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Customs Filing Integration Guide

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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
12/12	-01	Initial release.
3/2013	-02	Corrected property name to be glog.oaq.plugin.GTM_CUSTOMS_IN. 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: glog.oaq.plugin.gtm_customs_in. Note: This property is not available as default. You have to add it when you configure the system for AES.

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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

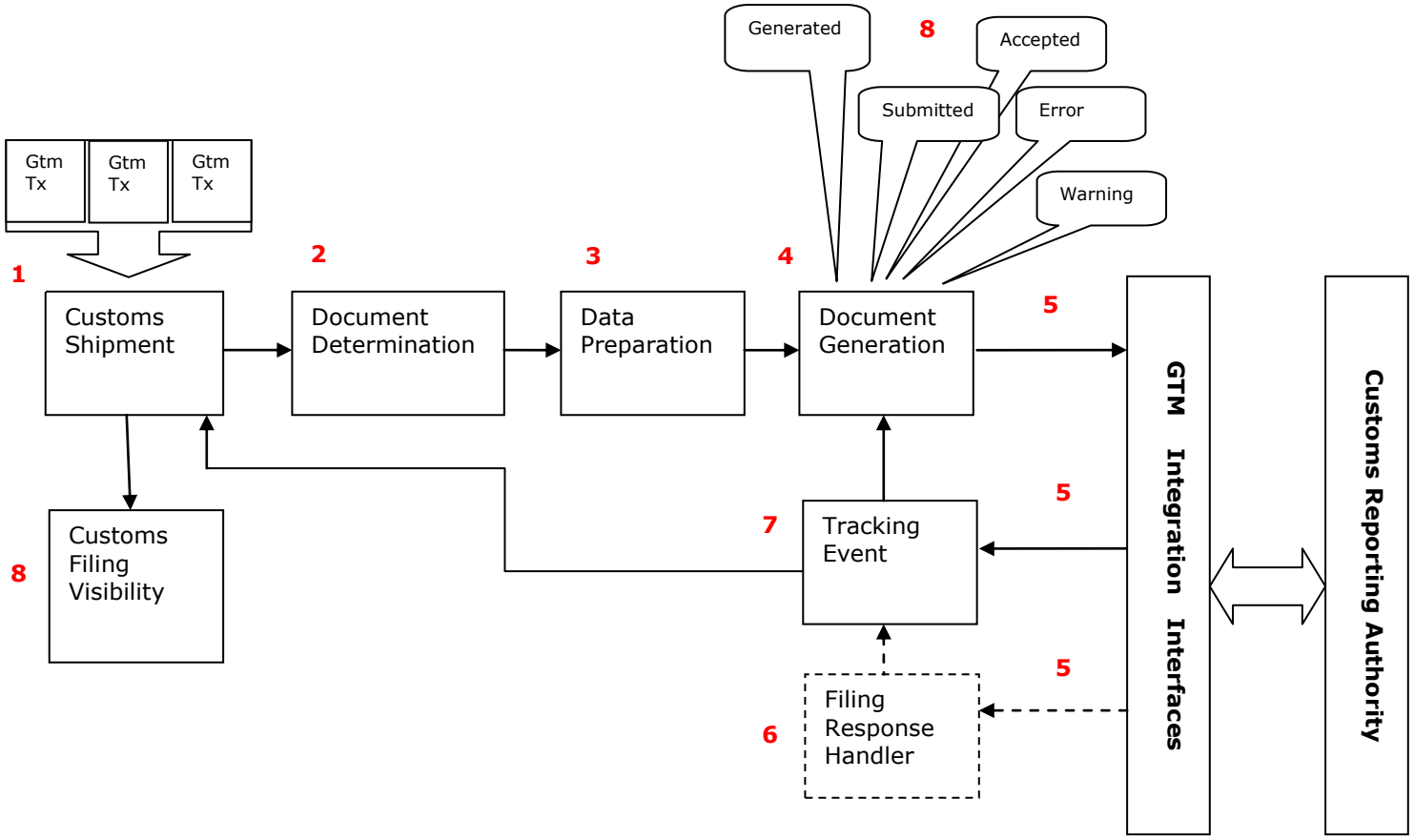

Figure 1

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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

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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.

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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 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.

Oracle Transportation Management/Global Trade Management does not directly integrate with MQ Series. Oracle Transportation Management/Global Trade Management integration with IBM Websphere MQ is normally achieved using Oracle Advanced Queuing (OAQ). On the outbound flow, when submitting export filings, OAQ can forward Oracle Transportation Management/Global Trade Management messages into an MQ middleware system where they can be retrieved and consumed by external systems, such as AES. Similarly on the inbound flow, when receiving filing responses from AES, OAQ can be configured to listen for messages from MQ middleware messaging queues, and transfer the messages into Oracle Transportation Management/Global Trade Management system.

Oracle Transportation Management/Global Trade Management's standard integration does not send out data in the EDI format. Similarly Oracle Transportation Management/Global Trade Management's standard integration does not handle processing of inbound EDI messages. On the outbound flow, Global Trade Management uses BI Publisher to generate the EDI filing document, and push the EDI message into OAQ. On the inbound flow, you want to have the ability to trigger notification and workflow when a filing response is received from AES. In order to achieve this, AES filing responses are modeled as tracking events. Filing responses are retrieved from OAQ, converted from EDI into a tracking event XML and enter Global Trade Management via the tracking event integration interface. Once in Global Trade Management, the tracking event can be matched back to the filing document and set appropriate statuses on the filing document.

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Process Overview: Customs Filing with AES

1. One or more Global Trade Management trade transactions are consolidated into a Global Trade Management customs shipment.
2. An EDI filing document is generated for the customs shipment using BI Publisher.
3. The EDI filing document is transmitted to AES via the OAQ-MQ Series Bridge.
4. An EDI filing response from AES is received.
5. The EDI filing response is converted into a tracking event.
6. The tracking event is matched back to the filing document submitted to AES.
7. Based on the content of the response, the status of the filing document is updated accordingly.
8. The Global Trade Management customs shipment is updated with any information returned in the filing response, e.g. Internal Tracking Number (ITN).
9. The filing status history of a customs shipment can be seen on the customs shipment manager's AES View grid.

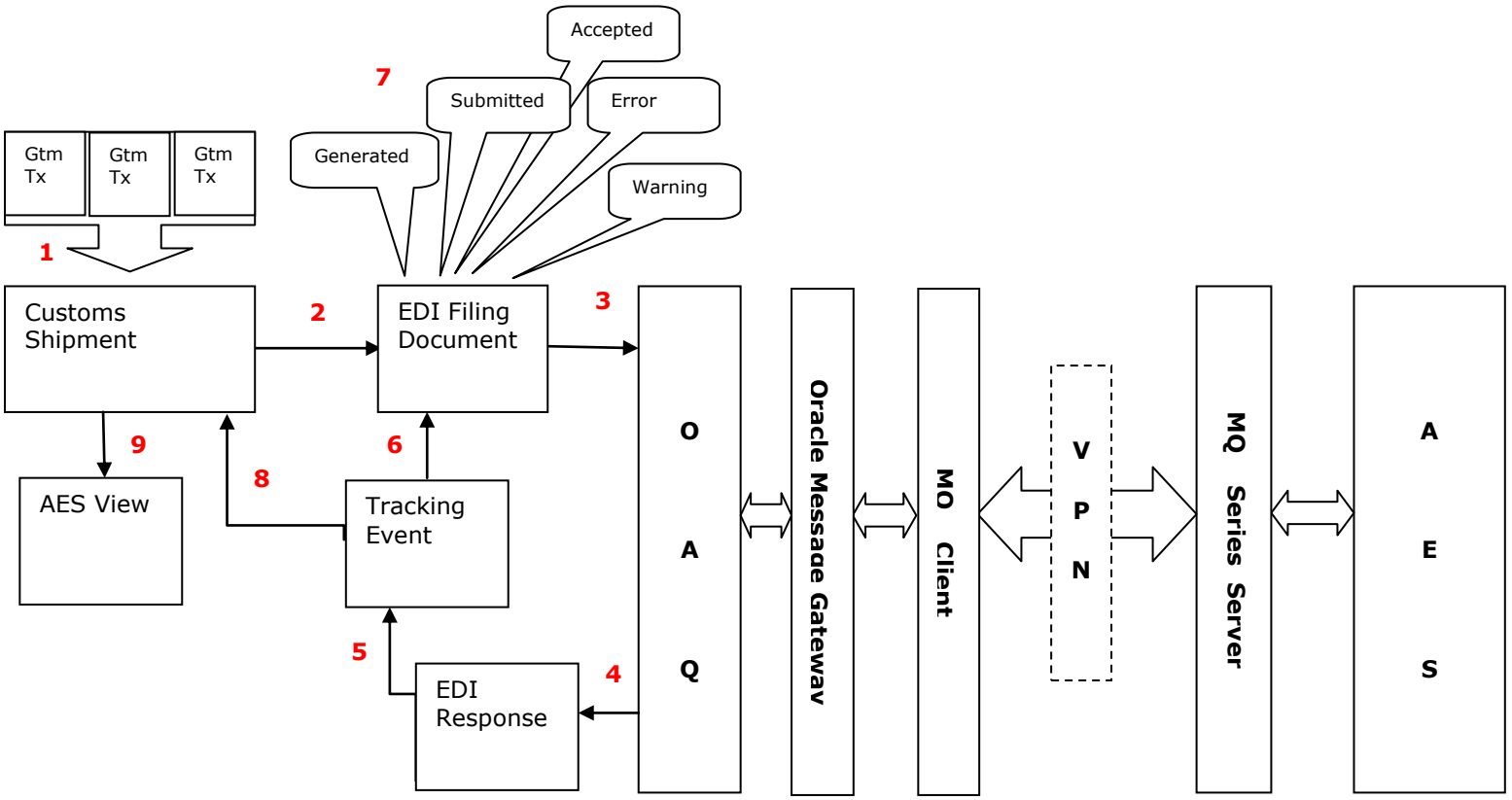

Figure 2

The process over view for customs filing with AES is similar to the generic process overview described in the previous section. Since AES has specific hardware (MQ Series over VPN) and software (EDI format) requirements, the additional components needed to address these requirements have been detailed. Global Trade Management uses an Oracle Advanced Queuing (OAQ)-Oracle Message Gateway bridge to interface with MQ Series. Global Trade Management also has a custom message handler to process EDI formatted filing responses.

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Architecture Overview: Customs Filing with AES

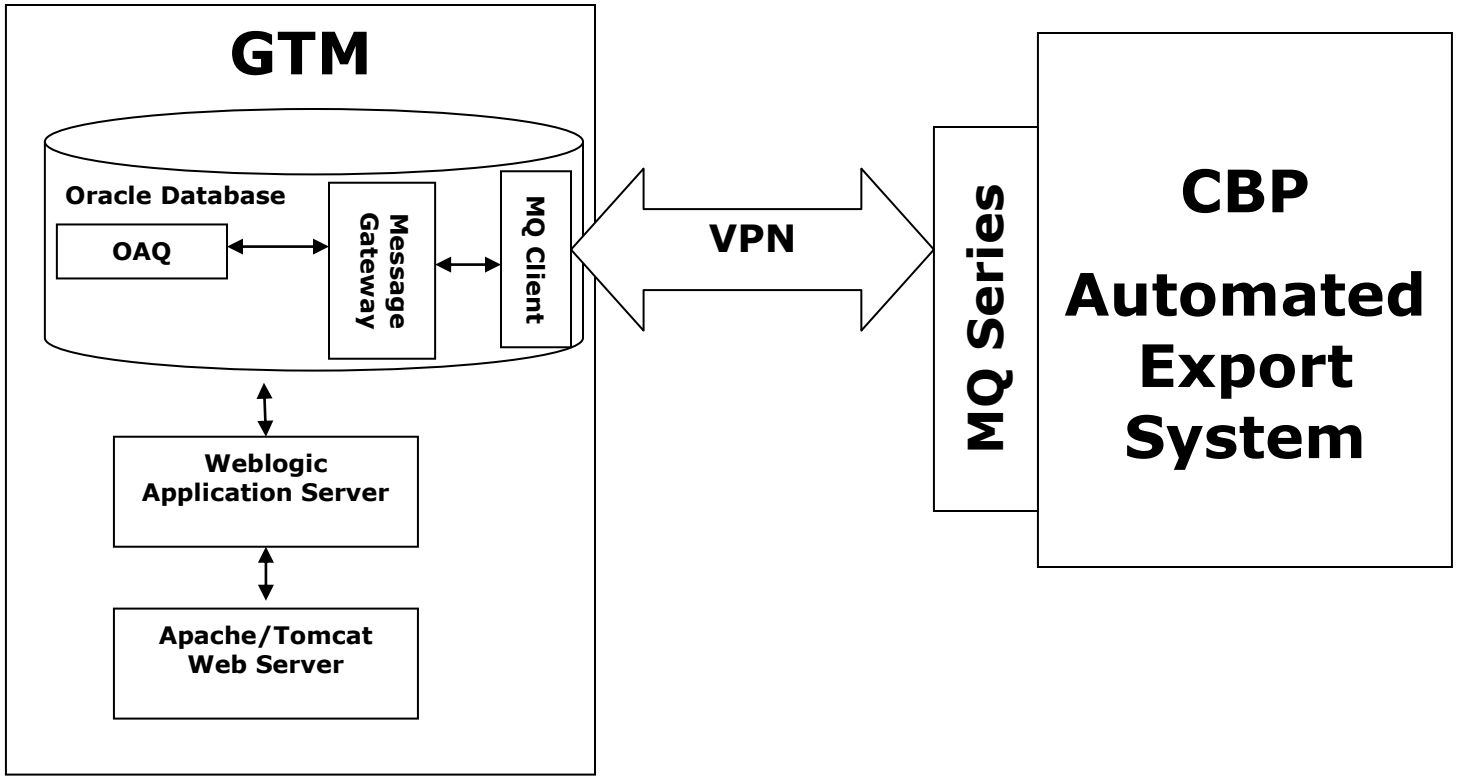

Figure 3

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3. Configuring Oracle Advanced Queuing (OAQ) and Oracle Message Gateway for AES

Global Trade Management - OAQ Configuration

Global Trade Management ships with OAQ queues specific for customs filing. There are two default queues, an inbound queue ***GTM_CUSTOMS_IN*** and an outbound queue ***GTM_CUSTOMS_OUT***. Both queues share the queue table ***GTM_CUSTOMS_QUEUE****,* which are created in the database as part of the installation.

OAQ-Message Gateway Configuration

From Global Trade Management's perspective, Global Trade Management uses OAQ to transmit the EDI filing to AES. However, internally OAQ needs another component to help communicate with non-Oracle messaging systems such as Websphere MQ Series. This component is the Oracle Messaging Gateway. Oracle Messaging Gateway, which is shipped as part of the Oracle Database suite, is a message delivery system that enables communication between OAQ and non-oracle messaging systems.

The Messaging Gateway consists of a Messaging Gateway Agent, which is an external process that runs in the same database server as OAQ and does the actual propagation. The Messaging Gateway Agent connects to non-Oracle messaging systems through communication channels called as messaging system links.

Propagation jobs are defined in order for messages to be propagated from one messaging system to another. A propagation job defines the source queue, destination queue, and various other attributes that affect the processing of the propagation job.

When the Messaging Gateway Agent processes a propagation job, it de-queues messages from the source queue and queues the messages to the destination queue. As each message is propagated, it is converted from its native format in the source messaging system to its native format in the destination messaging system. All data in the OAQ is in an Oracle data format. As messages flow from OAQ to MQ, they must be transformed into an MQ format. Similarly as messages flow from MQ to OAQ, they must be transformed from MQ format to Oracle format. Global Trade Management ships with these transformations defined.

Global Trade Management ships with scripts that create the propagation jobs to forward messages from OAQ to MQ and vice-versa. You should get the AES queue names and other connection attributes from CBP. Once you have these details, you should run the scripts to configure the propagation jobs. The script to create the propagation jobs and message transformations is found in the Appendix.

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4. 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 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. Validation rules are associated with a document type, on the Document Type power data.

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 ***EXPORT DATE***.
2. The customs shipment must have a reference number with the reference number qualifier ID ***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 ***PORT OF EXPORT*** and the port location must match a value from the Census Schedule-D list of locations.

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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 ***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 ***USPPI***, ***ULTIMATE CONSIGNEE***, and ***CARRIER.***
8. The ***USPPI*** and ***ULTIMATE CONSIGNEE*** should have first name, last name, and address (including country) information.
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 ***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 ***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:

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```
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 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.AE
SFilingCallback
```

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, Global Trade Management includes an external system ***GTM_CUSTOMS_OUT***, which is pre-configured to point to the default outbound OAQ queue.

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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 via MQ Series middleware. Global Trade Management uses OAQ 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 OAQ, 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 an OAQ 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:

```
glog.oaq.plugin.gtm_customs_in=1,-1,INTDQSVC:-handler
gtm.server.oaq.AESFilingResponseMessageHandler
```

This property specifies that when a message is queued into the *GTM_CUSTOMS_IN* queue, the plug-in *INTDQSVC,* calls the message handler *gtm.server.oaq.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

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employ 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 type and values on the filing document, and 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

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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.

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5. APPENDIX

OAQ – MQ Propagation Jobs and Transformation Instructions

The following instructions create the propagation jobs to forward messages from OAQ to MQ and vice-versa. They also set-up the transformations to convert messages from one format to another as they flow from OAQ to MQ and vice-versa.

1. Login to the database server using Oracle installation user. Make sure environmental variables ORACLE_HOME and ORACLE_SID are properly set.

   In SQL*Plus, as user SYS as sysdba run:

   ```
   @$ORACLE_HOME/mgw/admin/catmgw.sql
   ```

2. Modify `$ORACLE_HOME/network/admin/listener.ora` for the External Procedure as follows:

   ```
   LISTENER =
     (DESCRIPTION_LIST =
       (DESCRIPTION =
         (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC))
         (ADDRESS = (PROTOCOL = TCP)(HOST = <DB Sever Hostname>/<IP>)(PORT =
   1521))
       )
     )

   SID_LIST_LISTENER =
     (SID_LIST =
       (SID_DESC =
         (SID_NAME = mgwextproc)
         (ENVS=

   "LD_LIBRARY_PATH=$ORACLE_HOME/jdk/jre/lib/amd64:$ORACLE_HOME/jdk/jre/lib/amd
   64/server:$ORACLE_HOME/lib")
       (ORACLE_HOME = $ORACLE_HOME)
       (PROGRAM = extproc)
       )
     )
   ```

3. Add the following entry to $ORACLE_HOME/network/admin/tnsnames.ora

   ```
   MGW_AGENT =
   (DESCRIPTION=
      (ADDRESS_LIST= (ADDRESS= (PROTOCOL=IPC)(KEY=EXTPROC)))
      (CONNECT_DATA= (SID=mgwextproc))
   )
   ```

4. Add the following entries to classpath

   ```
   export JRE_HOME=$ORACLE_HOME/jdk/jre

   export
   CLASSPATH=$JRE_HOME/lib/rt.jar:$ORACLE_HOME/jdbc/lib/ojdbc5.jar:$ORACLE_HOME
   /jlib/orai18n.jar:$ORACLE_HOME/sqlj/lib/runtime12.jar:$ORACLE_HOME/rdbms/jli
   b/jmscommon.jar:$ORACLE_HOME/rdbms/jlib/aqapi.jar:$ORACLE_HOME/jlib/jta.jar:
   $CLASSPATH
   ```

5. Install MQ client on the database server. Refer to install MQ client for Oracle DB server at the following link. Ignore this step if MQ client already installed.

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http://publib.boulder.ibm.com/infocenter/wmqv6/v6r0/index.jsp?topic=%2Fcom.ibm.mq.amq1ac.doc%2Flq10790_.htm

6. Set up mgw.ora file located at `$ORACLE_HOME/mgw/admin`

   Copy *sample_mgw.ora* to *mgw.ora*. Edit *mgw.ora* and verify that the classpath is set as follows:

```
set
CLASSPATH=$ORACLE_HOME/jdbc/lib/ojdbc5.jar:$ORACLE_HOME/jdk/jre/lib/i18n.jar
:$ORACLE_HOME/jdk/jre/lib/rt.jar:$ORACLE_HOME/sqlj/lib/runtime12.jar:$ORACLE
_HOME/jlib/orai18n.jar:$ORACLE_HOME/jlib/jta.jar:$ORACLE_HOME/rdbms/jlib/jms
common.jar:$ORACLE_HOME/rdbms/jlib/aqapi.jar:/opt/mqm/java/lib/com.ibm.mqjms
.jar:/opt/mqm/java/lib/com.ibm.mq.jar:/opt/mqm/java/lib:/opt/mqm/java/lib/co
nnector.jar:/opt/mqm/java/lib/com.ibm.mq.jmqi.jar
```

   After copying over the *mgw.ora* file, stop and restart the database listener.

7. Change to the `<otm_install_path>/gc3/glog/oracle/script8` directory on the Oracle Transportation Management application server.

   In SQL*Plus, as user GLOGOWNER run:

```
@create_gtm_customs_job.sql
```

   a. Enter the password for SYS user to connect to database.
   b. Enter the glog user schema which contains all the glog objects. For default GLOGOWNER just press enter.
   c. Enter the password for the above user to connect to DB.
   d. Enter the propagation type, either OUTBOUND (from OAQ to MQ) or INBOUND (from MQ to OAQ). Press enter for default OUTBOUND.
   e. Enter database connection.
   f. Enter any name to create MGW agent or press enter for default gtm_agent.
   g. Enter any name to create messaging link or press enter for default gtm_customs_link.
   h. Enter the destination MQ server details as prompted.
      - MQ server Hostname or IP address.
      - MQ server Port (press enter for default 1414)
      - MQ server Connection Channel Name
      - MQ server Queue Manager Name
      - MQ server LOG in Queue Name
      - MQ server LOG out Queue Name
      - MQ server Provider Queue Name (Destination/Source MQ)

   Note: Repeat step number 7 to create any other OUTBOUND or INBOUND propagation job. The same agent name and messaging link name can be used for multiple propagation jobs.

Sample Filing Response Transformation Plug-in Implementation

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

import glog.server.oaq.IntegrationMessage;
```

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```
import glog.server.oaq.IntegrationMessageHandler;
import glog.server.oaq.OracleDequeued;

import glog.util.CommandLine;
import glog.util.GLProperties;
import glog.util.exception.GLException;
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 GLException {

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

          OracleDequeued dequeued = message.getDequeuedMessage();
          String ediMessage = dequeued.message.getXmlMessage().toString();
          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;
   }
}
```

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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*DHLP*E*MS MAXIMILIAN 2~
YNQ*RZ*N~
YNQ*QQ*Y~
DTM*274*20090407~
P5*D*K*20101~
P5*L*D*0131~
REF*BN*BOLS 1231~
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*MIXCOAC 420~
N4*MIXCOAC*ME*32803*MX~
N1*IC*LIFT SOLUTIONS MEX~
N3*MIXCOAC 420~
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*000000151*0*P*~Å
GS*AG*USCSAESTEST*232852542*20100111*0902*151*X*004050Å
ST*824*0151Å
BGN*01*232852542*20100111***XTÅ
N1*01*FOREIGN TRADE ORGANISATION US*24*23285254200Å
REF*01*000006Å
OTI*02*A1*232852542Å
OTI*02*B1*23285254200Å
OTI*02*SC1*00140000062010Å
OTI*02*ES1*X20100111000007Å
TED*974*  A SHIPMENT ADDED                  Å
OTI*02*Y1*23285254200Å
OTI*02*Z1*232852542Å
SE*12*0151Å
GE*1*151Å
IEA*1*000000151Å
```


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

```
ISA*00*[redacted]*01*[redacted]  *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
Location Refnum Qualifier	SCHEDULE_D

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Type of Qualifier	Qualifier ID
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/xp/cgov/trade/automated/automated_systems/data_comm_changes/

Census Schedule D Port Locations found in AES Appendix D – Export Port Codes:
http://www.cbp.gov/linkhandler/cgov/trade/automated/aes/tech_docs/aestir/june04_intro/appendices/apndx_d.ctt/apndx_d.doc

Census Schedule K (Classification of Foreign Ports by Geographic Trade Area and Country) found in AES Appendix Z – Additional Information Sources:

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http://www.cbp.gov/linkhandler/cgov/trade/automated/aes/tech_docs/aestir/june04_intro/appendices/apndx_z.ctt/apndx_z.doc

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