// <OTM host>/GC3/GtmTransactionCustManagement?
manager_layout_gid=GTM_SHIPMENT_VIEW&management_action=view&finder_set_gid=GTM_SHIPMENT&pk=@{4}
```

Column: Declaration Line GID

```
https:// <OTM host>/GC3/GtmTransactionLineCustManagement?
manager_layout_gid=GTM_SHIPMENT_LINE_VIEW&management_action=view&finder_set_gid=GTM_SHIPMENT_LINE&pk=@{4}
```

Column: Item_Gid

```
https:// <OTM host>/GC3/GtmItemCustManagement?
manager_layout_gid=GTM_ITEM_VIEW&management_action=view&finder_set_gid=GTM_ITEM&pk=@{4}
```

Column: License GID

```
https:// <OTM host>/GC3/GtmLicenseCustManagement?
manager_layout_gid=GTM_LICENSE_VIEW&finder_set_gid=GTM_LICENSE&management_action=view&pk=@{4}
```

NavigateToGTMLicenseUrl

Column: License Line GID

```
https://<OTM host>/GC3/GtmLicenseLineCustManagement?
manager_layout_gid=GTM_LICENSE_LINE_VIEW&finder_set_gid=GTM_LICENSE_LINE&management_action=view&pk=@{4}
```

NavigateToGTMPartyUrl

Column: Party GID

```
https://<OTM host>/GC3/GtmContactCustManagement?
manager_layout_gid=GTM_CONTACT_VIEW&management_action=view&pk=@{3}
```

NavigateToGTMTradeTransactionUrl

Column: GTM TRADE TRANSACTION GID

```
https:// <OTM host>/GC3/GtmTransactionCustManagement?
manager_layout_gid=GTM_TRANSACTION_VIEW&management_action=view&finder_set_gid=GTM_TRANSACTION&pk=@{4}
```

NavigateToGTMTradeTransactionLineUrl

Column: TRADE TRANSACTION Line GID

```
https:// <OTM host>/GC3/GtmTransactionLineCustManagement?
manager_layout_gid=GTM_TRANSACTION_LINE_VIEW&management_action=view&finder_set_gid=GTM_TRANSACTION_LINE&pk=@{4}
```

Configure Allow OTM Workbench to Embed Analytics and Data Visualization Content

In order to embed an Oracle Analytics Cloud page (Data Visualization, Analytics, and Business Intelligence Publisher) into Oracle Transportation Management workbench, you need to implement the following configuration change in the Identity Cloud Service console.

1. Sign in to the Oracle Cloud console as an administrator.
2. Navigate to **Identity & Security > Domains** on the menu.
3. Edit the **Domain** associated with your OTM Environments (i.e. IdentityCloudService or Default).
4. Navigate to the **Security** tab under **Domains**.
5. In the Session Settings section, click **Edit session settings**.
6. Enable **Allow cross-origin resource sharing (CORS)**.
7. Add the Oracle Analytics Cloud host domain in the **Allowed CORS domain names** field, and click **Save Changes**.

Note: This alternative works for latest versions of browsers like Chrome, Edge, and Firefox. However, it is not compatible with Safari. Also, embedding Workbench doesn't work if the browser is in Incognito mode.

Note: If a Workbench doesn't work in your browser, turn off the cross site tracking your browser setting.

Calling Oracle Analytics Web Service APIs

If you need to call Oracle Analytics Web Service APIs, you will need to create a user and assign them to the corresponding Identity Cloud Service Group. You can create the user manually using the instructions documented in the *Enable Report Generation from within Oracle Transportation Management* section. Instead of assigning the new user to the Report System in OTM, you will use the user and credentials for making remote Web Service API calls.

Common Configuration for Oracle Analytics Server and Oracle Analytics Cloud

Enabling Transportation Intelligence and Global Trade Intelligence

> **Note:** Before creating any reports or dashboards, you must create a catalog folder named "Custom" inside the existing "Shared Folders" folder. All reports and dashboards must be created inside this folder or a sub-folder. Defining reports and dashboards inside the “Custom” folder will ensure your customer-defined reports and dashboards are retained during future upgrades. If the "Custom" folder already exists, you can ignore this note.

Business intelligence refers to the following optional product offerings:

- Transportation Intelligence (TI)
- Global Trade Intelligence (GTI)

TI and GTI business intelligence solutions are designed to enable strategic and tactical analysis of the various aspects of the trade and transportation business processes and to aid decision making.

Business intelligence solutions are developed using the Oracle Analytics (for the core analytics metadata and dashboard reports) and Oracle Data Integrator (for the core Extract, Transform, Load process) products. The following section provides some details on the configuration and use of these modules. For more information on these products, see the *Transportation Intelligence Reference Guide help* and *Global Trade Intelligence Reference Guide help*.

The TI and GTI product options are disabled by default in the Cloud. By default, the Extraction, Transformation, and Load (ETL) processes are disabled so the corresponding analytic database tables will be empty. You will receive the following warning if you click one of the business intelligence Dashboard links "Business Intelligence is not currently licensed or installed on the server."

You will need to do the following in order to enable these product options. One or both of the following properties need to be set in order to enable the Oracle Analytics product options. These properties should be set in the “CUSTOM” property set.

- **TI property**: glog.analytics.ti.enabled=true
- **GTI property**: glog.analytics.gti.enabled=true

Once these properties are enabled, the ETL will run automatically on a daily basis.

> **Note:** It's recommended that ETL is run once daily. However, in exceptional cases, you can schedule to run ETL every six hours

In order to have visibility into the ETL process, the following property should be set. A summary of each ETL process will be sent to this email address when the process completes.

- `glog.odi.email.to.address=user@example.com`

It is possible to configure analytics using Oracle Analytics. The user interface for Oracle Analytics is accessed via menu option **Transportation Intelligence > Administration** where `<servicename>` and `<identity-domain-name>` are the values that were specified during provisioning.

Users sign in to Oracle Analytics using the Transportation and Global Trade Management User ID/password.

Note: Currently you must use the Transportation and Global Trade Management User ID (i.e. DBA.ADMIN), not the Transportation and Global Trade Management user name. You also must first grant the User the BI Roles "BIAdministrators" and "BIAuthors". BI Roles are administrated using the Transportation and Global Trade Management User Manager. This page is located at **Configuration and Administration > User Management > User Manager**.

Note: Before creating any reports or dashboards, you must create a catalog folder named "Custom" inside the existing "Shared Folders" folder. All reports and dashboards must be created inside this folder or a sub-folder. Defining reports and dashboards inside the “Custom” folder will ensure your customer-defined reports and dashboards are retained during future upgrades.

Note: Previously, triggering ETL wasn't allowed if a session was already running. Now, there's an extra clause to verify if the "Load Time" of the latest ETL is more than 2 days. If the latest session is running for more than 2 days, a concurrent ETL can be triggered. This will avoid issues which might occur due to a stale ETL session, or an ETL session getting stuck.

Enabling Fiscal Calendars

In order to enable fiscal calendars in the business intelligence applications, you must populate data in the AD_TIME table. Populate the AD_TIME table as follows:

- FISCAL_YEAR VARCHAR2(50)
- FISCAL_QUARTER_ID VARCHAR2(50)
- FISCAL_MONTH_ID VARCHAR2(50)
- FISCAL_WEEK_ID VARCHAR2(50)
- FISCAL_DAY VARCHAR2(50)

These columns correlate the calendar dates to fiscal dates. This data can be loaded using CSV files. For more details, see the *Using the CSV Utility help*.

Global Currencies Supported in TI and GTI

Oracle TI and GTI display reports in 3 different global currencies which are configured in Oracle Transportation Management. Cost-related facts in the TRANSPORTATION INTELLIGENCE subject area contain 3 extra fields for each cost. You can use global currencies for the following analysis folders:

- Invoice Analysis
- Invoice Line Analysis
- Order Release Analysis

- Order Movement Analysis
- Shipment Analysis
- Shipment Line Analysis
- Shipment Order Release Analysis
- Shipment Order Release Line Analysis
- Tender Performance Analysis
- Bulk Plan Analysis
- Shipment Claim Analyis
- Rate Analysis

1. Configure 3 global currencies in Oracle Transportation Management via the report common properties shown below. (Do not change 3 global currencies after the initial configuration as this might cause data discrepancy).
2. The exchange rates for the 3 global currencies are calculated as follows:
    a. Latest effective date is determined based on the shipment start time.
    b. The exchange rates for 3 global currencies are taken for the latest effective.
3. In the HDOWNER database, the fact tables for the analysis folders list above have 3 extra columns to hold global currencies' exchange rates.
4. The cost value for the global currency columns in each analysis folder is calculated as follows:
    a. Base cost * exchange rate of global currency.
    b. The multiplied amount is displayed for each of the global currency fields in each analysis folder.

Configure the following report common properties (**Business Process Automation > Power Data > Document Generation > Report Common Properties**):

Property	Default Value	Description
GLOBAL_CURRENCY1 **GLOBAL_CURRENCY2** **GLOBAL_CURRENCY2**		During client configuration, use these properties to configure three global currencies in which you would want to see the cost-based reports in TI. **Note:** Once these properties are set, it's recommended not to change the values.
EXCHANGE_RATE_GID	Default	Use this property to configure exchange rate in Oracle Transportation Management (OTM) to fetch exchange rates for objects (Bulk Plan, Order Release, Order Movement) that don't have SHIPMENT GID. These exchange rates will be used to display the global currency values in the cost-based reports.

Configuring Transportation Intelligence

Enabling Oracle Transportation Intelligence Agents in Oracle Transportation and Global Trade Management Cloud

The business objects in Oracle Transportation and Global Trade Management (like shipments, order releases, etc.) are loaded into the Transportation Intelligence tables when they have a status of READY_TO_LOAD. This status is set by automation agents in Oracle Transportation and Global Trade Management. To enable these automation agents, complete the following:

1. Log on to Oracle Transportation and Global Trade Management as a DBA.ADMIN user role user.
2. Go to **Business Process Automation > Agents and Milestones > Automation Agent**.
3. Search for and activate the following automation agents:
    - LOAD_ORDER_BASE_TO_HD (Default Event: Order base created)
    - LOAD_ORDER_RELEASE_TO_HD (Default Event: Order on shipment tendered)
    - LOAD_SHIPMENT_TO_HD (Default Event: Shipment tendered)

Unloading an Oracle Transportation and Global Trade Management Cloud Object from Transportation Intelligence

When an object is deleted from Oracle Transportation and Global Trade Management, it has to be removed from the Transportation Intelligence tables also. You need an agent that will automatically take care of deleting objects from TI tables when you delete the object in Transportation and Global Trade Management.

Automation gents need to be created for each object type in Oracle Transportation and Global Trade Management. To create an agent for SHIPMENT, perform the following steps:

1. Log onto Oracle Transportation and Global Trade Management as a DBA.ADMIN user role user.
2. Go to **Business Process Automation > Agents and Milestones > Automation Agent**. Select **New.**
3. Select **Agent Type** as *SHIPMENT*.
4. Select **Agent Event** as *SHIPMENT-REMOVED* with restrictions of *INTEGRATION*, *INTERNAL*, or *USER*.
5. Add **Agent Action** as *UNLOAD SHIPMENT FROM HD*.
6. Give a suitable name for the Agent ID and save the agent.

Any shipments which are now deleted in Oracle Transportation and Global Trade Management will be deleted from the Transportation Intelligence tables when the subsequent ETL is triggered.

Such automation agents need to be created for every needed object in Oracle Transportation and Global Trade Management (like order release, order base etc.). The list of **agent actions** available in Oracle Transportation and Global Trade Management are:

- UNLOAD BULK PLAN FROM HD
- UNLOAD INVOICE FROM HD
- UNLOAD ORDER BASE FROM HD
- UNLOAD ORDER BASE LINE FROM HD
- UNLOAD ORDER BASE SHIP UNIT FROM HD
- UNLOAD ORDER ITEM FROM HD
- UNLOAD ORDER MOVEMENT FROM HD
- UNLOAD ORDER RELEASE FROM HD

- UNLOAD QUOTE FROM HD
- UNLOAD SELL SHIPMENT FROM HD
- UNLOAD SHIPMENT FROM HD

Mandatory Oracle Transportation and Global Trade Management Cloud User Role (VPD Profile) Configuration

VPD profile determines what data the user is entitled to see. All users of Oracle Transportation and Global Trade Management should have **one** of the following profile sets.

- **FTI_DEFAULT**: All users who **ARE NOT** service providers in Oracle Transportation and Global Trade Management should have this profile. Use this profile to access the Logistics Network Modeling Intelligence and Logistics Machine Learning subject areas.
- **SERVPROV**: All the users who are service providers in Oracle Transportation and Global Trade Management.

Performing this step is mandatory for the proper operational behavior of Transportation Intelligence application.

Configuring Global Trade Intelligence

Loading an Oracle Global Trade Management Object into Global Trade Intelligence

By default, the Global Trade Management objects supported by GTI are all loaded into GTI. See the *Data Flow to Global Trade Intelligence help* for complete details.

Mandatory Oracle Transportation and Global Trade Management Cloud User Role (VPD Profile) Configuration

VPD profile determines what data the user is entitled to see. All users of Global Trade Intelligence should have the following profile set:

- **GTI_DEFAULT**: All users of Oracle Global Trade Intelligence should have this profile.

Unloading a Global Trade Management Object from Global Trade Intelligence

You can unload (soft delete) data from the Global Trade Intelligence historical database (HD). When data is deleted from Transportation and Global Trade Management, you can mark that record as deleted in the Global Trade Intelligence HD. The record remains in the HD, but is it filtered out using the GTI_DEFAULT VPD profile.

There are several PUBLIC automation agents and agent actions intended for use with Global Trade Intelligence to enable this functionality. See the *Data Flow to Global Trade Intelligence help* for complete details.

Configuring Oracle Analytics Publisher Reporting

Oracle Transportation and Global Trade Management provides several reports which can be run from the Report Manager. You also can create customer-defined reports using Oracle Analytics Publisher. The user interface for creating and modifying reports is accessed via **Transportation Intelligence > Administration > Manage Publisher**.

Users sign into Oracle Analytics Publisher using the Transportation and Global Trade Management User ID/password. You must first grant the User the BI Roles “BIAdministrators” and “BIAuthors”. BI Roles are administrated using the

Transportation and Global Trade Management User Manager. This page is found at **Configuration and Administration > User Management > User Manager**.

> **Note:** All reports must be created inside "Custom" folder or a sub-folder. Defining reports inside the “Custom” folder will ensure your customer-defined Reports are retained during future upgrades.

To run a report from Transportation and Global Trade Management you'll need to obtain the Oracle Analytics Publisher Report Path. The Report Path can be obtained from Oracle Analytics Publisher by viewing the report and clicking **Actions > Share Report Link > Current Page**. For example:

```
https://myservice-mydomain.otm.<data-center>.oraclecloud.com:9704/xmlpserver/ /Custom/my_pickup_summary/
my_pickup_summary.xdo
```

In this example, the relative Report Path is:

```
Custom/my_pickup_summary/my_pickup_summary.xdo
```

After a report is created in Oracle Analytics Publisher, it's necessary to define the report in Transportation and Global Trade Management. This page is found at **Business Process Automation > Power Data > Document Generation > Reports**. To configure a report to run the following options should be selected:

- Run on Third Party Report Server - Enabled
- Select via UI – Enabled
- Default Display Format - PDF
- Third Party Content Type - "Embedded"
- Report Path – The Relative Report Path obtained earlier

In order for users to be able to run Oracle Analytics Publisher Reports, it's first necessary to grant the user the BI Role “BIConsumer”.

Oracle Analytics Publisher Reports are primarily built using SQL queries. However, a few utility PL/SQL functions are available for use in Reports. For more details on creating Reports, see the *Transportation and Global Trade Management Report Designer’s Guide*.

Configuring the Email From Address in Oracle Analytics Publisher Reporting

To configure a email From address in Oracle Analytics Publisher reporting, complete the following:

1. Create an approved sender email in Oracle Cloud Infrastructure. See the *Managing Approved Senders help* in the Oracle Cloud Infrastructure online help.
2. Set up an Email Address as an Approved Sender in Oracle Transportation Management. Please refer the customer to the *Configuring Approved Senders* and *Configuring a Custom Domain and Sender* sections of this guide for more details.
3. Add the sender in Oracle Analytics Publisher as follows:
    a. Sign in to OTM as DBA.ADMIN.
    b. Go to **Transportation Intelligence > Administration**.
    c. Click **Manage Publisher**.
    d. Click **Delivery Configuration**.
    e. On Delivery Configuration tab, enter the email address created in step 1 above for both the **Email From Address** and **Delivery Notification Email From**.

Configuring an External Email Server in Oracle Analytics Publisher Reporting

Add a new server in Oracle Analytics Publisher as follows:

1. Click the **Email** tab.
2. Click **Add Server**.
3. Enter a **Server Name**, **Host (SMTP)**, **Port**, **Username**, and **Password**.
4. Set the "Access Control" to **Public**.
5. Verify the connection by clicking **Test Connection**.
6. Then click **Apply** to save your changes.

Report Permissions

By default, reports can only be run by the user that created the report in Oracle Analytics Publisher. In order to run reports from within Transportation and Global Trade Management, the permissions for the report must be set for the “BI Consumer Role”. Report permissions can only be set using Oracle Analytics. The user interface for Oracle Analytics is accessed via the following URL.`https://<servicename>-<identity-domain-name>.otm.<data-center>.oraclecloud.com/analytics/`

where <servicename> and <identity-domain-name> are the values that were specified during provisioning.

Please use the following steps to set permissions after creating customer-defined Reports.

1. After you log into to Oracle Analytics, click on the **Catalog** link in the menu.
2. Click on the **Custom** link in the “Shared Folders” section of the catalog.
3. Click the **Permissions** icon on the “Tasks” menu.
4. Select the “BI Consumer Role” and choose “Full Control” for the “Permissions”.
5. Check “Apply permissions to sub-folders.” and “Apply permissions to items within folder.”
6. Click “OK”.

Report Distribution

Report Scheduling and Distribution via Oracle Analytics Publisher is not supported. Scheduled jobs in Oracle Analytics Publisher will not be preserved during upgrades. Report Scheduling and Distribution must be performed using the Transportation and Global Trade Management Notification capabilities. For more details on this topic, see the *About Report Emails help*.

Known Limitations for Oracle Analytics

General Limitations

- Due to a BI server cache issue, when a business intelligence application in OTM is assigned to a user, it is not accessible in Analytics. To work around, go to **Transportation Intelligence > Administration > Maintenance and Troubleshooting** section and run **Reload Files and Metadata**. The Admin user should only have to run this only once to avoid this issue.

Oracle Analytics Cloud Limitations

- In Oracle Analytics Cloud, the following Report Output Formats aren't supported while generating reports from Oracle Analytics Publisher and Oracle Transportation Management:

- **Excel (.html)**: Web page
- **Excel (.mhtml)**: Single File Web Page
- **Excel (.xls)**: Excel 97-2003 Workbook

Excel(.xls) output format is not supported in Oracle Analytics Cloud if the user creates the BI Publisher report with a non-Excel layout template, like RTF layout, etc. Then the output format will be not be in Excel (.xls); instead, it will be in formats like Excel (.xlsx), PDF, HTML, etc.

> **Note:** Excel(.xls) output format is supported in Oracle Analytics Cloud if the user creates the BI Publisher report with Excel layout template. In this case, the report output will always be in Excel (.xls) format.

- When running the BI Publisher report from Oracle Transportation Management, Excel (.xsl) output format only works if the BI Publisher report was created with Excel format template. For example, report generation will result in an error if the report format template is other than the Excel format template and the user is trying to generate in Excel(.xsl) output format. (Issue # 38479632)
- Uploading an RTF file that is more than 30 MB in size is not supported.
- In Oracle Analytics Cloud, custom Java scripts which are used for action link in ad hoc queries, are no longer provided. These scripts were used to navigate to Oracle Transportation Management from Analytics Reports. Due to this, default "browser invoke" scripts are not available for Oracle Analytics Cloud. Refer to the *Oracle Analytics Cloud Action Links* section to configure the actions.
- If you were migrated from Oracle Analytics Server, the Printer Configurations were migrated but credentials were not. You will need to update the credentials by editing the Printer Configurations using the Administration menu in BIPublisher.
- For Oracle Analytics Cloud, Oracle Analytics Publisher is not translated in local language that is configured in the user preference. (Issue # 38265606). As a workaround you can:
  a. Go to Transportation Intelligence > Catalog > My Profile (top right user icon) > My Account > Publisher Preferences.
  b. Change the "Report Locale" to your preferred language.
  c. Sign out from Analytics and sign in again.
- If you were migrated from Oracle Analytics Server, BI Publisher scheduled jobs would be in Active state after the migration, but these scheduled jobs would not get executed. You should manually pause the jobs and then resume them from the UI after migration. (Issue # 38446604)

  > **Note:** BI Publisher job history will not be migrated from Oracle Analytics Server to Oracle Analytics Cloud.

- The maximum value of the “SQL Query Timeout” runtime property in BI Publisher is 1800 seconds (30 minutes). You should review your longest running BIP report queries and make sure to tune them to complete in 1800 seconds.

Oracle Analytics Server Limitations

- **OAS 5.9: ANALYTICS DASHBOARD DOES NOT OPEN CORRECTLY WHEN ACCESSED FIRST TIME AFTER LOG IN - OSM**: If you sign in to OTM as "user b" after logging out of OTM as "user a" without closing the browser after logging out, the first click any Analytics dashboard menu link redirects to the default My Dashboard instead of selected dashboard. (Issue # 32767978)

  Workaround

  1st Option:

Click the same dashboard link a second time to open the correct dashboard.

2nd Option:

Close the browser after logging out as "user a" before logging in as "user b".

- **MIGRATED OAS AGENTS ARE NOT WORKING**: Agents are getting disabled after customers are migrated to a new version. Also, if the active OAS (Oracle Analytics Server) agents are moved/copied from one location to another in Catalog, the status of the copied agent are "Suspended". Trying to run that agent reports the following error: "Cannot run this job. The job is suspended." (Issue # 35477667)

  Workaround

  To make the agents active again, you have to save the agent again from UI. After saving, it will move to status "Not suspended", and it can be triggered or used for scheduling.

6 Complementary Products

Oracle Transportation Mobile

Oracle Transportation and Global Trade Management integrates with Oracle Transportation Mobile Web Application, a mobile web application. For more information on how to configure Oracle Transportation and Global Trade Management to work with the Oracle Transportation Mobile Web Application, see the *About the Mobile Application help*.

Pre-Built Integrations

Oracle Transportation and Global Trade Management includes pre-built integrations to optional components for Geo-coding, Distance, and Rate Calculation. The following section provides information on configuring Oracle Transportation and Global Trade Management to use these products. It is your responsibility to contact the corresponding vendor for additional details on their product offerings and corresponding license agreements.

Geo-coding and External Distance/Time

Geo-coding a location refers to setting the latitude and longitude (lat/lon) coordinates on the location. The lat/lon is necessary for displaying locations on a map. Oracle Transportation and Global Trade Management has two methods for geo-coding a location. One option is to configure an external distance engine. The other option is to load data into the geo_postal_point or geo_cityprov_point tables.

Oracle Maps Cloud

Oracle Maps Cloud is available as an external distance engine. In order to use the Oracle Maps Cloud External Distance Engine, configure the following properties:

- `OracleSpatial.host=elocation.oracle.com`
- `OracleSpatial.port=7777`

> **Note:** The "glog.ExternalDistanceEngine.OracleSpatialEngine.protocol" is set to "https" by default and should not be modified. For more details on configuring Oracle Maps Cloud, see the *External Distance Engines help*.

PC Miler Web Service

PC*Miler Web Service is an external distance engine owned by *Trimble Maps* which can be used for geo-coding and distance calculation. Oracle Transportation and Global Trade Management can be configured to use the PC*MILER Service for distance and time calculation. Before you can use PC*Miler Web Services, you must set the corresponding ExternalDistanceEngine Properties. In order to use the PC*Miler Web Services, you will need to obtain a license key from *Trimble Maps* and set the following property:

- `glog.ExternalDistanceEngine.PCMilerWS.AuthorizationKey`

This property should be added to the CUSTOM Property Set. See the *Property Sets* section of this document for information on how to set properties.

Note: The "glog.ExternalDistanceEngine.PCMilerWS.WCFWebserviceWSDLUrl" property is set by default and should not be changed. For more details, see the *Configuring PC*Miler Web Services help*.

PC Miler Rail Web Service

PC*Miler Rail Web Service is an external distance engine that can be used for distance calculation for rail. Oracle Transportation and Global Trade Management can be configured to use the PC*Miler Rail Service for distance calculation between Rail Stations or SPLCs or City Province. Before you can use PC*Miler Rail Web service, you must set the corresponding ExternalDistanceEngine Properties. In order to use the PC*Miler Rail web services, you will need to obtain a license key from *Trimble Maps* and set the following property:

glog.ExternalDistanceEngine.PCMilerRailWS.AuthorizationKey

This property should be added to the CUSTOM Property Set. See the *Property Sets* section of this document for information on how to set properties.

Note: The "glog.ExternalDistanceEngine.PCMilerRailWS.WsdlUrl" property is set by default and should not be changed. For more details, see the *Configuring PC*Miler Rail Web Services help*.

HERE

HERE is an external distance engine which can be used for geo-coding, distance and time calculation. Before you can use HERE REST API, you must set these HERE properties.

You will need to specify authentication credentials through properties defined below:

- **here.app_id**
- **here.app_code**

You will need to specify geo-coding URL through properties defined below:

here.geocode.host=http://geocoder.api.here.com/6.2/geocode.xml

You will need to specify routing URL for distance and time calculation through properties defined below:

here.route.host=https://route.api.here.com/routing/7.2/calculateroute.xml

This property should be added to the CUSTOM Property Set. See the *Property Sets* section of this document for information on how to set properties.

External Rating

SMC RateWareXL with Carrier Connect Web Service

Oracle Transportation and Global Trade Management can be configured to use the RateWareXL with Carrier Connect Service hosted by *SMC3*. This web service provides a call to get rates and transit time. The following properties are used to configure the Rating engine to use this service.

- **glog.RatingEngine.RatewareXL.Username=**
- **glog.RatingEngine.RatewareXL.Password=**
- **glog.RatingEngine.RatewareXL.License=**

These properties should be added to the CUSTOM Property Set. See the *Property Sets* section of this document for information on how to set properties.

> **Note:** The "glog.RatingEngine.RatewareXL.Wsdl.URL" property is set by default and should not be modified. For more information on this topic, see the *How to Set Up an SMC Rate help*.

Maps

By default, Oracle Transportation and Global Trade Management maps use workbench maps as follows:

- PUBLIC workbench layouts which might include:
  - Dispatch Board (Fleet Management > Dispatch Board)
  - Modeling Workbench (Logistics Network Modeling > Modeling Workbench)
  - Modeling Analytics Workbench (Logistics Network Modeling > Modeling Analytics Workbench)
  - Network Workbench (Shipment Management > Itinerary Management > Network Workbench)
  - Planning Workbench (Operational Planning > Planning Workbench)
  - Work Assignment Workbench (Fleet Management > Work Assignment Workbench)
- Mapping actions available on the order release, shipment, location, and operational planning Managers use workbench maps including:
  - Map Bulk Plan Results
  - Map Fleet Bulk Plan Results
  - Map Inbound Shipments
  - Map Order Releases
  - Map Outbound Shipments
  - Map Shipments
- All user-created workbench layouts that contains a map component. A workbench is a type of screen that lets you create multi-panel layouts containing tables, maps, and Gantt charts. Layouts define the look and feel of a workbench. Each layout can have multiple regions, with each region displaying different, but related, information. The workbench designer enables you to create and edit workbench layouts. This page is accessed via **Configuration and Administration > User Configuration > Enhanced Workbench**.

See the *About Enhanced Workbench Layouts help* for more details.

You can integrate Oracle Transportation and Global Trade Management with HERE Platform for Business, ALK Maps, or Oracle Map Cloud Services (formerly eLocation) by setting the properties mentioned in the rest of this section.

HERE

HERE Version 3.1

After getting a version 3.1 map licensing key from HERE, set the properties detailed in the *For Version 3.1 of HERE Maps API help* section of the *HERE Properties help*.

HERE: *https://company.here.com/here/*

Upgrade from HERE V7 to HERE Routing V8

The following steps are required to upgrade from HERE version 7 to HERE Routing version 8:

1. Get the latest platform key from HERE support.
2. Edit the OTM property `here.api_key` with the Platform Key provided by HERE support.
3. Add the custom property `here.useLatestApiKey` with a value of TRUE.
4. In your workbench layout, set the logic configuration parameter of **HERE Default EDE ID** to **HERE_ROUTING_LATLONG_TO_LATLONG**.

> **Note:** For HERE V7, the value of the logic configuration parameter HERE Default EDE ID is set to HERE_LATLONG_TO_LATLONG. For HERE V7, the value of the logic configuration parameter HERE Default EDE ID is set to HERE_ROUTING_LATLONG_TO_LATLONG.

ALK

After getting map licensing from *Trimble Maps*, the following property needs to be set to enable this feature:`alk.api_key=`

Oracle Maps Cloud

After getting map licensing from Oracle Maps Cloud, the following properties need to be set to enable this feature:

```
elocation.mapviewer_url=
elocation.elocation_url=
```

> **Note:** Use the following to configure Oracle Maps Cloud: *https://www.oracle.com/middleware/technologies/ofm-mapviewer.html*

Business to Business Connectivity

Carrier Integration

Oracle Transportation and Global Trade Management supports communication with carriers via the Carrier Portal, which is a UI that can be exposed to external users for reviewing and accepting or rejecting shipment tenders, providing shipment status information, submitting invoices, and more. Alternatively, Oracle Transportation and Global Trade Management also supports integration with carriers in the same way as other external systems, as described in the “Integrating with Other Systems” section of this document.

Customers who transact with many carriers might wish to consider a B2B connectivity partner to manage the integration process with each individual carrier. Most B2B providers can providing such services, though the partners identified below have created turn-key solutions specifically for Oracle Transportation and Global Trade Management

customers. Please note that Oracle doesn't offer packaged integration with any of these partners. Rather, it's the B2B providers who own and support these integrations. Thus it's the responsibility of the customer to perform due diligence and identify whether such a solution is needed and which partner solution best fits their organization's requirements.

SPS Commerce (*https://www.spscommerce.com/*) offers pre-mapped Transportation and Global Trade Management XML to EDI messages for the shipment tender, tender response, shipment status, and invoice transactions. Their offering includes professional services for all carrier on-boarding and testing activities. SPS Commerce is based in Minneapolis, MN and has offices in ANZ, APAC, and EMEA. For more information, contact *info@spscommerce.com*.

Justransform (*https://justransform.com/*) is a cloud-based, self-service integration platform. Their solution includes packaged maps for all supported Transportation and Global Trade Management versions to/from applicable transactions in all available versions of EDI X12 and EDIFACT, as well as many other integration capabilities. Justransform is based in Cupertino, CA. For more information, contact *support@justransform.com*.

Transporeon (*https://www.transporeon.com/*) offers pre-mapped Transportation and Global Trade Management XML to EDI messages for the shipment tender, tender, response, shipments status, and invoice transactions. Their offering includes professional services for all carrier on-boarding and testing activities. Transporeon is based in Ulm, Germany and has offices throughout EMEA and in North America. For more information, contact *info@transporeon.com*.

Global Trade Management

Global Trade Content

Global trade practice requires companies to have access to and utilize the current trade data available. There are many types of trade data available with various sources, both nationally and internationally. Failure to utilize the most up-to-date data can result in inaccurate screenings which may lead to significant fines and penalties, delays, revocation of trade privileges, and lost revenues. Examples of trade content include, but are not limited to:

- Denied Party Screening Lists
- Harmonized System and Classification Information
- Tariff and Duty Rates
- Binding Rules and Regulations
- Free Trade Agreement Information

Global Trade Management provides an integration solution for automatically downloading much of this data directly from *Descartes*. For more information on this topic, see *Global Trade Content help*.

Customs Filing

U.S. export shipments require an export declaration to be filed with the U.S. Census. The export declaration is represented as EEI (Electronic Export Information) and is filed with the U.S. Census. The Oracle Global Trade Cloud Service supports filing with U.S. Customs and Border Protection's (CBP) Automated Export System (AES) interface via Descarte's Global Logistics Network (GLN) system. For more details on this topic, see the *Filing with AES via Descartes's GLN System* section in the *Customs Filing Integration Guide*.

7 Integration

Integrating with Other Systems

Integration to/from Oracle Transportation and Global Trade Management is accomplished via XML or JSON documents. All inbound and outbound integration is transferred via XML or JSON documents, transported over HTTPS. The XML content might optionally be contained in a SOAP Web service request.

Inbound and Outbound Integration via Transmissions are only supported with the HTTP protocol, including REST and SOAP Web Services. There's no support for FTP, Direct Database, or Oracle Advanced Queues (OAQ).

Inbound Integration

Sending data to Oracle Transportation and Global Trade Management is supported using one of the following methods:

- HTTP POST
- REST JSON (See REST API section)
- SOAP Web Services.

HTTPPOST

HTTPPOST integration is achieved by posting XML documents to the following URL: `https://otmgtm-[identity_domain].otmgtm.[data_center].ocs.oraclecloud.com`

The `[identity_domain]` value should be replaced with the values that were specified during provisioning. For example: See the **Input Provided During Provisioning** and **Resulting URLs** sections.

Refer to the *Integration Guide* for a description on the supported servlet endpoints and their corresponding use cases.

Input Provided During Provisioning

- **Identity Domain**: companyname
- **Data Center**: us-phoenix-1

Resulting URLs

- **Production**: `https://otmgtm-companyname.otmgtm.us-phoenix-1.ocs.oraclecloud.com`
- **Test**: `https://otmgtm-test-companyname.otmgtm.us-phoenix-1.ocs.oraclecloud.com`

If a specific port number is required by the upstream posting system, the port that should be used is 443. For proper security, the downstream system should require a username/password for user authentication. When the username and password fields are specified on an External System, they are automatically added to the Transmission Header in the generated XML document.

SOAP Web Services

You can also send data to Oracle Transportation and Global Trade Management via a SOAP web service call.

The web service call can be generated using the WSDL URL. The following URL is for the TransmissionService:

- `https://otmgtm-[identity_domain].otmgtm.[data_center].ocs.oraclecloud.com/GC3Services/TransmissionService/call?wsdl`

The [identity_domain] value should be replaced with the values that were specified during provisioning.

Input Provided During Provisioning

- **Identity Domain**: companyname
- **Data Center Name**: us-phoenix-1

Resulting URLs:

- **Production**: `https://otmgtm-companyname.otmgtm.us-phoenix-1.ocs.oraclecloud.com/GC3Services/TransmissionService/call?wsdl`
- **Test**: `https://otmgtm-test-companyname.otmgtm.us-phoenix-1.ocs.oraclecloud.com/GC3Services/TransmissionService/call?wsdl`

Alternatively, the WSDL file and corresponding XSD schema files can be retrieved via **Process Automation > Integration > Integration Manager > Retrieve WSDLs**. The WSDL should be saved to a file and subsequently imported into the source system.

Transportation and Global Trade Management enforces Web Service Security policies on all inbound and outbound Web Services. The Web Service Security Specification is an OASIS standard for defining security related information as part of a SOAP message. See *http://www.oasis-open.org/*. Transportation and Global Trade Management only supports the WS-Security User name Token Profile.

Inbound

For Inbound integration, the user name and password must be specified in the SOAP Header of the XML document. Please see the example below:

```
<SOAP-ENV:Header>
<Security xmlns="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
<UsernameToken>
<Username>XYZ.OTMUSER</Username>
<Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-
profile-1.0#PasswordText">password</Password>
</UsernameToken>
</Security>
</SOAP-ENV:Header>
```

Integration User Role

To send data to Oracle Transportation and Global Trade Management, it's necessary for the remote system to authenticate with valid user credentials. In addition this user must have the correct Access Control List entry points.

To facilitate this, Oracle Transportation and Global Trade Management provides by default the following options for inbound integration users:

- "INTEGRATION" user role for your inbound integration users. Assign this user role to your user.
- "INTEGRATION" ACL for your inbound integration users. Assign this parent ACL to your customer-defined user role or your user.
- "External Integration" ACL for your inbound integration users. Assign this child ACL to your customer-defined user role or your user.

Inbound Integration and SSL Certificates

All inbound integration requires that the transport be protected using HTTPS. Communications over HTTPS are encrypted using SSL. These SSL communications are initiated using SSL Certificates. The SSL Certificates must be from a trusted signing authority (no self-signed certificates). It is possible that the list of trusted signing authorities on the system doesn't contain the signing authority used for the Oracle Transportation and Global Trade Management Cloud certificates. In that case it might be necessary to download and install the Certificate in the source system.

The following instructions explain how to obtain the Root and Intermediate Certificate for an Oracle Transportation and Global Trade Management instance. Both the Root and Intermediate Certificates must be imported to prevent issues when the Certificate expires each year. You should install the root and intermediate certificate only, NOT the complete certificate chain. The instructions below assume the use of the Firefox web browser, but the steps will be similar with other browsers.

Follow these instructions to retrieve the SSL certificate:

1. Open the Firefox browser and sign into your instance. You must ensure you're logged in successfully to the Oracle Transportation and Global Trade Management application otherwise you'll be downloading the Identity Cloud Service certificates.
2. After confirming you're successfully logged into Oracle Transportation and Global Trade Management, click the **padlock** (lock symbol) next to the URL.
3. Click the arrow next to **Connection Secure** to show connection details, then click the **More Information** option at the bottom of the window.
4. Under the **Security** tab, click the **View Certificate** button.
5. There will be 3 tabs, one for the **Site Certificate**, the **Intermediate Certificate**, and **Root Certificate**. You must export both the Root and Intermediate certificates and import them into your keystore to recognize the OTM certificate. It isn't necessary to install the site certificate. If you install the site certificate you'll need to update this at every yearly certificate renewal.
6. Select the intermediate certificate "DigiCert Global CA G2" and then click the "Download PEM (CERT)" link. This should prompt you to save the file. You must remember the location where you saved the files.
7. Repeat the above step 6 for the root certificate "DigiCert Global Root G2".
8. Import both the root and intermediate certificates into the sending system keystore to recognize the OTM certificate by application using the keystore.
9. To confirm installation check your local copy of "keystores" on the source system making the calls to make sure that the intermediate and root certs are present.

For more details on this topic, see the following KB article:

- *KB75360: How to Retrieve Security Certificates for Inbound Integration using Firefox*

Note: For Inbound Integration which uses the Oracle E-Business Suite – GTM ITM Adapter, see the following KB article for details on how to handle SSL Certificates: *KB153851: How to Retrieve and Change Security Certificates for Inbound Integration to GTM from EBS ITM*. To avoid an interruption of service when the Certificate is renewed, you'll need to open a Service Request to obtain the latest SSL Certificate from Oracle a month before the current Certificate will expire.

IP Allow List for Inbound Integration

Follow these steps to obtain the Public IP Address for Inbound Integration to Oracle Transportation and Global Trade Management.

1. Sign in to the My Services Cloud Portal.
2. Click the “Transportation Management” link.
3. Scroll down to the “Service Environments” section.
4. Copy the “Service Environment URL” for each environment by right-clicking on the URL and select “Copy Link Address”.
5. Run `nslookup` using only the Host from the URL. For example.

```
nslookup otmgtm-test-myotminstance.otmgtm.us-ashburn-1.ocs.oraclecloud.com
Server: 10.1.1.1
Address: 10.1.1.1#53

Non-authoritative answer:
otmgtm-test-myotminstance.otmgtm.us-ashburn-1.ocs.oraclecloud.com canonical name =
 1586234534085.otmgtm.us-ashburn-1.ocs.oraclecloud.com.
Name: 1586234534085.otmgtm.us-ashburn-1.ocs.oraclecloud.com
Address: 199.999.99.99
```

   In this example, the Public IP Address for Inbound Integration is 199.999.99.99.

Integration Data Queues

It is important to note that in the Cloud service all Inbound integration uses the Integration Data Queue feature. This feature persists all inbound Transmissions into a database table. A polling process on the application server queries the corresponding table and processes Transmissions in batches. The Cloud Service is configured by default to have 4 polling threads with a batch size of 8, that poll every 2 seconds. This allows for a maximum throughput of 57,600 Transmissions per hour. You can change these settings using the Data Queue manager, available on the menu at **Business Process Automation > Integration > Data Queues**. The "INTEGRATION IN" Data Queue controls the processing of Inbound Integration.

The Integration Data Queue feature prevents the application server from being overwhelmed by a peak in integration volume. Customers can increase the inbound integration throughput by adjusting this configuration. However, the risk is that unnecessarily increasing the throughput could negatively affect the performance of other parts of the system. For more details on this topic, please see the *Integration Guide*. It is important to note though that the configuration of the Integration Data Queue feature is limited.

XSL Stylesheets for Inbound Integration

Oracle Transportation and Global Trade Management service supports the ability to transform XML Documents during Inbound Transmission Processing. This capability is supported using the TransformerServlet. Use the following steps to load your customer-defined XSL files for Inbound Integration.

1. Create Stylesheet Content: Create a Stylesheet Content record and upload the corresponding XSL file. This page is located at **Business Process Automation > Power Data > Event Management > Stylesheet Content**.
2. Set the stylesheet_name attribute in your XML file to the Stylesheet Content GID: `<?gc3-int-translate stylesheet_name="db:GUEST.MYSTYLESHEETCONTENTGID"?>`

> **Note:** For more detail on this topic, please refer to the "Transform Inbound XML with XSL" section in the *Transportation and Global Trade Management Integration Guide*.

REST API

Transportation and Global Trade Management provides multiple public REST APIs that can be used to access data stored in Transportation and Global Trade Management and construct integrations to other systems. You can make many types of HTTP requests using Oracle REST APIs. You can easily make requests to view, create, update, or delete records.

Where possible a REST API should be used in preference to the Transmission XML via SOAP or HTTP. REST supports synchronous and asynchronous messaging for almost all resources which is an expansion of the Transmission XML capabilities. However, REST does not yet support all the capabilities available using Transmission XML and these capabilities will be added over the next few updates to the REST API. In cases where the feature is not yet available the Transmission XML message must be used.

For detailed instructions on how to use REST APIs, see the *REST API for Transportation and Global Trade Management guide*.

OAuth Client Credentials Flow

The inbound HTTP POST and REST interfaces also support authentication and authorization using OAuth in addition to HTTP Basic Authentication. See the *Integration Guide* for configuration details.

Outbound Integration and Notification

Outbound Integration from Oracle Transportation and Global Trade Management is supported using HTTPPOST and Web Services. In either case an External System is created to define the target system for the integration. See the *Integration Guide* for more details on this subject.

Web Services

You can send data from Oracle Transportation and Global Trade Management via a web service call. For proper security, the downstream system used in outbound integration should require a username and password for user authentication. If the downstream system uses the WS-Security Username Token Policy, the username and password should be specified when creating the Web Service EndPoint.

OutXMLProfile for Outbound Integration and Notification

Out XML Profiles allow you to generate outbound XML and exclude portions of outbound XML with a high degree of control. This is done by specifying what XML builder class files should be excluded when generating XML documents or by selecting an XML template on which you can base the outbound XML. Outbound XML includes integration and notification. Unnecessarily large outbound integration is a common cause of performance issues. Reducing the size of the XML will greatly reduce the load on the database and application server.

XSL Stylesheets for XML Document Generation and Email Notification

Oracle Transportation and Global Trade Management supports the ability to configure XML Document Generation and Email Notification via XSL stylesheet. The following steps should be followed to upload an XSL stylesheet and apply it to an External System or Contact Notification.

1. Create a Stylesheet Content record and upload the corresponding XSL file.

   This page is located at **Business Process Automation > Power Data > Event Management > Stylesheet Content**.
2. Create a Stylesheet Profile record, specifying the previously created Stylesheet Content.

   This page is located at **Business Process Automation > Power Data > Event Management > Stylesheet.**
3. Create/Edit Contact Notification by setting the Stylesheet for the 'Email' Communication Method to the Stylesheet Profile created in Step #2.

   This page is located at **Business Process Automation > Communication Management > Contact Notification.**
4. For XML Document Generation, create/Edit External System by setting the Stylesheet Profile to the Stylesheet Profile created in Step #2.

   This page is located at **Business Process Automation > Communication Management > External Systems.**

XSL Stylesheets to Customize Email Notifications

Oracle Transportation and Global Trade Management service supports the ability to download default XSL files for notifications. Please use the following steps to download default XSL files for customization.

1. Select Stylesheet Content: Select a default Stylesheet Content record and download the corresponding XSL file. This page is located at Business Process Automation > Power Data > Event Management > Stylesheet Content.
2. Customize the downloaded XSL file and upload the newly created file to Stylesheet Content. This page is located at Business Process Automation > Power Data > Event Management > Stylesheet Content.
3. To refer another stylesheet in an XSL file or to To import another stylesheet, which is already present in the database, then the import statement is to be given as below:
   ```
   <xsl:import href="db:<STYLESHEET_CONTENT_GID>"/>
   ```

Note: db: specifies that the stylesheet to be imported should be looked up in the STYLESHEET_CONTENT table.

Outbound Integration and SSL Certificates

All outbound integration requires that the transport be protected using HTTPS. Communications over HTTPS are encrypted using SSL. These SSL communications are initiated using SSL Certificates. The SSL Certificates must be from a trusted signing authority (no self-signed certificates). It is possible that the list of trusted signing authorities in the Oracle Transportation and Global Trade Management Cloud will not contain the Certificate for your signing authority. In that case an SR will need to be raised to request the Certificate be reviewed for possible inclusion.

Only 1-way SSL handshaking is supported. 2-way SSL functionality is planned for a future release. For more information, see, *KB151363: How to Configure Outbound Integration (KB151363)*.

IP Allow List for Outbound Integration

All outbound integration is routed through a NAT Gateway. If you have a firewall with IP restrictions on inbound integration to your data center (outbound from Oracle Cloud), please see the following KB article for details on obtaining the IP Addresses.

- *KB36143: What are the OCI IP Addresses for Outbound Integration?*

Note: You'll need to request the IP range for both the Primary and Disaster Recovery Regions.

Note: There's an exception to this routing for traffic outbound to Oracle Integration Cloud endpoints. The traffic is going over the Service Gateway rather than the NAT Gateway by default. In this case, you need to open a Service Request with Oracle Transportation and Global Trade Management to change the routing of that traffic to go out of the NAT gateway instead of the Service Gateway.

Outbound Integration and PaaS/IaaS

The following instructions are intended to provide high-level information for integrating Transportation and Global Trade Management with an application hosted on Oracle Cloud Infrastructure PaaS/IaaS services. For more detail on this topic, please see the documentation corresponding to your particular PaaS service. Integration from Transportation and Global Trade Management to any other application hosted on an Oracle Cloud Infrastructure service must be performed via a publicly accessible IP address and publicly accessible ports. By default, access to Oracle Cloud Infrastructure Services are available via port 80 (HTTP) and 443 (HTTPS). If the service isn't provisioned with a public IP address, it will be necessary for you to reserve a public IP address for their service.

It is highly recommended that you register your service using a Public Domain Name and use the Domain Name in the URL, rather than the IP address. It is also recommended that you obtain an SSL Certificate for their Domain Name and require that all communication use HTTPS. Depending on the Certificate Authority used, it might be necessary to open a Service Request to have the SSL Certificate loaded into the Transportation and Global Trade Management instance.

You should test all URLs from outside of Transportation and Global Trade Management first using a web browser or a utility such as JDeveloper, SOAPUI, curl, or wget. For more details, please see the "Register a Custom Domain Name with a Third-Party Registration Vendor" and "Obtaining the SSL Certificate" topics in the Infrastructure as a Service documentation.

> **Note:** If you're integrating with an instance of Oracle Integration Cloud (OIC) that's in the same region as your Transportation and Global Trade Management instance, you'll need to open a Service Request to have Cloud Operations properly route the outbound integration traffic to your OIC instance. This isn't necessary if the OIC instance is found in a different region.

Outbound REST Integration

In addition to the HTTP (POST) and SERVICE (SOAP Web service) communication methods there is now a REST option which can send out the JSON REST resource format and Transmission XML messages. The determination of which format to use is controlled by the content type defined on the target external system. See the *REST API documentation* for details.

8 Data Management

Migration Projects

The Migration Project feature is a standard way to define and manage one or more datasets for the purpose of migrating data from one Transportation and Global Trade Management instance to another.

Although the Transportation and Global Trade Management application is fully functional “out of the box”, an operational system will typically require some configuration. Best practice would be for such a configuration to be developed and tested in a pre-production environment, accepted by product and business/operational experts and then promoted to the production environment.

For more details on using Migration Projects to move data between instances, see the *Migration Project section* of the *Data Management Guide*.

Business Data Purge and Archive

To maintain best performance, it's necessary to periodically purge or archive data from the operational database. Oracle Transportation and Global Trade Management uses multiple methods for purging and archiving data. This section explains these concepts in more detail.

Purging old data helps maintain best performance in the operational system. Archiving is used with purging for critical business objects which need to be accessible for an extended period of time. When data is archived, it's moved to an archive database schema and compressed. Data in the archive schema can be queried, but can't be modified.

Note: Templates aren't deleted when you purge data.

Note: Oracle Analytics data isn’t purged.

These business objects support archiving, with the following settings:

- **Operational Retention Period**: How long the data is kept in the operational database. If the data hasn't been updated for the period specified by Operational Retention Period, then it's archived. The Operational Retention Period is **2 years** for Shipment, Invoice, Work Invoice, Order Release, OB Order Base, DM Transaction, GTM Campaign, Device and P_BID entities. The Operational Retention Period is **5 years** for GTM Transaction entity.
- **Frequency**: How often the job runs to archive data. The Frequency is **weekly**.
- **Archive Retention Period**: How long the data is kept before it's permanently purged from the system. The Archive Retention Period is **10 years**.

Purge Only Option

The Business Data Purge process stores deleted data in the archive database schema by default. A domain can be marked to skip archiving of the purged data by selecting the Purge Only (No Archive) checkbox on the Domain Settings page. To enable the **Purge Only** option, you must open a service request with Oracle Support. Oracle Support also

offers an option to skip archiving for all domains, in which case the Purge Only (No Archive) checkbox isn't functional. Likewise, if you haven't contacted Oracle Support about enabling Purge Only, the checkbox isn'tfunctional on the Domain Settings page.

> **Note:** If you select the Purge Only (No Archive) checkbox on the Domain Settings page, domain data will be completely lost when the two-year purge starts.

Business Objects that Support Archiving

All objects found in **Configuration and Administration > Process Management > Mark for Purge** in the Purge Type field support archiving.

Archived data are found in the Report Manager in the "Archive" reports section. The archive reports take a single parameter, which is the ID of the object to be retrieved from the archive. The search for the ID lets you query the archive schema business objects using flexible criteria. Some sample archive reports are provided upon installation.

Documents associated with the business objects above are archived when the business objects are archived. A DBA or Admin user role may access the archived documents using the Archived Documents UI, via **Business Process Automation > Document Management > Archived Documents**. Not all documents are associated with business objects, and those which aren't associated aren't archived or purged.

> **Note:** There are no indexes on the archive schema database tables, thus the performance of the search is expected to be slower than the operational database. If the data returned by the sample report is not sufficient, it's recommended to copy the default report and change it as needed.

Scheduled Purges

Scheduled purges are used for purging miscellaneous transient and diagnostic data. The following table defines the retention period and purge frequency. The timing and frequency of these processes should not be altered.

Retention period and purge frequency

Entity	Retention Period	Purge Frequency
Action Log	7 days	Weekly
Audit	30 days	Weekly
Bulk Plan Results	30 days	Weekly
Bulk Reporting	30 days	Weekly
Business Intelligence Publisher (BIP) Schedule Job History	7 days	During upgrade

Entity	Retention Period	Purge Frequency
Note: The retention period of 7 days is applicable only for jobs scheduled in Business Intelligence Publisher and not for jobs scheduled in Oracle Transportation Management via **Business Process Automation > Reporting > View Scheduled Jobs**.		
Demurrage Transaction	2 years	Weekly
Device Association	2 years	Weekly
Document Content	30 days	Weekly
Email Delivery Suppression	30 days	Daily
GTM Data Content	30 days	Weekly
GL User Authentication	30 days	Weekly
GTM Campaign	2 years	Weekly
GTM Shipment	5 years	Weekly
GTM TIP Inventory	5 years	Weekly
GTM Transaction	5 years	Weekly
Invoice	2 years	Weekly
Mail	7 days	Weekly
Object Lock	30 days	Weekly
Order Base	2 years	Weekly
Order Release	2 years	Weekly
Planning Diagnostics	30 days	Weekly
QD Logs	7 days	Weekly
RPLS Ad hoc Audit	60 days	Every two months
Sell Side Shipment	2 years	Weekly
Shipment	2 years	Weekly
Tracked Files	1 hour	Hourly
Work Invoice	2 years	Weekly

Partitioned Purges

Oracle Transportation and Global Trade Management contains several integration and logging tables that can become quite large very quickly; these tables have been partitioned to allow for quick purges of older data. By partitioning the tables, a particular partition (segment) can be truncated, instead of records being individually deleted, which is

inefficient for large amounts of data. The following table outlines the time period used to create the partitions, along with the number of partitions for each entity.

Time period which is used to create the partitions and the number of partitions

Entity	Time Period	Partitions
Data Queue - LIFETIME	Monthly	12
Data Queue - VISIBILITY	Monthly	12
Data Queue - NOTIFY	14 days	12
Data Queue - INTEGRATION_IN	Daily	12
Data Queue - INTEGRATION_OUT	Monthly	12
Data Queue - NS_CONTACT_POINT_OVERRIDE	3 days	12
Data Queue - ADHOC_NOTIFY	3 days	12
Data Queue - VISIBILITY_SHIPMENT	11 days	12
Data Queue - VISIBILITY_INVOLVED_PARTY	11 days	12
Data Queue - VISIBILITY_PIECE	11 days	12
Data Modification History	Monthly	4
Audit Event	Yearly	4
Explanation	Daily	7
Integration Logging	Monthly	4
Integration Logging(Mobile)	Daily	7
Login History	Monthly	4
Mobile Messages	Daily	7
Mail Blocked Messages	Daily	7
Object Lock	Daily	7
Problem	Monthly	4
Process Control History	Quarterly	4
Transaction(Mobile)	Daily	7
Transaction(Inbound)	Bi-Weekly	4
Transaction(Outbound)	Weekly	4
Transaction(Mobile)	Daily	7
Transmission(Inbound)	Bi-Weekly	4
Transmission(Outbound)	Weekly	4
Tender Transmission(Outbound)	Quarterly	4

These jobs are set to run at 1 AM on the last day of the cycle. Every table reuses its partitions, because the intention is that before the end of the cycle, the oldest partition is purged in preparation for the new cycle. For example, for a monthly table, on April 30th, partition 1 should be purged to remove January's data, which will then be used for May. For example:

If the time period of the table is monthly, then the data is segmented as follows:

- Jan – partition 1
- Feb – partition 2
- Mar – partition 3
- Apr – partition 4
- May - partition 5
- June – partition 6, etc.

Schedule at which oldest partition is purged in preparation for the new cycle

Time Period	Oldest Partition Purge Schedule
Daily	Every day at 10 PM UTC
Weekly	Every Monday at 4 AM UTC
Bi-Weekly	Every other Sunday at 4:30 AM UTC
Monthly	Every last day of the month at 5 AM UTC
Quarterly	Every last day of the quarter at 6 AM UTC

Loading Legacy Data

Loading legacy Business Transaction data from a previous instance of Transportation and Global Trade Management is permitted. A maximum of two years of data is permitted. Legacy data will adhere to the same data retention policies previously described. It is important that the original insert_date of the data be preserved during the data upload in order to prevent the data from prematurely getting archived and to prevent performance issues during archiving. The Oracle Transportation and Global Trade Management Service does not provide any mechanism for loading the data. Loading the legacy data is the responsibility of the customer and/or the corresponding implementation partner and must be performed using a support integration technology (i.e. CSV or XML).

Virus Scan

It is important to understand that all document upload interfaces to Oracle Transportation and Global Trade Management are protected with virus scanning for your added security. There is no configuration required and this feature cannot be disabled. If you encounter any issues with uploading documents, please open a Service Request.

Database Replication Enablement for Oracle Transportation and Global Trade Management

Database Replication Enablement is an optional, separately priced feature (Part# B91919) of the Transportation and Global Trade Management that provides for a near real time replication of the main data from the Transportation and Global Trade Management production schema, which can be used for purposes of integrated reporting with other systems, or population of an external data lake. The key advantage to this feature is that it allows SQL access to a read-only copy of the Cloud database, a database which is owned by the customer and not part of the SaaS offering. The replication is performed using the Oracle GoldenGate product, which must be licensed by the customer along with the target database license.

The replication is performed on the glogowner and reportowner schemas (not hdowner or archive) and copies the data, structure and indexes. It doesn't copy the VPD information. The tables listed below are excluded from replication because they either include sensitive data or they contain high-volume transient data that isn't required for analytics type reporting. It is important to understand that deletions, including Business Data Purge for Orders, and Shipments, are also replicated. You'll need to propagate the data in the corresponding tables to another table or database if they intend to keep the data longer than the purge period. For more details on the setup and configuration required, please review this MOS note, *KB119246: GoldenGate Deployment for Oracle Transportation and Global Trade Management Cloud (OTM) - ATP and GGS*.

> **Note:** Replication isn't bi-directional. You must not modify the target database because changing the target database could break the replication. Any data you add/modify in the target database may be lost during maintenance.

To reduce the downtime required to apply Quarterly Updates, Oracle Transportation and Global Trade Management Cloud(OTM/GTM) runs a pre-downtime process several days before the scheduled Quarterly Update. This process includes applying database structure changes using the Oracle Database feature "Edition Based Redefinition". This feature prevents the database structure changes from impacting the current running version of the OTM/GTM service.

Customers using the paid optional GoldenGate based Database Replication service (Part# B91919) will see these database structure changes immediately in the replication service. This is the expected behavior since the replication is performed at the Database Table level and is near real time. These database structure changes will not impact your OGG Target server configuration or replication process. However, these changes will potentially impact your downstream queries from the OGG Target database.

Review the Cloud Documents > Database Structural Changes section in note *KB153929: Oracle Transportation and Global Trade Management Documentation Resources*.

Table Name

- APP_MACHINE_FAILOVER_T
- APP_MACHINE_T
- APP_POWER_ACTION_ACCESS_T
- APP_SERVER_DATA_QUEUE_DEF_T
- APP_SERVER_DOMAIN_T
- APP_SERVER_FUNCTION_T
- APP_SERVER_MACHINE_T

- APP_SERVER_QUEUE_T
- APP_SERVER_T
- BUSINESS_PROCESS_LOG_T
- CONNECTION_POOL_T
- DATA_PURGE_HISTORY_DETAIL_T
- DATA_Q_DEF_RELATED_Q_DEF_T
- DATA_QUEUE_DEF_T
- DATA_QUEUE_EXECUTOR_T
- DATA_QUEUE_INDEX_COL_T
- DATA_QUEUE_INDEX_T
- DATA_QUEUE_POLLER_INDEX_T
- DATA_QUEUE_POLLER_T
- DATA_QUEUE_TABLE_T
- DATA_SOURCE_T
- DB_TRACE_FILE
- DBPATCH_LOG_T
- DOMAIN_COPY_SCRIPT
- DOMAIN_COPY_SEQ_CACHE
- EBR_TABLE_T
- ERROR_LOG_T
- EXCEPTIONS
- EXPLANATION_T
- GL_LOGIN_HISTORY_T
- I_LOG_DETAIL_T
- I_LOG_T
- I_TRANSACTION_ACK_T
- I_TRANSACTION_DETAIL_T
- I_TRANSACTION_REFNUM_T
- I_TRANSACTION_T
- I_TRANSMISSION_ACK_T
- I_TRANSMISSION_PGROUP_T
- I_TRANSMISSION_REFNUM_T
- I_TRANSMISSION_REPORT_T
- I_TRANSMISSION_T
- JMSCONSUMER_T
- JMSDESTINATION_T
- JMSMESSAGE_T

- JMSMESSAGEQUEUE_T
- JMSTABLEID_T
- OBJECT_LOCK_T
- PLAN_TABLE
- Q_INTEGRATION_IN_EXCEPTION_T
- Q_INTEGRATION_IN_T
- Q_INTEGRATION_OUT_EXCEPTION_T
- Q_INTEGRATION_OUT_OVERFLOW_T
- Q_INTEGRATION_OUT_T
- Q_LIFETIME_EVENT_EXCEPTION_T
- Q_LIFETIME_EVENT_T
- Q_MESSAGE_EXCEPTION_T
- Q_MESSAGE_T

Production to Test Cloning (P2T)

Oracle Transportation and Global Trade Management service supports the ability to have the production database instance cloned to your test instances. This is often a good idea to have done shortly after go-live to facilitate issue replication. It's also highly recommended to have this done before an upgrade. P2T requests are made by opening service requests.

The entire production database is cloned with the following exceptions.

- BIPublisher Reports aren't copied.
- Files such as images and email stylesheets that are stored on the file system aren't copied.
- Recurring processes are disabled with a **Next Process Time** set in the distant future to prevent production processes from running on test data. These might be edited as needed to run in the test system.
- All users other than Service Administrators (users with the ‘DBA.ADMIN” role) are expired to prevent inadvertent use of the test system. There's a “Manage User Expiration Date” action available on the User Manager, which can be used to un-expire a group of users.
- The Transportation and Global Trade Management password for Service Administrators is retained from production. Note: This password would only be used if the DBA.ADMIN user was used for Integration processing, which is highly discouraged. Regardless, it's highly recommended to change this password immediately following a P2T.
- The web services are unlinked from the External System record. Edit the corresponding External Systems and relink them to the test web service after the P2T is complete.
- Environment Specific data and data potentially containing Personally Identifiable Information (PII) isn't propagated.
- Credentials for External Systems aren't copied.

The following table outlines the data that's not propagated.

Non-Propagated Data

Table Name	Column Name
ADHOC_NOTIFY	COM_ADDRESS
APP_MACHINE	MACHINE_URL
CONTACT	CELL_PHONE
CONTACT	EMAIL_ADDRESS
CONTACT	FAX
CONTACT	PHONE1
CONTACT	PHONE2
CONTACT_POINT	COM_ADDRESS
CUSTOMER_TAX_INFO	All Columns
DOMAIN_SETTING_TAX_INFO	All Columns
DRIVER	DATE_OF_BIRTH
DRIVER_CDL	All Columns
EXTERNAL_SYSTEM	HOSTNAME
EXTERNAL_SYSTEM	URL
EXTERNAL_SYSTEM	IP_ADDRESS
EXTERNAL_SYSTEM_SERVICE	All Columns
I_MESSAGE	CELL_PHONE
NOTIFY_REQUEST	COM_ADDRESS
ORDER_RELEASE	EM_PHONE_NUMBER
PROBLEM	PROBLEM_URL
PROCESS_CONTROL_REQUEST	NEXT_PROCESS_TIME, for all public entries
REPORT_EMAIL	EMAIL_ADDRESS
SHIPMENT	EM_PHONE_NUMBER
X_UN_LOC_CODE	EMAIL_ADDRESS

CSV/DB.XML

The Oracle Transportation and Global Trade Management service provides capabilities for importing and exporting configuration data. The options are Comma Separated Value (CSV) or DB.XML. The remote interfaces for these features are thoroughly documented in the *Data Management Guide*. It is important to understand that limits are imposed on

the amount of data that can be contained in a single request. This is necessary to prevent these features from affecting critical operations.

- **CSV Export**: 512MB
- **DB.XML Export/Import**: 10MB

9 Best Practices

Best Practices Introduction

OTM Cloud is a SaaS application that was first released as a software product in the year 2000, with GTM following in 2009. Both products were built on the premise of allowing great flexibility and configurability with the use and flow of the application. This flexibility allows great power and is a large reason that OTM has been the leader in the Gartner Magic Quadrant for so many years. However, if not designed or implemented correctly, bad configurations can cause instability and/or performance problems. In recent years, Oracle's engineering team has built many guardrails in the application that prevent the most egregious errors, but there are still configuration mistakes that are outside our control to contain. This section contains recommendations from OTM experts on the best practices for configuring those key parts of the application. Oracle will continue to expand this section as we discover more common configuration mistakes, so please stay tuned. We hope that you use this guide to both drive new configuration work and review existing configurations. Most of the content in this best practices section is intended for the OTM superuser, not for the average user. As always, we encourage feedback on this documentation.

Security and User Provisioning Best Practices

- Be judicious with functionality given to other users. Create roles with specific functionality instead of granting DBA.ADMIN role.
- Make sure only a limited number of trusted users can add/modify agents or make other configuration changes.
- Limit the number of users with DBA.ADMIN role to a small community.
- Configure integration users with INTEGRATION role. The integration user should not be used and not be able to sign in to the application.
- Only experienced, thoroughly trained, and deeply knowledgeable OTM users should have DBA.ADMIN user role access to ensure proper system administration.

Implementation Design Best Practices

- Avoid using traditionally static entities such as location and contact as transient. This can cause database contention with tables that aren't designed to have frequent deletes.
- Review the "*Thread Tuning*" section for advice on how to properly tune workflow and data queue threads.
- Tune threads in small increments and observe effects on throughput as described in the *Thread Tuning* section.
- Set glog.sql.query.timeout.* and glog.sql.update.timeout.* limits lower than default. This reduces the time a bad custom SQL will block a thread.
- Make tuning changes for caches and thread counts in the CUSTOM Property Set so they aren't lost on restart.

Integration Best Practices

- Configure different integration users for different sources/flows of integration. This makes it easier to debug integration issues.
- Avoid sending the same object in multiple transactions within the same transmission.
- Avoid transmissions with a large number of transactions, especially when the containing transmission isn't configured to process in parallel.
- If configuring multiple inbound flows, create custom data queues and assign different interfaces to varying queues. If one inbound flow encounters performance problems or an unexpected increase in volume, having multiple queues will isolate the problem to one data queue allowing the most critical inbound integration to remain up and running. It will also allow you to control the various flows more easily.
- Agents that send outbound transmissions should be configured to send the transmission in a new process to avoid blocking agent queues or any other agents tied to inbound transmissions. This can help avoid having problems in a downstream cause a backup of inbound transmissions to Oracle Transportation Management.
- Always configure an out XML profile for outbound interfaces, especially heavy interfaces such as TenderOffer and PlannedShipment.

Agents and Workflow Best Practices

- Try to avoid having multiple agents fire on the same event.
- Order Release agents that run during bulk plan should be short lived, so as not to extend the length of bulk plan. If there's more processing to do, raise an event in a new process.
- Wherever possible, use provided actions instead of Direct SQL Update in agents. If extra actions are needed, log an idea lab.
- Don't use Direct SQL Update to update tables unrelated to the agent type (that is, updating order_release in a shipment agent).
- All agent changes should be code reviewed by qualified Oracle Transportation Management experts.
- All agent changes should be tested against production volume on a test environment.

Custom SQL Best Practices

- Limit Direct SQL to the table matching the Data Query Type of the agent. For example, update the order_release table in an ORDER_RELEASE agent. Even updating a child table such as shipment_stop in a shipment agent can run the risk of database deadlocks.
- Don't use tables from unused functionality for other purposes. Tables are designed accounting for column indexing and volume/purging with a specific purpose in mind, and misuse can cause performance and instability problems.

- If Direct SQL Update is used, restrict it working with attribute fields, reference number, remark fields.
- Don't update internal tables from Direct SQL Update as this could corrupt/conflict with Oracle Transportation Management internal code.
- Custom SQL and reports should use the view name corresponding to desired table. The view name is the table name without "_T" suffix.
- Use the tools available for diagnosing custom SQL:
  - On the SQL Execution Interface screen, select the "Show Execution Plan" checkbox to get an Explain Plan for the SQL you entered. Be sure to sign in with the same user that would run the SQL so you're running with the appropriate VPD.
  - Use the AWR Report screen to obtain an AWR Report for a time period you choose. Note that snapshots are written on the hour, so requested data may not be available until the top of the hour.
  - Use the AWR SQL Detail Report screen to obtain an Explain Plan of a SQL given the SQL ID from an AWR Report.
  - If you wrote custom SQL for OTM or are working with SQL, use the *SQL Performance screen* (**Configuration and Administration > Technical Support > Diagnostics and Tools > Database > SQL Performance**) to search for SQL queries that perform poorly. For more details, also see the *About SQL Performance Monitoring help*.

Enhanced Workbench Best Practices

- Maintain performance by minimizing data content by periodically evaluating components, screensets, and columns on the layouts.
- Only keep the required content on the layouts. If particular content is unused by most users, it should be added as a hidden tab. Hidden tabs only load only when they're exposed.
- Derived fields add to processing time when layout is loaded. Oracle recommends a maximum of 5-6 derived fields per screenset.
- The actions on the screenset are a part of the data content, so creating custom screen sets for tables with the minimum number of required actions can help reduce the data content and improve the performance of the workbench.
- A custom screenset with only required columns of interest to the user in the Table regions will improve performance of the layout. It's recommended to keep the number of columns to less than 20-25.
- Keep the page size smaller using these settings:
  - Go to **Configuration and Administration > Preferences > User Preferences**. Add the Finder Page Size preference to your user preference. This controls both Finder Results and Workbench tables. Although the default is 25, set the value to 10-12.
  - Go to **Configuration and Administration > User Configuration > Screen Set Manager**. On the Results tab, set the Records Per Page size. This controls the workbench table attached to this screenset.
- Tables perform best with less than 500 records.
- Gantt charts perform best when adding less than 100 objects and there's a smaller time range (around 5-7 days).

Optimization Best Practices

- Review the *glog.query Properties help* for possible finder query optimizations. Properties such as glog.query.joinSubqueryToParent and glog.query.xidOptimization as well as others could be used to make finder queries faster when there are very few domains.
- Review glog.webserver.finderresults.concatPseudoField property in *glog.webserver Property help* to see if this feature is needed. If not, performance can be improved by turning it off.
- Avoid using too much agent logging. This can be helpful during implementation, but should be turned off in production.

Report Best Practices

- All the parameters sent from Oracle Transportation Management to BI Publisher will be strings, so you must account for strings in the where condition for the queries written in data model of BI Publisher. Date strings are sent with a specific date format, and this date format is also sent as a parameter from Oracle Transportation Management. When dealing with dates, you must convert date string using the format, so also define a parameter to receive the date format.
- Reports executed from Oracle Transportation Management on BI Publisher are always treated as Online Reports for BI Publisher even if they're scheduled in Oracle Transportation Management. This means the query timeouts and memory guard properties, such as Report Size Limit, set in BI Publisher for Online Reports will be applied to the reports requested from Oracle Transportation Management.
- Reporting within Oracle Transportation Management is meant for running transactional reports that deal with single object records, not aggregate or analytical reports. Any aggregate or analytical reports that deal with huge data sets should be scheduled directly in BI Publisher.
- When writing queries, keep in mind the VPD that will be used.
  - When logged into BI Publisher, the logged in user's VPD will apply, meaning it will use the VPD of the default role assigned to the user.
  - In Oracle Transportation Management, if switching roles, the VPD will change to the newly selected role, so make sure the queries work for that VPD, too.
- See the following BI Publisher Documentation:
  - *Best Practices for SQL Data Sets*
  - *SQL Query Tuning*

Analytical Reports

- Create a report with facts and dimensions from same analysis folder, as using a different analysis folder might yield inconsistent results. For example, creating a report with Shipment Count fact from the Shipment Analysis folder and Dimension from the Shipment Stop Analysis folder will show inconsistent results.
- Always have at least one fact and one dimension in the analytical report. You might see inconsistent results if ONLY dimension columns or ONLY fact columns are selected in the report.

- Analytical reports are intended for analyzing at a higher level, meaning they should always be aggregated or summarized with high level dimension. For example: number of shipments and total cost by service provider in a particular lane.
- It's always recommended to back up custom artifacts (reports and dashboards) on regular basis from Oracle Analytics (/analytics) using the archive option. This will be stored as a `.catalog` file. You can make a backup of BI Publisher reports, Data Visualization workbooks, and analytical dashboards and reports using this option.
- All catalog folders in Oracle Analytics are read-only except the custom folder. To change a default report, copy it to the custom folder and edit it.
- Avoid saving your custom reports in the User folder; instead, use the Custom folder. Reports stored in the User folder will not be retained during migration from Oracle Analytics Server to Oracle Analytics Cloud.
- Caching is enabled in analytics, so that if the same report is run with same parameters, it will get the data from BI server cache instead of from the database. ETL clears the BI server cache as part of the ETL process, so it's recommended to run any analytical report after 30 min of ETL completion as BI server will look for cache table for every 30 min and clear the cache if the cache table has entries.
- Analytics users should always have any of the following VPD profiles. Or, you can create a custom VPD profile with all the predicates provided in these VPD profiles.
    - FTI_DEFAULT
    - GTI_DEFAULT
    - SERVPROV

ETL

- ETL is scheduled to run once daily. It is NOT recommended to create multiple ETL schedules on same day.
- It's recommended to monitor ETL on regular basis and report any issues. This avoids a bulk extract in the event ETL was stuck due to some issues and wasn't running for an extended period of time. This might lead to performance issues when the ETL is run again. ETL can be monitored from Transportation Intelligence > ETL results screen. Select “In Progress” Load Status to monitor the running ETL process.
- Customers should not run lookback ETL regularly. This might impact the performance as this will load the two weeks of data from the date selected in the OTM. This lookback option is only meant to correct the data if there were any ETL fixes.

Troubleshooting/Maintenance Best Practices

- Periodically monitor exception log and promptly resolve issues.
- When investigating performance issues, use the "Performance Collection" screen which captures multiple diagnostics at once. This also allows for easily saving these results to share with Oracle Support.
- Use the "Performance Collection" screen, especially OPEN PROCESSES, to periodically review how custom agents and workflow interact with each other.
- Configure metric thresholds for items you want to monitor and be alerted to. This can also capture diagnostic data when an issue occurs automatically when the threshold is triggered.