

Oracle® Global Trade Management

Customs Filing Integration Guide

Release 6.3

Part No. E38424-05

September 2014

Copyright © 2012, 2014 Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Contents

CONTENTS	IV
FIGURES	V
SEND US YOUR COMMENTS	VI
PREFACE	VII
CHANGE HISTORY	VII
1. CUSTOMS FILING IN GLOBAL TRADE MANAGEMENT	1-1
PROCESS OVERVIEW	1-2
CUSTOMS SHIPMENT CREATION	1-2
FILING DOCUMENT DETERMINATION	1-2
DATA PREPARATION	1-2
FILING DOCUMENT GENERATION	1-2
FILING DOCUMENT TRANSMISSION.....	1-2
FILING RESPONSE PROCESSING	1-2
FILING PROCESS VISIBILITY	1-3
2. CUSTOMS FILING WITH AES	2-1
OVERVIEW	2-1
AES REQUIREMENTS.....	2-1
ARCHITECTURE	2-1
3. CONFIGURING WEBLOGIC QUEUES	3-1
CREATING A MESSAGE QUEUE IN WEBLOGIC	3-1
CONFIGURING A WEBLOGIC QUEUE FOR CUSTOMS FILING	3-1
CONFIGURING WEBLOGIC QUEUES FOR FILING RESPONSE	3-1
CONFIGURING XA DATA SOURCE IN WEBLOGIC	3-2
MONITORING WEBLOGIC QUEUE USING OTM/GTM DIAGNOSTICS.....	3-3
CONFIGURING WEBLOGIC QUEUE FOR ERRONEOUS FILING RESPONSES.....	3-3
4. CONFIGURING WEBLOGIC MESSAGING BRIDGE	4-1
WEBLOGIC MESSAGING BRIDGE OVERVIEW	4-1
BINDING CONNECTION OPTION FOR COMMUNICATING WITH IBM MQ SERIES QUEUES	4-1
IBM MQ CLIENT	4-1
WEBLOGIC MESSAGING BRIDGE FOR CUSTOMS FILING (OUTBOUND FROM OTM/GTM)	4-1
WEBLOGIC MESSAGING BRIDGE FOR FILING RESPONSE (INBOUND TO OTM/GTM)	4-1
XA ADAPTER.....	4-1
INSTALLING IBM MQ CLIENT	4-1
CONFIGURING WEBLOGIC TO USE IBM MQ CLIENT	4-1
BINDING FILE GENERATION	4-2
DEPLOYING XA ADAPTER	4-4
CONFIGURING WEBLOGIC MESSAGING BRIDGE FOR CUSTOMS FILING	4-4
SOURCE DESTINATION.....	4-5
TARGET DESTINATION	4-6

CONFIGURING A CUSTOMS FILING BRIDGE.....	4-6
CONFIGURING WEBLOGIC MESSAGING BRIDGE FOR CUSTOMS FILING RESPONSE	4-7
SOURCE DESTINATION.....	4-8
TARGET DESTINATION	4-9
CONFIGURING THE BRIDGE.....	4-9
PRESERVING WEBLOGIC CONFIGURATION CHANGES.....	4-9
5. AES EXPORT DECLARATION FILING AND RESPONSE PROCESSING....	5-1
OUTBOUND EXPORT DECLARATION FILING SETUP	5-1
CUSTOMS SHIPMENT CREATION	5-1
DOCUMENT DETERMINATION	5-1
DOCUMENT VALIDATION	5-1
DOCUMENT DATA PREPARATION	5-2
DOCUMENT GENERATION	5-2
DOCUMENT FILING	5-4
INBOUND FILING RESPONSE PROCESSING	5-4
EDI TO TRACKING EVENT XML TRANSFORMATION.....	5-4
TRACKING EVENT PROCESSING	5-5
CUSTOMS FILING STATUSES	5-5
6. FTR CHANGES.....	6-1
7. TROUBLESHOOTING	7-1
8. APPENDIX	8-1
SAMPLE FILING RESPONSE TRANSFORMATION PLUG-IN IMPLEMENTATION	8-1
SAMPLE OUTBOUND X12.601 EDI FILING DOCUMENT	8-2
SAMPLE INBOUND X12.824 EDI FILING RESPONSE: SHIPMENT ADDED RESPONSE	8-2
SAMPLE INBOUND X12.824 EDI FILING RESPONSE: SHIPMENT REJECTED RESPONSE	8-3
IMPORTANT QUALIFIERS	8-3
REFERENCES	8-4

Figures

Figure 1.1	1-1
Figure 2.1	2-2
Figure 4.1	4-5
Figure 4.2	4-8

Send Us Your Comments

Oracle Global Trade Management Customs Filing Integration Guide, Release 6.3

Part No. E38424-05

Oracle welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, please indicate the title and part number of the documentation and the chapter, section, and page number (if available). You can send comments to us in the following ways:

- Electronic mail: otm-doc_us@oracle.com

If you would like a reply, please give your name, address, telephone number, and electronic mail address (optional).

If you have problems with the software, contact Support at <https://support.oracle.com> or find the Support phone number for your region at <http://www.oracle.com/support/contact.html>.

Preface

This document is intended for Global Trade Management clients, Global Trade Management administrators, or Global Trade Management consultants who have an interest in creating and electronically filing trade documents for the purpose of reporting export declarations to trade regulatory authorities. This guide provides instructions on how to create filing documents and how to configure the integration components required for submitting the filing document to the US Trade regulatory authority, the US Census, via US Customs and Border Protection's (CBP) Automated Export System (AES).

Change History

Date	Document Revision	Summary of Changes
12/2012	-01	Initial release.
03/2013	-02	Corrected property name to be <code>glog.oaq.plugin.GTM_CUSTOMS_IN</code> . Note: This property is not available as default. You have to add it when you configure the system for AES.
12/2013	-03	Corrected the case in the property: <code>glog.oaq.plugin.gtm_customs_in</code> . Note: This property is not available as default. You have to add it when you configure the system for AES.
05/2014	-04	AES enables users to specify whether the HTS or Schedule B codes should be reported. AES's FTR changes which are effective from April 5, 2014. Changed property to: <code>glog.oaq.plugin.GTM_CUSTOMS_IN</code> Removed the integration with OAQ and added how to integrate with AES using WebLogic Message Queues and Messaging Bridge. Chapter 2 is revised while chapters 3 and 4 are newly added.
09/2014	-05	Changed references to "GC3 Server" to be "Select the server starting with "gc3-"." Added chapter 7: Troubleshooting

1. Customs Filing In Global Trade Management

The Customs Filing feature in Global Trade Management allows you to prepare documents for filing export declarations and subsequently transmit these documents to various customs reporting authorities, who could be national or other regulatory authorities, which govern trade compliance.

The process of customs filing broadly consists of the following pieces:

1. Customs Shipment Creation
2. Filing Document Determination
3. Data Preparation
4. Filing Document Generation
5. Filing Document Transmission
6. Filing Response Processing (Optional)
7. Filing Response Interpretation
8. Filing Process Visibility

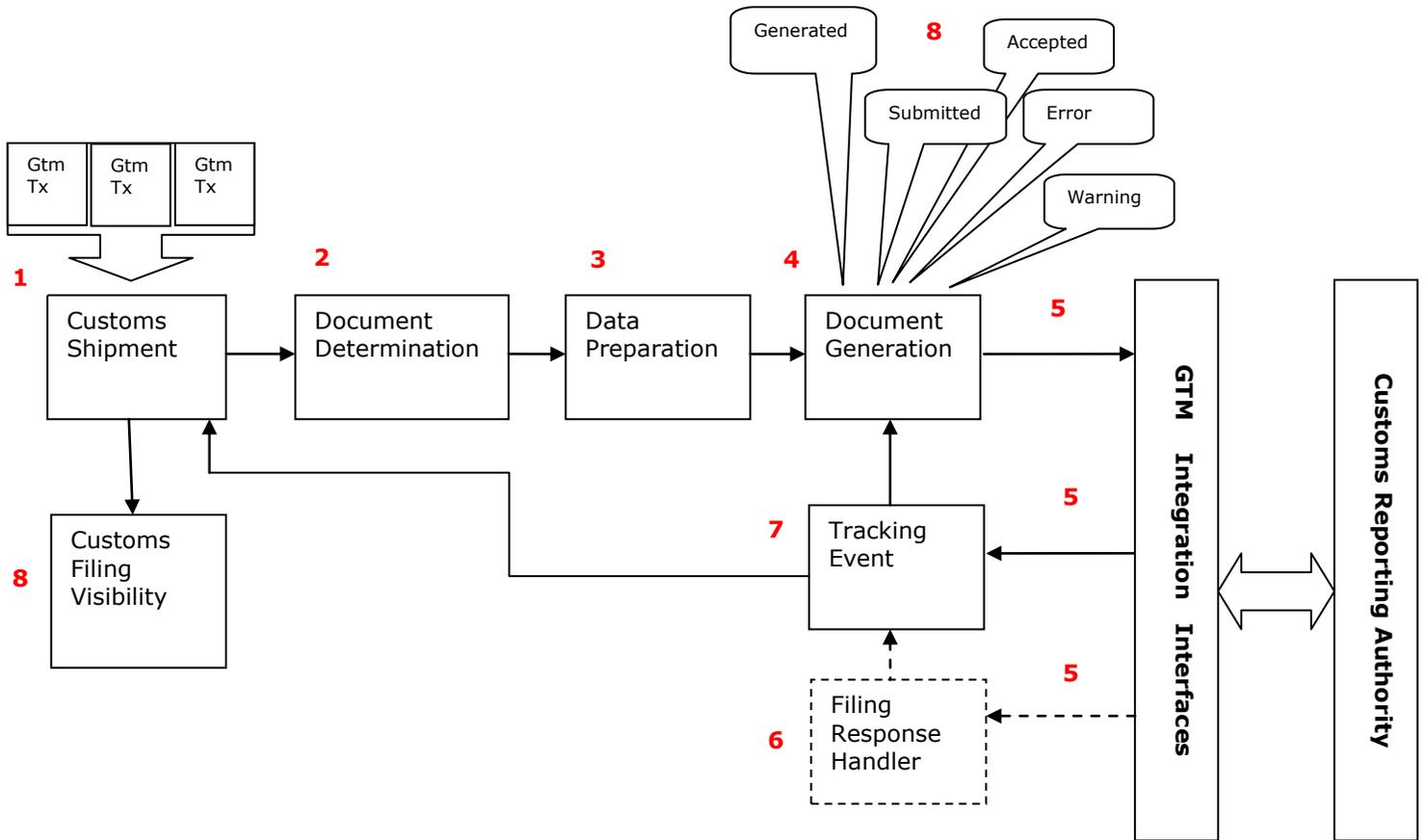


Figure 1.1

Process Overview

Customs Shipment Creation

A customs shipment is the business object for all customs related activities. Customs shipments can be created manually or automatically. You can consolidate one or more trade transactions into a customs shipment. This consolidation can be done via UI and agent actions. All compliance screening activities should be performed on the trade transactions prior to consolidating them into a customs shipment. Once a trade transaction has been consolidated into a customs shipment, if a change needs to be made to the trade transaction that impacts the customs shipment, the trade transaction must first be removed from the customs shipment, then any changes to the trade transaction are applied, and finally the updated trade transaction should be re-added to the customs shipment.

Filing Document Determination

Customs regimes specify which documents need to be provided when filing export declarations, based on their regulatory requirements. You model the customs requirements as compliance rules. You run the compliance rules on the customs shipment to determine whether the customs shipment requires any documents and what the required document types are. The compliance rules are of the Control Category **DOCUMENT**. After the compliance rules are run, the required document types are listed on the **Documents** tab of the **Customs Shipment** manager.

Data Preparation

Data preparation is essentially a task that involves converting the data from one form to another mainly for various reporting purposes. Data preparation can be run for multiple end-uses such as creating trade documents for customs filing, commercial invoices, etc. Typically the data such as quantities and currencies on the customs shipment use UOMs that are relevant to your operational environment. Users might want to show the quantities and currencies on reports and trade documents using different UOMs. Global Trade Management provides both UI actions and automation agent actions that help convert the quantities from one UOM to another. After the action converts the UOMs, the converted quantities are stored in the **Reporting Quantities** grid fields.

Filing Document Generation

If it is determined that a filing document is necessary after the data preparation, you can generate the filing document for the customs shipment by running the **Generate Document** action. When this action is run, the system retrieves all the information required to generate the document content, validates this information using the validation rules defined for the document type, and invokes the document creation mechanism. The action inspects all the lines belonging to the customs shipment, and selects only those lines that have been deemed reportable to be included in the filing document. Documents can be created via tools such as BI Publisher.

Filing Document Transmission

After the filing document has been generated for a customs shipment, you can transmit the filing document for that customs shipment using the **File Customs** action. This action transmits the filing document using the standard Global Trade Management/Oracle Transportation Management communication mechanisms. The action takes as a parameter, an external system. Global Trade Management/Oracle Transportation Management provides multiple integration options such as XML, web services, data queues, OAQ queues, etc. to interface with the reporting authority systems.

Filing Response Processing

Inbound filing responses are modeled in Global Trade Management as **Tracking Events**. This allows filing responses, after entering Global Trade Management, to trigger notification or workflow, such as

updating the statuses of the filing and updating the customs shipment with response codes and confirmation numbers. Also, the filing responses can enter Global Trade Management via a variety of integration mechanisms such as the standard XML integration, web services, data queues, or OAQ queues. Oracle Transportation Management/Global Trade Management by default can only handle XML data; therefore if the inbound filing response is in a format other than XML, you can optionally configure a message handler to transform the response into a tracking event XML.

Filing Process Visibility

To indicate where a customs shipment is in the lifecycle of customs filing, Global Trade Management provides a number of statuses. Global Trade Management also has a ***Customs Filing History*** grid on the ***Documents*** tab of the ***Customs Shipment*** manager UI, where you can see how the statuses change as the customs shipment passes through various stages of the customs filing process. Users can define their custom external statuses on customs shipments or on the filing document to monitor other conditions.

2. Customs Filing With AES

Overview

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 via U.S. Customs and Border Protection's (CBP) Automated Export System (AES) interface.

Using Global Trade Management, you can file an export declaration with AES for a trade-shipment. To file an export declaration, you generate within Global Trade Management a filing document for that trade-shipment. You then electronically submit the filing document to AES using Global Trade Management. AES asynchronously sends a filing response.

AES Requirements

CBP and AES have the following specific requirements for external systems, in order to file export declarations:

- CBP requires that all communication with AES must use CBP approved software/hardware virtual private network (VPN). The CBP recommended VPN options can be found [here](#).
- CBP requires that all communication with the AES system happen via an IBM WebSphere MQ Series interface.
- All data transmitted to/from AES should be in ANSI X.12 EDI format.

Architecture

The following diagram describes the architecture overview of customs filing implementation with AES.

The WebLogic application server communicates with the AES MQ via a WebLogic Messaging bridge using the IBM MQ Client for customs filing and receiving responses.

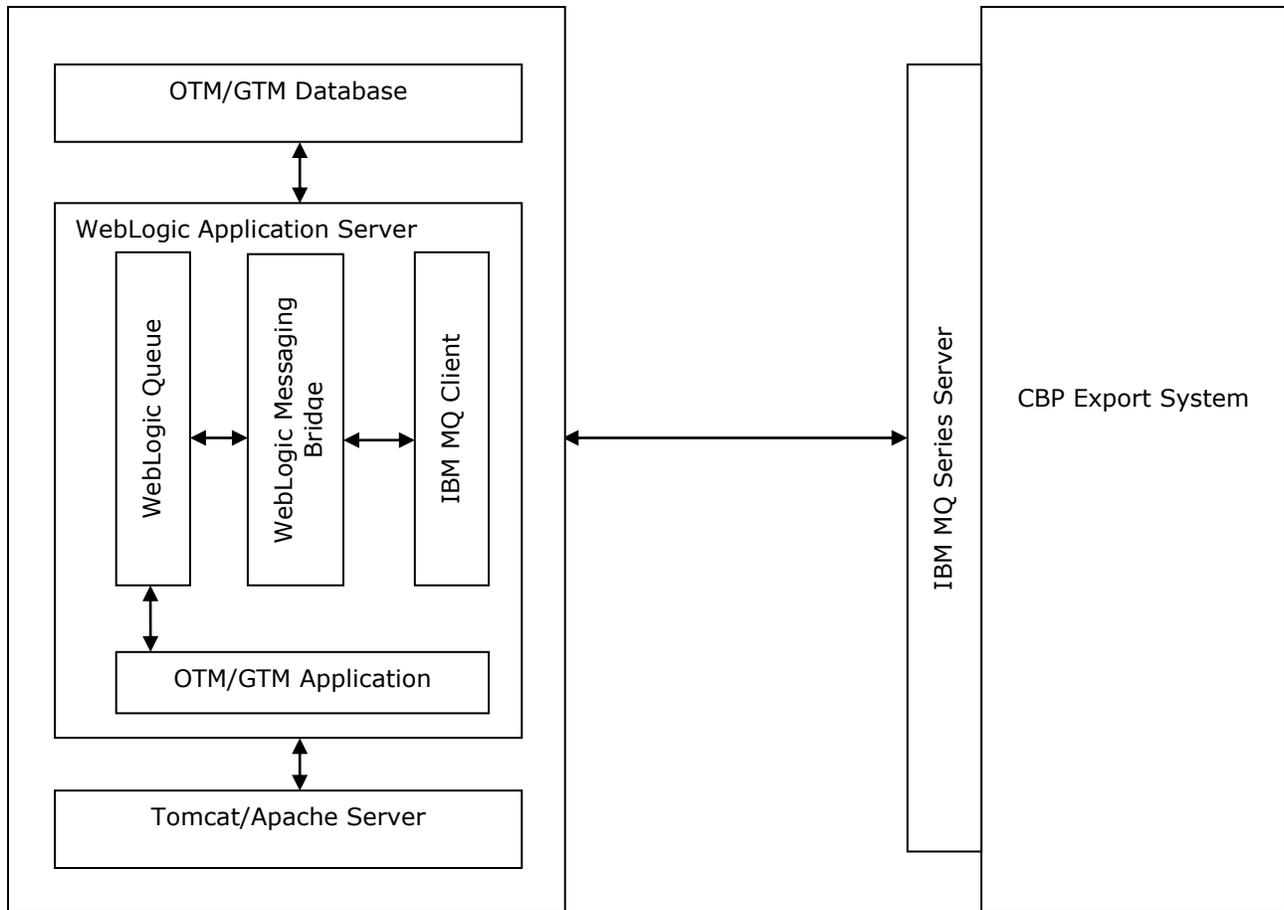


Figure 2.1

Global Trade Management (GTM) can interact with AES IBM MQ Series via the WebLogic Queues. GTM uses the WebLogic Queues as intermediate points for sending and receiving filing documents/responses to/from AES.

Customs Filing (Outbound from OTM/GTM)

- GTM sends the filing documents to the WebLogic Queue. Refer to Configuring WebLogic Queues and Configuring a WebLogic Queue for Customs Filing on how to configure a WebLogic Queue for customs filings.
- WebLogic messaging bridge then transmits the filing documents from the WebLogic Queue to the queue in IBM MQ Series. Please refer to Configuring WebLogic Messaging Bridge and Configuring WebLogic Messaging Bridge for Customs Filing on how to configure a WebLogic Messaging Bridge for posting messages from WebLogic Queue to AES IBM MQ Series queue.

Filing Response (Inbound to OTM/GTM)

- Please refer to Configuring WebLogic Queues and Configuring WebLogic Queues for Filing Response on how to configure a WebLogic Queue for receiving customs filing response.
- AES filing responses that are available in IBM MQ Series are read into the WebLogic Queue using the WebLogic messaging bridge. Please refer to the Configuring WebLogic Messaging Bridge and Configuring WebLogic Messaging Bridge for Customs Filing Response sections for how to configure a WebLogic Messaging Bridge for reading the messages from AES IBM MQ Series queue to WebLogic Queue.
- GTM reads the filing response from the WebLogic Queue and processes it.

Note: GTM interacts only with the WebLogic queues. The WebLogic messaging bridge takes care of sending out the filing documents from the WebLogic queues to the IBM MQ Series queues and receiving the filing responses from the AES IBM MQ Series queues to the WebLogic queues.

The recommended approach for communicating with AES IBM MQ Series is using the WebLogic Queues and WebLogic Messaging Bridges. The OAQ-based integration is deprecated and will be removed in the next release.

3. Configuring WebLogic Queues

WebLogic Queues are used as intermediate storage while forwarding messages from GTM to AES. The following sections demonstrate how to configure the WebLogic queues for both the customs filing and filing response flows.

GTM ships with a default WebLogic Queue named **gtm_customs_out_queue** which is configured to receive the filing documents. An external system **GTM_CUSTOMS_OUT_AES** is also provided with GTM so you can interface with the WebLogic Queue.

If you choose to use a custom WebLogic queue instead of the default WebLogic queue provided, you can create and configure the WebLogic queue as described below.

Creating a Message Queue in WebLogic

A WebLogic Queue can be created by following the [WebLogic documentation](#).

A WebLogic queue for OTM/GTM can be created using following steps:

1. Log into the WebLogic Administrative console.
2. Open **Services > Messaging > JMS Modules**.
3. Open **GC3JMSModule**.
4. Make changes to the WebLogic configuration by clicking the **Lock & Edit** button in the Change Center tab available on top left side in the WebLogic Administrative Console.
5. Add a new resource with the following details:
 - **Resource Type:** *Queue*
 - **Name:** *<Name of Resource>*
 - **JNDI Name:** *<JNDI name of resource>*
 - **sub deployment:** *<create new sub deployment with same name>*
 - **Target:** select GC3 server.
6. Activate the changes in WebLogic configuration by clicking **Activate Change** in Change Center tab.

Configuring a WebLogic Queue for Customs Filing

You can configure a WebLogic Queue for Customs Filing using the following property:

```
glog.jmsoutqueues.<WebLogic Queue name>=jms
```

The *<WebLogic Queue name>* is the name of the WebLogic Queue defined. (Refer to the section [Creating a Message Queue in WebLogic](#)).

You can use an existing OTM/GTM External System or create a new External System and associate it with the custom WebLogic Queue created above. The External System's **Queue Name** should reference the *<WebLogic Queue name>* in the property defined above.

Configuring WebLogic Queues for Filing Response

Message processing from the WebLogic Queue is disabled by default in OTM/GTM. Set the following property to enable the processing:

```
glog.jmsqueue.suppress=false
```

You can configure a WebLogic Queue for receiving a customs filing response using the following property.

```
glog.jmsqueue.<Type>.<WebLogic Queue name>= <Thread count>,<Wait time>, <Plug-in Id>: -handler <Handler Class>
```

Note: <Type> is the type of message.

OTM/GTM allows the following types of messages:

- **Integration:** A message which adheres to OTM/GTM XML schemas.
- **Plugin:** A message which requires transformation to convert to a XML which adheres to OTM/GTM XML Schemas.

The <WebLogic Queue name> is the name of the WebLogic Queue defined. (Refer to the section Creating a Message Queue in WebLogic).

<Thread count> is the number of threads to be created for processing the inbound messages from the queue.

<Wait time> is a positive integer representing the number of seconds each thread has to wait before it checks the queue for messages. This property overrides `glog.jmsqueue.waittime` property which defined the default wait time for all the queues.

Note: Make sure that this <Wait time> is less than the transaction timeout value in WebLogic and should not be equal to zero (0). Default is 1.

<Plug-in Id> is the service which publishes a new transmission topic after reading the message from the queue. For WebLogic Queues, you can always use JMSINTDQSVC as the plug-in ID. JMSINTDQSVC works in conjunction with the handler class to convert the message.

<Handler Class> is the Java class which is responsible for converting the message from the WebLogic Queue to an XML which adheres to OTM/GTM XML Schemas.

For Example:

For AES customs filing, when OTM/GTM receives the response from AES, the following property is used for defining the inbound queue which receives the EDI message.

```
glog.jmsqueue.plugin.gtm_customs_in_queue=1,1,JMSINTDQSVC: - handler  
gtm.server.jms.AESFilingResponseMessageHandler
```

GTM contains with a default WebLogic Queue **gtm_customs_in_queue** which is configured to receive the filing responses.

Configuring XA Data Source in WebLogic

Processing a filing response involves reading messages from the WebLogic queue and saving it to the OTM/GTM database. These two operations should both be successful, or else rolled back.

This requires connections which support two phase commit, one connection for reading from the queue and another connection for persisting to the database. A two-phase commit guarantees the commit or rollback of multiple transactions. A two-phase commit is where there is one transaction for reading from the queue and another transaction for persisting to the OTM/GTM database. These two transactions should be both successful, or else rolled back.

For getting a DB connection which supports a two-phase commit, a XA Data Source is required. Refer to the [WebLogic Documentation](#) for how to create a XA Data Source.

This data source has to be registered with OTM. This can be done by following these steps.

1. Log into OTM/GTM with DBA.ADMIN
2. Navigate to **Configuration and Administration > System Administration > Data Source Manager**.
3. Create a new data source with the following details:
 - **Data Source ID:** *<Data Source ID in OTM/GTM>*
 - **Manager:** *EXTERNAL JTS*
 - **Schema:** *glogowner*
 - **Multi-User:** *Selected*
 - **Database:** *GC3*
 - **Database User:** *glogdba*
 - **Database Password:** *<password of glogdba account>*
 - **User:** *DBA.ADMIN*
 - **JDBC URL:** *jndi: <XA Data Source JNDI name in WebLogic>*
 - **JDBC Driver:** *oracle.jdbc.xa.client.OracleXADataSource*

<Data Source ID in OTM/GTM>: Data Source ID created in OTM for the XA Data Source.

<password of glogdba account>: Password of glogdba schema user.

<XA Data Source JNDI name in WebLogic>: The JNDI name of the XA Data Source created in weblogic.

Also, set the following property:

```
glog.jmsqueue.datasources=<Data Source Id in OTM/GTM>
```

Monitoring WebLogic Queue using OTM/GTM Diagnostics

In order to monitor the processing of inbound messages from the WebLogic queues, use the following properties:

- **glog.jmsqueue.trackQueueSize:** This property allows Oracle Transportation Management to track queue size statistics. A value of *true* will start the tracking and a value of *false* will turn off tracking.
- **glog.jmsqueue.diagQueueSize:** If this value is set to *true*, the queue backlog is displayed in diagnostics. Default is *true*.

Configuring WebLogic Queue for Erroneous Filing Responses

A successfully processed message will get removed from the inbound WebLogic Queue, while an erroneous message will be retained in the queue. An error can occur while converting or while saving the transmission. This causes the same message to be read and re-processed several times.

A WebLogic queue can be configured to handle such a failure messages such that it will route all failure messages to an error queue after a configured number of re-deliveries.

Steps to configure:

1. In the Administration Console, navigate to the queue resource that you want to configure.
2. On the **Configuration > Delivery Failure page > In Redelivery Delay Override**, specify the delay before rolled back or recovered messages are redelivered.
3. In **Redelivery Limit**, specify the number of redelivery tries a message can have before it is moved to an error destination.
4. In **Expiration Policy**, select the expiration policy as *Redirect*.
5. In **Error Destination**, select a pre-configured queue to receive messages that have expired or reached their redelivery limit.

The error queues must be targeted to the same JMS server as the queues for which the error queue is defined. If no error queue is configured, then expired or undeliverable messages are simply deleted.

4. Configuring WebLogic Messaging Bridge

WebLogic Messaging Bridge Overview

For a detailed description of WebLogic Messaging Bridge, please refer to the [WebLogic Documentation](#).

The following sections describe different components required for the WebLogic Messaging Bridge.

Binding Connection Option for Communicating with IBM MQ Series Queues

This integration connects to an IBM MQ Series by using the binding connection option. This approach allows the communication between WebLogic Messaging Bridge and the IBM MQ Series using the JNI interface. Please refer to the IBM MQ Series documentation for more details on the connection options.

IBM MQ Client

The WebLogic Messaging Bridge requires an IBM MQ client with proper configuration (binding connection information) to be able to communicate with IBM MQ Series queues.

WebLogic Messaging Bridge for Customs Filing (Outbound from OTM/GTM)

A WebLogic Messaging Bridge puts filing documents from WebLogic Messaging Queue into the AES IBM MQ Queue. It is required that the filing documents from WebLogic queue should be forwarded to AES IBM MQ exactly once.

WebLogic Messaging Bridge for Filing Response (Inbound to OTM/GTM)

Another WebLogic Messaging bridge pulls filing responses from AES IBM MQ Queue and stores them in the WebLogic queue. This also requires that a response message is to be received exactly once. The received filing response is then processed by GTM.

XA Adapter

Messaging bridge requires an XA Adapter to send or receive message exactly once. The XA adapter guarantees that the operation is performed exactly once.

Installing IBM MQ Client

MQ client can be downloaded [here](#). Please refer to MQ Client documentation for installation instructions.

Configuring WebLogic to use IBM MQ Client

The WebLogic Message Bridge requires the following JARs to be available in the WebLogic classpath. All these JARs will be available in the java > bin folder of MQ Client installation.

- com.ibm.mq.jar
- com.ibm.mq.jmqi.jar
- com.ibm.mqjms.jar
- dhbcore.jar
- fscontext.jar
- providerutil.jar

To add the jar files to the class path for the WebLogic server, the jar files need to be listed in the weblogic.conf file. The weblogic.conf file is available in WebLogic installation folder.

```
classpath=<MQ Client Installation>/java/lib/com.ibm.mq.jar
classpath=<MQ Client Installation>/java/lib/com.ibm.mq.jmqi.jar
classpath=<MQ Client Installation>/java/lib/com.ibm.mqjms.jar
classpath=<MQ Client Installation>/java/lib/dhbc.jar
classpath=<MQ Client Installation>/java/lib/fscontext.jar
classpath=<MQ Client Installation>/java/lib/providerutil.jar
```

For example:

```
classpath=/opt/mqm/java/lib/com.ibm.mq.jar
classpath=/opt/mqm/java/lib/com.ibm.mq.jmqi.jar
classpath=/opt/mqm/java/lib/com.ibm.mqjms.jar
classpath=/opt/mqm/java/lib/dhbc.jar
classpath=/opt/mqm/java/lib/fscontext.jar
classpath=/opt/mqm/java/lib/providerutil.jar
```

Binding File Generation

IBM MQ client ships with a JMS Administration tool which allows you to create a configuration file describing the binding information pertaining to AES IBM MQ queues. The binding information includes name of queue, location of queue, etc. This binding information (configuration file) is fed into the WebLogic Messaging Bridge to forward/receive messages to/from AES IBM MQ.

The following information has to be collected before performing this step. This information will be needed for both operations, i.e. AES customs filing and riling response processing.

- Host IP address of AES IBM MQ Server
- Queue manager name in AES IBM MQ Server
- Queue names in AES IBM MQ Server (one for filing and other for response)
- Port number to be used to connect to the AES IBM MQ Server
- Server connection channel
- User and password information for security authentication (if any)

To run the JMS Administration tool provided by IBM MQ client successfully, the following environmental variables have to be set.

```
MQ_JAVA_DATA_PATH
MQ_JAVA_INSTALL_PATH
MQ_JAVA_LIB_PATH (only for unix)
```

These environmental variables are already available in a Windows system after the IBM MQ Client installation.

The UNIX operating system requires explicit setting of these variables. In the UNIX operating system the environment variables can be set as described here: http://www-01.ibm.com/support/knowledgecenter/api/content/SSFKSJ_7.5.0/com.ibm.mq.dev.doc/q030590_.htm. Running the “. /setjmsenv64” (64-bit machine) script will display the required environment variables and their values. This script is available in **java > bin** folder of IBM MQ client installation. Running this script will only show the variable values. Then, you need to set them explicitly.

The following steps describe process involved in creating a JMS configuration binding file for the IBM MQ Series queues using JMS Administration tool.

1. Make a copy of JMSAdmin.config file available in **java > bin** directory of MQ Client installation folder.

2. Open the copy of JMSAdmin.config and remove the starting '#' from the following lines.

```
#INITIAL_CONTEXT_FACTORY=com.sun.jndi.fscontext.ReffFSContextFactory  
#PROVIDER_URL=file:/C:/JNDI-Directory
```

3. Add '#' to the start of all other lines containing INITIAL_CONTEXT_FACTORY= and PROVIDER_URL=.

4. Change the Provider URL as shown:

```
PROVIDER_URL=<destination directory to be used for creating the binding  
file>  
destination directory should exist in the file system.
```

5. For Windows, open a command prompt and enter the following details:

```
<<WebSphere MQ client installation path>>\Java\bin\JMSAdmin.bat -cfg <Copy  
of JMSAdmin.config>
```

6. For Unix, open a Terminal and use JMSAdmin.sh.:

```
<<WebSphere MQ client installation path>>\Java\bin\JMSAdmin.sh -cfg <Copy of  
JMSAdmin.config>
```

Notice this will open InitCtx> prompt.

7. Enter the following commands into **InitCtx> Prompt** to specify that an XA based connection has to be used for customs riling. Messaging bridge also requires XA based connection to send message exactly once.

- - Command to define Queue Connection factory to connect to AES IBM MQ Series.
 - o DEF XAQCF(<Local Queue Connection Factory name>) TRANSPORT(CLIENT)
HOST(<IP address of AES IBM MQ Server>) PORT(<Port number provided by AES
for Filing>) QMGR(<Queue Manager name provided by AES for Filing>)
CHANNEL(<Server connection channel provided by AES>)
- - Command to define Queue provided by AES IBM MQ Series for customs filing.
 - o DEF Q(<Local Queue Name to be used by Bridge for Filing>) QMGR(<Queue
manager name provided by AES for Filing>) QUEUE(<Queue name provided by
AES for Filing>)

8. For example:

```
InitCtx> DEF XAQCF (CF_SEND) TRANSPORT(CLIENT) HOSTNAME(veracruz.x.com)  
PORT(1414) QMGR(QM_SEND) CHANNEL(SVRCON)  
InitCtx> DEF Q (LOCAL_NAME_Q_SEND) QMGR(QM_SEND) QUEUE(Q_SEND)
```

In the above two commands only the Queue connection factory CF_SEND and the local queue name for the AES IBM Queue LOCAL_NAME_Q_SEND, are the names that you can define on your own. The rest of the variables are to be provided based on the information provided by AES.

9. Enter the following commands into the **InitCtx> Prompt** to specify that an XA based connection has to be used in messaging bridge for filing response. Messaging bridge also requires an XA based connection to receive the message exactly once. If host, port and queue manager are the same as customs filing, the following commands can be ignored:

- - Command to define Queue Connection factory to connect to AES IBM MQ Series.

- o DEF XAQCF(<Local Queue Connection Factory name>) TRANSPORT(CLIENT) HOST(<IP address of AES IBM MQ Server>) PORT(<Port number provided by AES for Response>) QMGR(<Queue Manager name provided by AES for Filing Response>) CHANNEL(<Server connection channel provided by AES>)
- - Command to define Queue provided by AES IBM MQ Series for filing response.
 - o DEF Q(<Local Queue Name to be used by bridge for Response>) QMGR(<Queue manager name provided by AES for Response>) QUEUE(<Queue name provided by AES for Response>)

10. For example:

```
InitCtx> DEF XAQCF(CF_RECEIVE) TRANSPORT(CLIENT) HOSTNAME(veracruz.x.com)
PORT(1414) QMGR(QM_RECEIVE) CHANNEL(SVRCON)
InitCtx> DEF Q(LOCAL_NAME_Q_RECEIVE) QMGR(QM_SEND) QUEUE(Q_RECEIVE)
```

In the above two commands only the Queue connection factory CF_RECEIVE and the local queue name for the AES IBM Queue LOCAL_NAME_Q_RECEIVE are the names that you can define on your own. The rest of the variables are to be provided based on the information provided by AES.

11. Type 'End'. This will close the **InitCtx> prompt** and create a file in the destination directory mentioned in Copy of JMSAdmin.config in PROVIDER_URL.

This will create a configuration file named .bindings in the folder mentioned in PROVIDER_URL.

The above process will generate a bindings file which has information for both queues meant for filing documents and filing responses. The bindings file can also be generated separately for both the filing documents and filing response queues of AES IBM MQ Series queues.

Refer to the following link for a detailed example on JMS Administration tool usage:

- <http://www-01.ibm.com/support/docview.wss?uid=swg21614256>

Deploying XA Adapter

The WebLogic application server comes with a XA adapter that can be deployed and made available to the messaging bridge. More about deploying the resource adapters can be found [here](#).

Adapter can be deployed by following these steps:

1. Log into the WebLogic Administrative Console using following credentials.
 - **User:** *system*
 - **Password:** *<Provided at time of OTM/GTM installation>*
2. Follow the steps in [Deploy resource adapters](#). Below are the values for some of the attributes which are required during this configuration.
 - **Target type:** *Application*
 - **JNDI Name:** *<Any JNDI name>*
 - **Targeting Server:** *Select the server starting with "gc3-".*

Configuring WebLogic Messaging Bridge for Customs Filing

In order to post the filing documents from GTM to the AES filing system, follow these steps:

1. A WebLogic Queue to receive the filing document from GTM has to be configured. For Configuring a WebLogic Queue for receiving documents from GTM, please refer to the Configuring WebLogic Queues and the sub section Configuring a WebLogic Queue for Customs Filing.

2. GTM contains a default WebLogic Queue **gtm_customs_out_queue** which is configured to receive the filing documents. An external system **GTM_CUSTOMS_OUT_AES** is also provided with GTM for interfacing with the WebLogic Queue.
3. In the WebLogic Administrative console, create a JMS Message Destination for the above WebLogic Queue.
4. In the WebLogic Administrative console, create a JMS Message Destination with the bindings file created for the AES IBM MQ queue meant for customs filing documents.
5. In the WebLogic Administrative console create, a messaging bridge with source destination as created in step 2 and target destination as created in step 3.

The following picture presents overview of customs filing using messaging bridge.

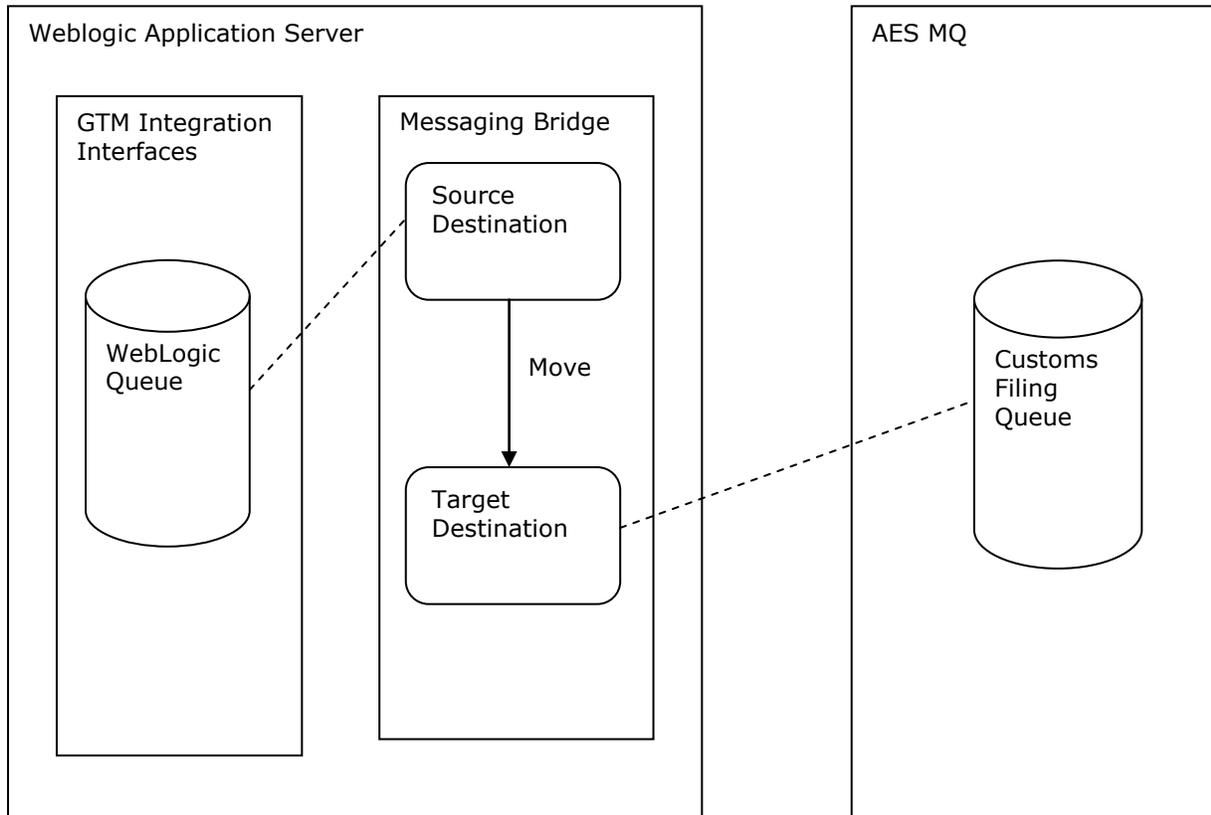


Figure 4.1

Refer to [Messaging Bridge](#) for more details.

Refer to the following sections which further elaborate the creation of source destination and target destination for the messaging bridge and creation of the messaging bridge itself.

Source Destination

A source destination is a WebLogic queue. Messages are read from source destination by the customs filing bridge.

A source destination can be created using the following steps:

1. Log into the WebLogic Administrative Console using following credentials.
 - User: *system*

- Password: <Provided at time of OTM/GTM installation>
2. Follow the steps mentioned in [Create JMS bridge destinations](#) to create the source destination for the WebLogic Queue. Below are the values for some of the attributes which are required:
 - **Adapter JNDI Name:** *eis.jms.WLSConnectionFactoryJNDIXA*
 - **Connection URL:** *t3://<Weblogic server address>:<Admin port>*
 - **Connection Factory JNDI Name:** *weblogic.jms.XAConnectionFactory*
 - **Destination JNDI Name:** *gtm_customs_out_queue*
 - **Destination Type:** *Queue*

Target Destination

A target destination represents a customs filing queue in AES IBM MQ. Messages are read from the source destination by the customs filing bridge and sent to the queue represented by this target destination. A target destination can be created using the following steps:

1. Log into the WebLogic Administrative Console using following credentials:
 - **User:** *system*
 - **Password:** <Provided at time of OTM/GTM installation>
2. Follow the steps mentioned in [Create JMS bridge destinations](#) to create the target destination for the filing queue in AES IBM MQ. Below are the values for some of the attributes which are required:
 - **Adapter JNDI Name:** *eis.jms.WLSConnectionFactoryJNDIXA*
 - **Initial Context Factory:** *com.sun.jndi.fscontext.RefFSContextFactory*
 - **Connection Factory JNDI Name:** <Local Queue Connection Factory name for customs filing queue>
 - **Destination JNDI Name:** *Customs Filing Local Queue name provided in InitCtx> prompt.*
 - **Connection URL:** <Directory location Specified in PROVIDER_URL>
 - **Destination Type:** *Queue*

Configuring a Customs Filing Bridge

A customs filing bridge forwards the message from the source destination to the target destination. A customs filing bridge can be created with following steps:

1. Log into WebLogic's Administrative Console using following credentials:
 - **User:** *SYSTEM*
 - **Password:** <Provided at time of OTM/GTM installation>
2. Follow the steps mentioned in [Create messaging bridge instances](#) to create a WebLogic Messaging Bridge which forwards messages from WebLogic Queue (source destination) to AES IBM MQ queue for customs filing. Below are the values for some of the attributes which are required during this configuration.
 - **Quality of Service:** *Exactly Once*
 - **Existing Source Destination:** <JMS Message Bridge Destination created as in Source Destination above>
 - **Messaging Provider:** *WebLogic Server 7.0 or higher*
 - **Existing Target Destination:** <JMS Message Bridge Destination created as Target Destination above>
 - **Messaging Provider:** *other JMS*
 - **Targeting Server:** *Select the server starting with "gc3-".*
 - **Asynchronous Mode Enabled:** *not selected*

- **Started:** *selected*

Configuring WebLogic Messaging Bridge for Customs Filing Response

In order for GTM to receive the filing responses from AES System, follow these steps:

1. Configure a WebLogic Queue to receive the filing response from AES System. For Configuring a WebLogic Queue to receive the filing responses from AES IBM MQ, refer to the section Configuring WebLogic Queues and the sub section Configuring WebLogic Queues for Filing Response.
2. Once the data source is defined after following the steps in the OTM Integration Guide for the inbound transmission, define the following property:

```
glog.jmsqueue.plugin.gtm_customs_in_queue=1,1,JMSINTDQSVC: - handler  
gtm.server.jms.AESFilingResponseMessageHandler
```

GTM contains a default WebLogic Queue `gtm_customs_in_queue` which is configured to receive the filing responses.

3. In the WebLogic Administrative console, create a JMS Message Destination for the above WebLogic Queue.
4. In the WebLogic Administrative console, create a JMS Message Destination with the bindings file created for the AES IBM MQ queue meant for customs filing responses.
5. In the WebLogic Administrative console, create a messaging bridge with a source destination and target destination as described earlier.

The following picture presents overview of filing response using messaging bridge.

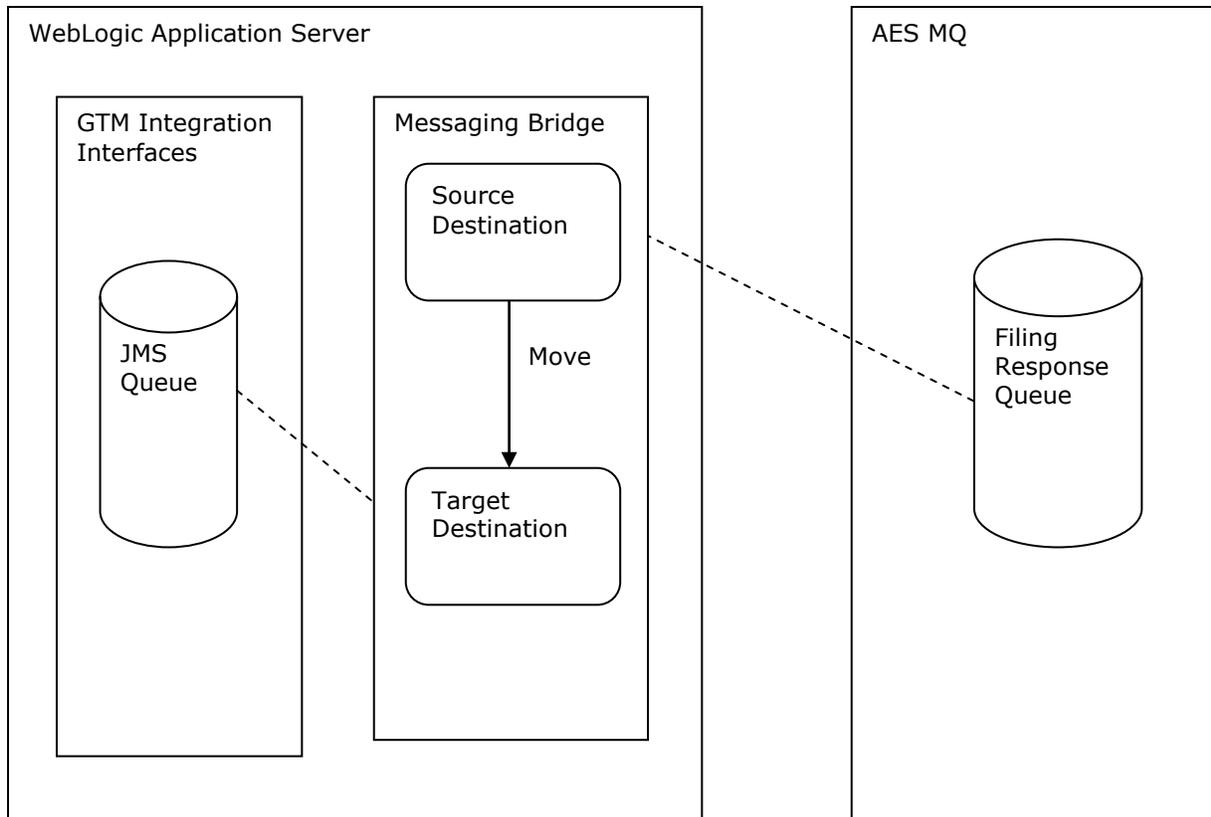


Figure 4.2

Refer to [Messaging Bridge](#) for more details.

Refer to the following sections which elaborate the creation of a source destination and target destination for the messaging bridge and the creation of the messaging bridge itself.

Source Destination

The source destination represents the customs filing response IBM MQ queue of AES. Messages are read from source destination by customs filing response bridge. Source destination can be created using the following steps:

1. Log into WebLogic Administrative Console using following credentials.
 - **User:** *system*
 - **Password:** *<Provided at time of OTM/GTM installation>*
2. Follow the steps mentioned in [Create JMS bridge destinations](#) to create the target destination for the filing queue in AES IBM MQ. Below are the values for some of the attributes which are required.
 - **Adapter JNDI Name:** *eis.jms.WLSConnectionFactoryJNDIXA*
 - **Initial Context Factory:** *com.sun.jndi.fscontext.RefFSContextFactory*
 - **Connection Factory JNDI Name:** *<Local Queue Connection Factory name for customs filing response queue>*
 - **Destination JNDI Name:** *Customs Filing response Local Queue name provided in InitCtx> prompt*
 - **Connection URL:** *<Directory location Specified in PROVIDER_URL>*

- **Destination Type:** *Queue*

Target Destination

The source destination represents a WebLogic queue. Messages are read from the source destination by the customs filing response bridge and sent to the queue represented by this target destination. A source destination can be created using the following steps.

1. Log into the WebLogic Administrative Console using following credentials:
 - **User:** *system*
 - **Password:** *<Provided at time of OTM/GTM installation>*
2. Follow the steps mentioned in [Create JMS bridge destinations](#) to create the source destination for the WebLogic Queue. Below are the values for some of the attributes which are required:
 - **Adapter JNDI Name:** *eis.jms.WLSConnectionFactoryJNDIXA*
 - **Connection URL:** *t3://<Weblogic server address>:<Admin port>*
 - **Connection Factory JNDI Name:** *weblogic.jms.XAConnectionFactory*
 - **Destination JNDI Name:** *gtm_customs_in_queue*
 - **Destination Type:** *Queue*

Configuring the Bridge

A customs filing response bridge forwards the message from the source destination to the target destination. A customs filing response bridge can be created with following steps.

1. Log into WebLogic's Administrative Console using following credentials.
 - **User:** *SYSTEM*
 - **Password:** *<Provided at time of OTM/GTM installation>*
2. Follow the steps mentioned in [Create messaging bridge instances](#) to create a WebLogic Messaging Bridge which forwards messages from WebLogic Queue (source destination) to AES IBM MQ queue for customs filing. Below are the values for some of the attributes which are required during this configuration:
 - **Quality of Service:** *Exactly Once*
 - **Existing Source Destination:** *<JMS Message Bridge Destination created as in Source Destination above>*
 - **Messaging Provider:** *Other JMS*
 - **Existing Target Destination:** *<JMS Message Bridge Destination created as in Target Destination above>*
 - **Messaging Provider:** *WebLogic Server 7.0 or higher*
 - **Asynchronous Mode Enabled:** *not selected*
 - **Started:** *selected*

Preserving WebLogic Configuration Changes

Changes done to WebLogic configuration, like creating bridges, destination, etc., may be lost during server restart. Please refer to the "Advanced Configuration: Application Server" section of the Administration Guide to preserve the changes.

5. AES Export Declaration Filing and Response Processing

Outbound Export Declaration Filing Setup

Customs Shipment Creation

Customs shipments can be created manually through a consolidation process. You can consolidate one or more trade transactions to create a customs shipment. Consolidation can be performed via UI actions as well as automation agent actions.

All compliance related activities should have been completed on the trade transaction as they will not be available on the consolidated customs shipment.

AES uses a **Shipment Reference Number** to uniquely identify each shipment. This identifier should be created for each customs shipment and should remain constant for the customs shipment through the process of filing the export declaration. Global Trade Management provides an automation agent **GENERATE SHIPMENT REFERENCE NUMBER** to create this unique identifier when a new customs shipment is created. The identifier is added to the customs shipment as a reference number, using the Refnum Qualifier ID, **SHIPMENT REFERENCE NUMBER**. You can either activate this automation agent, or use this automation agent as a template to create your own custom automation agent to generate an AES **Shipment Reference Number**.

Document Determination

Using compliance rules, you can configure that based on specific criteria customs shipments must have certain types of documents. One such type of document is an export declaration. The documents that must be generated for a customs shipment are displayed in the **Required Documents** grid on the **Customs Shipment Line** manager on the UI.

Global Trade Management ships with a pre-defined document type called **AES_FILING**, which helps create an EDI formatted export declaration that can be filed with the U.S. Census via AES. The **AES_FILING** document type is associated with the **EAR** and **ITAR** regimes. Document type to regime associations can be added or modified via the **Regime Document Definition** power data.

You can create additional document types for use with other regimes or for other end uses such as a commercial invoice.

Document Validation

Associated with each document type are validation rules. At the time of document generation, the document generation mechanism checks the document content against these rules. Validation rules are implemented as saved queries, so you can add additional rules or modify any existing rules associated with a document type. Validation rules can be defined using the Document Validation Rules power data page. Validation rules are associated with a document type, on the Document Type power data page.

The following rules are pre-defined for the **AES_FILING** document type:

1. The customs shipment must have a date defined with the date qualifier ID of **EXPORT DATE**.
2. The customs shipment must have a reference number with the reference number qualifier ID of **SHIPMENT REFERENCE NUMBER**.
3. The customs shipment must have at least three remarks with the following remark qualifier IDs: **RELATED COMPANY**, **EXPORT INFORMATION CODE**, and **FILING OPTION**.

4. The customs shipment must have a port defined using the port qualifier ID of **PORT OF EXPORT** and the port location must match a value from the Census Schedule-D list of locations.
5. The customs shipment must have a transport mode.
6. If the transport mode is one of **VESSEL-CH**, **VESSEL-CO**, or **VESSEL-NO**, the customs shipment must have a port with the port qualifier ID of **PORT OF UNLADING** and the port location must match a value from the AES Schedule-K list of locations.
7. The customs shipment must have at least three involved parties, using the involved party qualifier IDs of **USPPI**, **ULTIMATE CONSIGNEE**, and **CARRIER**.
8. The **USPPI** and **ULTIMATE CONSIGNEE** should have first name, last name, and address (including country) information. The **ULTIMATE CONSIGNEE** must have a consignee type defined in **ULTIMATE CONSIGNEE TYPE**.
9. The customs shipment should have at least one reportable line, and up to a maximum of 999 reportable lines.
10. Each reportable line can only have one control of reportable regimes.
11. Each reportable line must have a quantity with the quantity qualifier ID of **TOTAL GROSS WEIGHT**.
12. Each reportable line must have an HTS and/or Schedule-B classification code. If there is no Schedule-B classification code available, the HTS classification code on the line must be allowed by AES. An HTS classification codes is allowed by AES, if that classification code has a classification code attribute of **IS_AES_REPORTABLE** with attribute value **Yes**.

Document Data Preparation

Specific to filing with AES, the **AES_FILING** document type expects that the quantities that need to be reported to AES are present in the reporting quantities fields. This means that you must either run the **Convert UOMs** action on the customs shipment to populate the reporting quantities fields, or if the quantities already use the correct UOMs, you must manually copy the quantities' values into the reporting quantities fields, for them to be correctly included in the filing document.

Document Generation

If it is determined, based on running compliance rules on a customs shipment, that a document is required, you can generate the document for the customs shipment by running the **Generate Document** action. When this action is run, the system retrieves all the information required to generate the document content, validates this information using the validation rules defined for the document type, and invokes the document creation mechanism. Documents can be created via tools such as BI Publisher.

Global Trade Management ships with default templates to generate using BI Publisher, EDI formatted export declaration documents that can be filed with the US Census via AES. To use these templates to generate EDI filing documents, the following properties must be set up.

To specify AES authentication details:

```
gtm.aes.param.P_TRANSMITTER_ID
gtm.aes.param.P_COMMUNICATION_PASSWORD_ID
gtm.aes.param.P_FILER_ID
```

To indicate whether sample test data or actual export information is being sent:

```
gtm.aes.param.P_IS_PRODUCTION
```

To indicate the quantity qualifier ID and currency qualifier ID that should be reported:

```
gtm.aes.param.P_REPORTING_QUANTITY          (default=ORDERED)
gtm.aes.param.P_REPORTING_CURRENCY          (default=TOTAL VALUE)
```

To indicate the reference numbers and time zone that should be reported:

```
gtm.aes.param.P_REPORTING_REFERENCE_NUMBER  (default=BN)
gtm.aes.param.P_REPORTING_REPORTING_FOREIGN_ENTITY (default=FOREIGN ENTITY)
gtm.aes.param.P_REPORTING_TIMEZONE          (default=US/Eastern)
```

To indicate the classification code type that should be reported:

```
gtm.aes.param.P_CLASSIFICATION_CODE_TYPE    (default=HTS US)
```

To indicate whether an alternate code type can be reported:

```
gtm.aes.param.P_ALLOW_ALTERNATE_CODE_TYPE   (default=YES)
```

AES allows you to report the HTS or Schedule-B codes when filing export declarations. By setting the above properties, you can configure which code type to report and whether GTM can report an alternate code type. This means that if a user prefers to report the HTS codes and there is either no HTS code on the customs shipment line or if the HTS code is not reportable, then GTM will report a Schedule-B code.

To indicate the license value that must be reported:

```
gtm.aes.param.P_REPORTING_LICENSE_VALUE
```

To generate the filing document, Global Trade Management iterates through all the customs shipment lines and selects those lines that have been marked, during report determination, with control types and control codes specific to the regime associated with the document type. Customs shipment lines that need to be included in the filing document have a control type in the **Reporting Results** grid in the customs shipment line manager in the UI.

Once all the information is retrieved, the document generation mechanism invokes a callback helper process. This callback helper process essentially performs miscellaneous tasks such as validating the statuses before and after document generation, plus any additional pre and post document generation tasks specific to the document type. For AES, Global Trade Management has defined a specific callback process **AESFilingCallback** that is associated with the **AES_FILING** document type. You can use the **AES_FILING** document type or you can create your custom document types. However, any document type created for the purpose of creating a filing document that will be filed via AES must use the **AESFilingCallback** process. The document type to the callback helper process association is defined via the following property.

```
glog.reqdoc.reqdocCallbacks.<DOCUMENT_TYPE>=<callback-helper-java-class>
```

By default, the property is set as follows to indicate that **AES_FILING** document type is associated to the callback *gtm.server.agent.business.transaction.AESFilingCallback*.

```
glog.reqdoc.reqdocCallbacks.AES_FILING=gtm.server.agent.business.transaction.AESFilingCallback
```

The **AESFilingCallback** does the following:

- Validates the statuses before generating the document.
- Sets the status after generating the document.
- Creates the filing reference numbers for the customs shipment lines.

- Creates a tracking number for the filing document.

Global Trade Management tags the filing document with a tracking number which is returned in the filing response, allowing Global Trade Management to match a filing response back to the original filing document.

Documents generated for the customs shipment are listed on the **Documents** tab of the **Customs Shipment** manager. You can view the generated document content and document statuses via the **Document Manager**.

Document Filing

After a document has been generated for a customs shipment, you can transmit the filing document for that customs shipment using the **File Customs** action. This action transmits the filing document using the standard Global Trade Management/Oracle Transportation Management communication mechanisms.

To facilitate sending the filing document to AES, GTM includes an External System **GTM_CUSTOMS_OUT_AES**, which is pre-configured to point to the default outbound WebLogic Queue **gtm_customs_out_queue**

Inbound Filing Response Processing

Inbound filing responses are modeled in Global Trade Management as tracking events. This allows filing responses, after entering Global Trade Management, to trigger notification or workflow, such as updating the statuses of the filing, updating the customs shipment with response codes and confirmation numbers such as the ITN.

The filing responses can enter Global Trade Management via a variety of integration mechanisms such as the standard XML integration, web services, data queues, or OAQ queues.

Global Trade Management includes a pre-built solution for AES Filing Responses. AES uses EDI formatted filing responses and interfaces with external systems via MQ Series middleware. Global Trade Management uses WebLogic Queues to communicate with AES through the MQ Series middleware. Global Trade Management has a message handler to convert the EDI response into a tracking event XML.

EDI to Tracking Event XML Transformation

When a filing response is received from AES into WebLogic Queue, the response message is fed into Global Trade Management's integration layer. The Oracle Transportation Management/Global Trade Management integration can only handle XML data. Global Trade Management has a plug-in which can intercept messages coming in on a WebLogic Queue and invoke a message handler to convert the EDI into a standard GLog-XML tracking event. The transformed message is fed back into the integration layer.

The plug-in is configurable via the following property:

```
gtm.jmsqueue.plugin.gtm_customs_in_queue=1,-1,JMSINTDQSVC:-handler  
gtm.server.jms.AESFilingResponseMessageHandler
```

This property specifies that when a message is queued into the *gtm_customs_in_queue* queue, the plug-in *JMSINTDQSVC*, calls the message handler *gtm.server.jms.AESFilingResponseMessageHandler* to perform the transformation.

Note: This property is not available as default. You have to add it when you configure the system for AES.

You can create your own message handlers if you want to implement custom transformation logic. The message handler must be Java program. (See appendix for a sample message handler). Global Trade Management expects that the message handler converts the filing response to a tracking event XML; therefore any custom message handler must transform the response message and create XML corresponding to a complete inbound tracking event as defined in the GLogXML schema.

Integration XML that comes into Global Trade Management is expected to contain username and password fields for authentication. The default message handler, when building the tracking event XML, uses the username and password specified by the following properties:

```
gtm.customsfiling.gloguser.username  
gtm.customsfiling.gloguser.password
```

Tracking Event Processing

Global Trade Management ships with an automation agent for processing filing responses. The automation agent **PROCESS CUSTOMS FILING RESPONSE** of type **TRACKING EVENT** is triggered when a new tracking event enters the system, or if an existing tracking event is re-processed. The automation agent, when triggered, attempts to match the tracking event to a filing document. If the matching is successful, the automation agent then updates the status on the document according to the filing response status. The automation agent by default is not active. It is recommended that you use this automation agent as a template, to create your own automation agents to process filing responses.

Customs Filing Statuses

Statuses are a good way to trace where a customs shipment, or the associated filing document, is in the lifecycle of the filing process. Global Trade Management by default has a set of status types and values on the filing document that are specific to the AES filing process. These status types and values are listed below.

SHIPMENT_CUSTOMS_STATE: Indicates the state of the customs shipment that the document is associated with. Indirectly, it indicates the submission state of the filing document. This status type has the status values:

- **New:** Customs shipment has not been filed yet.
- **Update:** Customs shipment has been modified after filing at least once.
- **Cancel:** Customs shipment has been cancelled after filing at least once.

CUSTOMS_FILING_GENERATION: Indicates the generation status of the filing document. This status type has the status values:

- **Not Generated:** Document has not yet been generated.
- **Generated:** Document has been generated.

CUSTOMS_FILING: Indicates the status of the filing process. This status type has the status values:

- **Not Started:** Filing process not started.
- **Submitted:** Filing document has been submitted.
- **Cancellation Submitted:** Cancellation of a prior filing has been submitted.
- **Replacement Submitted:** Replacement of a prior filing has been submitted.
- **Accepted:** Filing response that the filing has been accepted.
- **Accepted Verify:** Filing response is conditionally accepted.

- **Replaced:** Filing response that a prior filing has been replaced.
- **Cancelled:** Filing response that a prior filing has been cancelled.
- **Compliance:** Filing response that filing has compliance problems.
- **Rejected Fatal:** Filing response that filing has been rejected with fatal errors.
- **Rejected Warning:** Filing response that filing has been rejected with warnings.

When you generate a document, using the **Generate Document** action on a customs shipment, the status value for **CUSTOMS_FILING_GENERATION** is set to **Generated**.

When you transmit the filing document, for the very first time, the status value for **CUSTOMS_FILING** is set to **Submitted**. When a response is received from AES, the status value is set to indicate the response result.

If you want to modify a customs shipment, after its filing document has been submitted and want to re-file the export declaration for the customs shipment, first you must run the action **Update Shipment Custom State**, which sets **SHIPMENT_CUSTOMS_STATE** to **Modified**, and **CUSTOMS_FILING_GENERATION** to **Not Generated**. Next, you must re-generate the filing document by running the **Generate Document** action, which sets the status value for **CUSTOMS_FILING_GENERATION** to **Generated**. Finally, you must run the **File Customs** action to transmit the modified filing document, which sets the status value for **CUSTOMS_FILING** to **Replacement Submitted** or **Cancellation Submitted**, based on the intent of modifying the customs shipment.

You can define your own customs status types and values to indicate other conditions that you might be interested in or when filing with other regimes.

6. FTR Changes

In April 2014 the Automated Export System (AES) deploys the FTR changes that were detailed in AES Broadcase #201316. GTM is updated to accommodate these regulatory changes. The format and query templates are modified to fulfill the new reporting requirements. However, you should note the following changes need to be configured in the templates to query and report the values correctly.

1. Ultimate Consignee Type – Element N106

The N106 element is used to report the Ultimate Consignee Type. This value is required when the N101 Element value is **CN**. The Ultimate Consignee Type should be stored on the party master using the **User-defined Category / Type / Code** mechanism. A new **AES FILING category** and a new **ULTIMATE CONSIGNEE TYPE** are added. The Ultimate Consignee Type options are:

- XT : Direct Consumer
- QW : Government Entity
- DU : Reseller
- B2 : Other

There must be one Ultimate Consignee Type set per party. The documentation validation rule pertaining to the ultimate consignee is modified to validate that any party designated as an ultimate consignee has the Ultimate Consignee Type value assigned.

2. License Value – Element X114

A license value must be reported for certain license codes in the X114 Element. The license value is defined as the value for a licensable shipment which does not include any overhead charges like insurance, domestic freight, and other charges in US dollars.

If the EDI license code being reported is one of the

C30, N01, N02, S05, S61, S73, S85, S94, T10, T12 code,

then the license value is reported as the Assigned License Value of the shipment line (i.e. the *Value* field in the Assigned Licenses grid).

If the EDI license code being reported is one of the

C35, C43, C59 code,

then these exception codes has no assigned license value to report. In this case, you should assign a value to the shipment line that they want to report as the license value. You should indicate which value qualifier was used to assign the value, by setting the **gtm.aes.param.P_REPORTING_LICENSE_VALUE** property.

3. New License Codes

A number of additional license codes are now supported with changes in the format and query templates. However, the DY6 License Code deserves special mention. A new control DY6 is created in AES for reporting of items that fall under the "600 series" ECCNs with a paragraph ".y" . If an AES filer submits export information containing a "600 series" ECCN with a paragraph ".y", then filer must report using the C60 EDI code.

GTM has built-in logic templates to automatically report a DY6 control when certain conditions are met. If a transaction contains an "NLR" license but is classified with a "600 series" ECCN US code, then the C60 EDI code must be reported irrespective of any other conditions.

7. Troubleshooting

When filing your export data with AES, you will receive a response. If your filing is correct and includes all the required data in the proper format, AES will accept the filing and send back a response code and an ITN which is your confirmation number. If there is a problem with your submission and it is not accepted, you will need to troubleshoot the issues, make changes and retransmit your data to AES.

There are a few things you can do when troubleshooting an issue:

- If there is an issue, AES will send back a response code and severity related to that code. To find more detail about a response code and how to resolve the corresponding issue, you can refer to the 'Appendix A – Commodity Filing Response Matrix' document which is available on the Customs and Border Protection (CBP) website. This document includes details for each response code including the severity, the reason you received the response code, and the resolution.
- The 'ANSI X-12: 601 – Export Shipment Information' document is the EDI specification which CBP uses to support electronic filing of data. This EDI implementation guide provides the details of the data which CBP wants to be submitted for export filing with AES. This document is available on the CBP website.
- The 'GTM - AES X12 601 Mapping.xlsx' document provides the details of how the data which needs to be filed with AES is mapped to GTM. You can see the data element from the 'ANSI X-12: 601 – Export Shipment Information' document, where the data resides in the GTM database, and where the data should be entered on the GTM user interface.
- As part of troubleshooting, these three documents can be used together to determine what the issue is, how to resolve it, and where the data resides in GTM. For example, you submit a filing to AES from GTM. You receive a response back from AES with a response code of 116. You do not receive back the ITN. To troubleshoot this, you can:
- Look up Response Code 116 in the 'Appendix A – Commodity Filing Response Matrix' document provided by CBP. This document shows the following:

Response Code: 116

Narrative Text: RELATED COMPANY INDICATOR MISSING

Severity: FATAL

Proprietary Record ID/Data Elements: Input SC1 Record/Related Company Indicator

X.12 Segment ID/Data Elements: BA101

Reason: The Related Company Indicator on the SC1 record is missing.

Resolution: A declaration must be made on an EEI as to whether the USPPPI and foreign ultimate consignee are 'related'. For an explanation of related/non-related transactions, see the Foreign Trade Statistical Regulations, 30.7(v). Verify whether the parties to the transaction are related, correct the SC1 record and retransmit.

- If you are looking for more detail about the Related Company Indicator, you can refer to the 'ANSI X-12: 601 – Export Shipment Information' document and search for 'Related Company Indicator'. This document shows the following:

User	Ref.	Data		
<u>Attribute</u>	<u>Des.</u>	<u>Element</u>	<u>Name</u>	<u>Attributes</u>
M	BA101	645	Related Company Indication Code Code indicating parties to a transaction RELATED COMPANY INDICATOR An indication that, during the fiscal year, either the USPPI or foreign ultimate consignee reported, owned 10% or more of the other's voting securities. N NO - Companies NOT related Y YES - Companies related Equivalent AESTIR Proprietary Element: SC1 - Related Company Indicator.	M 1 ID 1/1

You can see that AES wants to know if ‘...during the fiscal year, either the USPPI or foreign ultimate consignee reported, owned 10% or more of the other’s voting securities’.

- If you want to see where this data resides in GTM, you can use the ‘GTM – AES X12 601 Mapping.xlsx’ document. In this document, search for ‘Related Company Indicator’. This document shows the following:

Data Element	Segment/Element Name	Element Details	Comments	Database Mapping	Location of Data in Customs Shipment
BA101	Related Company Indicator Code	Related Company Indicator	Possible Codes: "N" - NO Companies are NOT related; "Y" - YES Companies related	GTM_TRANSACTION_REMARK.REMARK_TEXT where GTM_TRANSACTION_REMARK.REMARK_QUAL_GID = RELATED COMPANY	Customs Shipment > Remark Text where Remark Qualifier ID = RELATED COMPANY GTM converts from the GTM-specific values displayed on the UI to the AES-required values for reporting purposes as follows: "NO" is converted to "N" "YES" is converted to "Y"

When you do this search, you can see that AES expects this data to be sent in the BA101 element. There are two possible codes: “N” – NO Companies are NOT related or “Y” – YES Companies related. You can also see that this data should be populated on the Customs Shipment as a remark with a qualifier of ‘RELATED COMPANY’. You can verify if the ultimate consignee is related to the USPPI, add this data to GTM and retransmit to AES.

For a copy of either the ‘ANSI X-12: 601 – Export Shipment Information’ and ‘Appendix A – Commodity Filing Response Matrix’ documents, please go to the CBP website at <http://www.cbp.gov>. For a copy of the ‘GTM – AES X12 601 Mapping.xlsx’ document, please go to My Oracle Support and refer to the Oracle Transportation Management and Global Trade Management Version 6.x Documentation and Training Resources (Doc ID 796594.1) note.

8. Appendix

Sample Filing Response Transformation Plug-in Implementation

```
import java.io.StringReader;
import javax.xml.transform.stream.StreamSource;

import glog.server.jms.IntegrationMessage;
import glog.server.jms.IntegrationMessageHandler;
import glog.server.jms.JmsDequeued;

import glog.util.CommandLine;
import glog.util.GLProperties;
import glog.util.exception.GLEException;
import glog.util.jdbc.T2SharedConnection;

public class CustomMessageHandler implements IntegrationMessageHandler {

    private String glogUserName;
    private String glogUserPwd;

    @Override
    public void handleMessage(IntegrationMessage message,
        CommandLine cmd, T2SharedConnection conn) throws GLEException {

        glogUserName = GLProperties.get().getProperty
            ("gtm.customsfiling.gloguser.username");
        glogUserPwd = GLProperties.get().
            getProperty("gtm.customsfiling.gloguser.password");

        JmsDequeued dequeued = message.getDequeuedMessage();
        String ediMessage = dequeued.message;
        String xmlMessage = transformMessage(ediMessage);

        StreamSource ss = new StreamSource(new StringReader(xmlMessage));
        message.addTransmission(ss);
        message.setUsername(glogUserName);
        message.setPassword(glogUserPwd);

        return;
    }

    private String transformMessage(String queueMessage){
        String transformedMessage;
        // custom transformation logic
        return transformedMessage;
    }
}
```

Sample Outbound X12.601 EDI Filing Document

ISA*03* [REDACTED] *01* [REDACTED] *01*232852542 *ZZ*USCSAESTEST *090407*1555*^*00405*000003113*0*T*~
GS*SE*232852542*USCSAESTEST*20090407*155524 *1*X*004050~
ST*601*0001~
BA1*Y*1*11*MX*00140031132009**NO*PA*232852542*DHLPE*MS MAXIMILIAN 2~
YNQ*RZ*N~
YNQ*QQ*Y~
DTM*274*20090407~
P5*D*K*20101~
P5*L*D*0131~
REF*BN*BOLS1231~
M12*70***N~
VID*CN*AS23*42334~
VID*CN*KLDA*ADERD~
N1*EX*FTO US*24*232852542~
N3*FIFTH AVENUE~
N4*NEW YORK*CA*12345*US~
N1*CN*LIFT SOLUTIONS MEX***01~
N3*MIXCOAC420~
N4*MIXCOAC*ME*32803*MX~
N1*IC*LIFT SOLUTIONS MEX~
N3*MIXCOAC420~
N4*MIXCOAC*ME*32803*MX~
L13*A*8542310000*NO*12*10*15000*1***K*4.536*Ball bearing*OS~
X1**NLR*1***C32**F*****1C982~
SE*23*0001~
GE*1*1~
IEA*1*000003113~

Sample Inbound X12.824 EDI Filing Response: Shipment Added Response

ISA*00* [REDACTED] *01* [REDACTED] *ZZ*USCSAESTEST *01*232852542 *100111*0902*^*00405*00000151*0*P*~
GS*AG*USCSAESTEST*232852542*20100111*0902*151*X*004050~
ST*824*0151~
BGN*01*232852542*20100111***XT~
N1*01*FOREIGN TRADE ORGANISATION US*24*23285254200~
REF*01*000006~
OTI*02*A1*232852542~
OTI*02*B1*23285254200~
OTI*02*SC1*00140000062010~
OTI*02*ES1*X20100111000007~
TED*974* A SHIPMENT ADDED ~
OTI*02*Y1*23285254200~
OTI*02*Z1*232852542~
SE*12*0151~
GE*1*151~
IEA*1*00000151~

Sample Inbound X12.824 EDI Filing Response: Shipment Rejected Response

```

ISA*00*██████*01*██████*ZZ*USCSAESTEST*01*232852542*090407*1001*^*00405*000000053*0*P~Å
GS*AG*USCSAESTEST*232852542*20090407*1001*53*X*004050Å
ST*824*0053Å
BGN*01*232852542*20090407***XTÅ
N1*01*FTO US*24*232852542Å
REF*01*003111Å
OTI*02*A1*232852542Å
OTI*02*B1*232852542Å
TED*034*F HEADER USPPI EIN LOCATION INVALID *N1Å
TED*035*F TRAILER USPPI EIN LOCATION INVALID *N1Å
TED*056*I SHIPMENT REF NBR:00140031112009 *N1Å
OTI*02*ES1Å
TED*965*F R BLOCK REJECTED; RESOLVE AND RETRANSMIT Å
OTI*02*Y1*232852542Å
OTI*02*Z1*232852542Å
SE*14*0053Å
GE*1*53Å
IEA*1*000000053Å
  
```

Important Qualifiers

Qualified IDs that are referenced in the default BI Publisher templates used to generate the EDI formatted filing document.

Type of Qualifier	Qualifier ID
Date Qualifier	EXPORT DATE
GTM Transaction Line Refnum Qualifier	FILING REFERENCE NUMBER
GTM Transaction Line Refnum Qualifier	VEHICLE IDENTIFICATION NUMBER
GTM Transaction Line Refnum Qualifier	VEHICLE TITLE NUMBER
GTM Transaction Refnum Qualifier	SHIPMENT REFERENCE NUMBER
GTM Transaction Refnum Qualifier	BN
Involved Party Qualifier	CARRIER
Involved Party Qualifier	FORWARDING AGENT
Involved Party Qualifier	INTERMEDIATE CONSIGNEE
Involved Party Qualifier	SHIP FROM
Involved Party Qualifier	ULTIMATE CONSIGNEE
Involved Party Qualifier	USPPI

Type of Qualifier	Qualifier ID
Location Refnum Qualifier	SCHEDULE_D
Location Refnum Qualifier	SCHEDULE_K
Party Refnum Qualifier	DDTC REGISTRATION NUMBER
Party Refnum Qualifier	DUNS
Party Refnum Qualifier	FOREIGN ENTITY NUMBER
Port Qualifier	PORT OF EXPORT
Port Qualifier	PORT OF UNLADING
Product Classification Type	ECCN US
Product Classification Type	SCHEDULE B
Quantity Qualifier	ORDERED
Quantity Qualifier	TOTAL GROSS WEIGHT
Remark Qualifier	FILING OPTION
Remark Qualifier	ORIGIN
Remark Qualifier	EQUIPMENT INITIAL NUMBER
Remark Qualifier	EXPORT INFORMATION CODE
Remark Qualifier	ELIGIBLE PARTY CERTIFICATION
Remark Qualifier	RELATED COMPANY
Remark Qualifier	ROUTED EXPORT TRANSACTION
Remark Qualifier	VEHICLE TITLE STATE CODE
Value Qualifier	TOTAL VALUE

References

- CBP recommended VPN options:
<http://www.cbp.gov> and search for Communication Access.
- Census Schedule D Port Locations found in AES Appendix D – Export Port Codes:
<http://www.cbp.gov> and search for AESTIR Appendices.
- Census Schedule K (Classification of Foreign Ports by Geographic Trade Area and Country) found in AES Appendix Z – Additional Information Sources:
<http://www.cbp.gov> and search for AESTIR Appendices

- ANSI X-12: 601 – Export Shipment Information: <http://www.cbp.gov> and search for 601
- Appendix A – Commodity Filing Response Matrix: <http://www.cbp.gov> and search for AESTIR Appendices
- GTM – AES X12 601 Mapping.xlsx: <https://support.oracle.com>, Doc ID 796594.1

