



GC3

Integration Guide

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Please send your comments about GC3 to:

Global Logistics Technologies, Inc

1016 West Ninth Avenue

King of Prussia, PA 19406

Telephone: (610) 491-9881

FAX: (610) 491-9897

<http://www.g-log.com>

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Table of Contents

TABLE OF CONTENTS	III
ABOUT THIS MANUAL	X
1. INTEGRATION OVERVIEW	1-1
INTERFACE DEFINITION	1-1
GC3 XML SCHEMA	1-1
VIEW THE GC3 XML SCHEMA	1-2
GLOBAL IDS (GIDS)	1-3
TRANSMISSION TEMPLATE WRAPPER.....	1-3
2. SEND DATA TO GC3 (INBOUND)	2-1
SEND DATA TO GC3	2-1
SEND DATA AND LOAD FASTER INTO GC3	2-1
RESULT	2-2
SEND DATA VIA A WEB SERVICE TO THE APPLICATION TIER	2-2
CHANGE SCHEMA WITH XSL	2-3
TRANSFORM FLAT FILES INTO GLOGXML	2-3
SETUP	2-3
TRANSACTION CODES	2-4
UPPERCASE GIDS AND XIDS	2-4
BUSINESS NUMBER GENERATOR (BNG)	2-4
CONTROL VALIDATION OF INBOUND TRANSMISSIONS	2-4
BLANK OUT CERTAIN FIELDS	2-5
MODIFY RECORDS WITHOUT GID	2-5
INCLUDING NON 7-BIT ASCII CHARACTERS	2-6
WMSERVLET CLIENT	2-6
GC3 INTERNAL PROCESSING	2-6

3. SEND DATA FROM GC3 (OUTBOUND)	3-1
CHANGE SCHEMA WITH XSL	3-1
TRANSFORM GLOGXML INTO FLAT FILES	3-1
GC3 INTERNAL PROCESSING	3-2
4. TYPES OF INTERFACES	4-1
DATA LOADING	4-1
TRANSPORT FLOW.....	4-1
FINANCIAL	4-3
MISCELLANEOUS.....	4-3
5. SETTING UP INTERFACES	5-1
DEFINE EXTERNAL SYSTEMS.....	5-1
USER MANAGEMENT	5-1
WORKFLOW PARAMETERS.....	5-1
AGENT MANAGER	5-1
6. INTERFACES	6-1
PROCESSINFO	6-1
SHIPMENT INTERFACES (INS)	6-1
PLANNED SHIPMENTS	6-1
ACTUAL SHIPMENTS.....	6-1
ORDER CENTRIC MODIFICATIONS.....	6-6
DATA REQUIREMENTS.....	6-7
SENDING SHIPMENTS (SHIPMENT AS WORK).....	6-7
ALLOCATIONBASE INTERFACE.....	6-7
PROCESS ALLOCATIONS	6-7
ACCRUAL INTERFACE	6-8
EXCHANGERATE INTERFACE	6-8

INSERT NEW EXCHANGE RATE INTO GC3.....	6-8
MODIFY EXCHANGE RATE IN GC3	6-8
DELETE EXCHANGE RATE IN GC3	6-9
SEND EXCHANGE RATE FROM GC3	6-9
INVOICE INTERFACE	6-9
CONSOLIDATED INVOICES.....	6-10
ITEMMASTER INTERFACE	6-10
ITINERARY INTERFACE.....	6-10
JOB INTERFACE	6-10
LOCATION INTERFACE	6-11
INSERT NEW LOCATION INTO GC3	6-11
MODIFY LOCATION IN GC3	6-12
DELETE LOCATION IN GC3.....	6-12
SEND LOCATION FROM GC3.....	6-12
MILEAGE INTERFACE	6-13
RELEASE INTERFACE.....	6-13
RELEASE TYPE	6-13
BUSINESS NUMBER GENERATOR (BNG)	6-14
RELEASEINSTRUCTION INTERFACE.....	6-14
REMOTEQUERY INTERFACE.....	6-14
SHIPMENTQUERY	6-14
RIQUERY INTERFACE	6-14
TRANSMISSION REPORTQUERY	6-15
REMOTEQUERYREPLY INTERFACE	6-15
SERVICETIME INTERFACE	6-15
SHIPMENTSTATUS INTERFACE (INE)	6-15
INSERT NEW SHIPMENT STATUS INTO GC3	6-15
SEND SHIPMENT STATUS FROM GC3.....	6-16
MATCH EVENTS TO AN OBJECT	6-16
MATCH EVENTS TO A SHIPMENT STOP.....	6-17
SHIPSTOP INTERFACE.....	6-18

TENDEROFFER INTERFACE	6-18
SEND NEW TENDEROFFER FROM GC3	6-18
CANCEL TENDEROFFER	6-19
BATCH PROCESS TENDER OFFERS.....	6-19
TENDERRESPONSE INTERFACE	6-19
INSERT NEW TENDERRESPONSE INTO GC3	6-19
TRANSMISSIONREPORT INTERFACE	6-20
SEND TRANSMISSION REPORT FROM GC3.....	6-20
TRANSORDER INTERFACE (INO)	6-21
INSERT NEW ORDER AND RELEASE ORDER LINE	6-21
INSERT NEW TRANSORDER AND RELEASE SHIPUNIT	6-22
MODIFY ORDER BASE WITH LINES	6-23
MODIFY SHIPUNITS.....	6-24
DELETE ORDERS	6-25
BULK PLAN ORDERS	6-25
INCREMENTALLY RELEASE TRANSORDER LINE FROM EXISTING TRANSORDER.....	6-26
SEND TRANSORDER FROM GC3	6-27
PROCESSING CODES	6-27
XLANE INTERFACE	6-28
DATA REQUIREMENTS.....	6-28
BILLING INTERFACE	6-28
VOUCHER INTERFACE	6-28
PROCESS VOUCHERS.....	6-29
CSVFILECONTENT INTERFACE	6-29
INSERT NEW CSVFILECONTENT INTO GC3	6-29
DATAQUERYSUMMARY INTERFACE	6-29
SEND DATAQUERY SUMMARY FROM GC3	6-29
FINANCIALSYSTEMFEED INTERFACE	6-30
GLOGXMLELEMENT	6-30
HAZMATGENERIC INTERFACE	6-30
INSERT NEW HAZMAT INTO GC3	6-30
MODIFY HAZMAT IN GC3	6-31

DELETE HAZMAT IN GC3.....	6-31
HAZMATITEM INTERFACE.....	6-32
INSERT NEW HAZMATITEM INTO GC3.....	6-32
MODIFY HAZMATITEM IN GC3.....	6-32
DELETE HAZMATITEM IN GC3	6-33
RATE_GEO INTERFACE.....	6-33
SEND RATE_GEO FROM GC3.....	6-33
INSERT RATE RECORDS INTO GC3	6-33
RATE_OFFERING INTERFACE.....	6-33
SEND RATE_GEO FROM GC3.....	6-34
INSERT RATE RECORDS INTO GC3	6-34
SCHEDULE INTERFACE.....	6-34
SHIPMENTGROUP INTERFACE	6-34
SHIPMENTGROUPTENDEROFFER.....	6-34
SHIPMENTLINK (RELATED SHIPMENTS) INTERFACE	6-34
TRANSACTIONACK INTERFACE	6-35
TRANSMISSION INTERFACE	6-35
TRANSMISSION HEADER.....	6-35
TRANSMISSION BODY.....	6-36
TRANSMISSIONACK INTERFACE.....	6-36
SEND TRANSMISSION ACK FROM GC3	6-36
BULK CONTINUOUS MOVE INTERFACE.....	6-36
BULKPLAN INTERFACE	6-36
BULKRATING INTERFACE	6-37
BULKTRAILERBUILD INTERFACE.....	6-37
GENERICSTATUSUPDATE INTERFACE	6-37
THE ROLE OF THE TRANSACTION CODE.....	6-37
TOPIC INTERFACE	6-38
SSHIPUNIT INTERFACE.....	6-38
ALTERNATIVE INTERFACES	6-38

HOW TO USE	6-38
TRANSORDERSTATUS INTERFACE	6-39
INSERT NEW TRANSORDER STATUS INTO GC3	6-39
CONTACT INTERFACE	6-40
INSERT NEW CONTACT INTO GC3	6-40
MODIFY CONTACT	6-40
DELETE CONTACT	6-41
CONTACTGROUP INTERFACE.....	6-41
SKU INTERFACE.....	6-41
INSERT NEW	6-41
UPDATES THROUGHOUT THE DAY	6-42
REPLACE AN INDIVIDUAL SKU.....	6-42
HOW TO STRUCTURE YOUR DATA.....	6-43
SKU TRANSACTION INTERFACE	6-46
SHIP SKU TO OR FROM THE WAREHOUSE	6-46
OBLINE INTERFACE	6-46
SEND OBLINE FROM GC3	6-46
ORDERMOVEMENTREPLACE INTERFACE.....	6-47
OBSHIPUNIT INTERFACE	6-48
SEND OB SHIP UNIT FROM GC3	6-48
VOYAGE INTERFACE.....	6-48
BOOKINGLINEAMENDMENT INTERFACE.....	6-48
CHARTERVOYAGE INTERFACE	6-48
CONSOL INTERFACE.....	6-49
CLAIM INTERFACE.....	6-49
DOCUMENT INTERFACE.....	6-49
SKUEVENT INTERFACE	6-50
TRANSORDERLINK INTERFACE.....	6-50
7. INTEGRATION MESSAGES	7-1

8. ORACLE ADVANCED QUEUING	8-1
ENABLE OAQ FUNCTIONALITY	8-1
QUEUE DATABASE TABLE	8-1
DEFAULT QUEUES	8-2
QUEUE MANAGEMENT UTILITIES	8-2
INBOUND PROCESSING	8-2
OUTBOUND PROCESSING	8-3
OPTIONAL ORACLE SETTINGS	8-3

About this Manual

This manual is for members of the GC3 implementation team, who connect GC3 to other systems through integration interfaces. This manual explains how GC3 sends and receives integration messages.

This manual does not cover the installation of any components required to import or export. See the Administration Guide on your GC3 CD for installation and configuration instructions.

1. Integration Overview

Logistics systems require large amounts of data, including information about locations, geography, service providers, rates, itineraries, as well as transactional data such as orders and shipment status. Much of this data comes from traditional ERP systems; however, some of this information now comes from the Internet. In either case, GC3 uses the following tools and techniques for data integration:

- XML-based business-to-business (B2B) integration
- Support for XML and EDI-based integration for carrier and other partner communications
- HTML to communicate with non-EDI, non-XML partners
- Configurable, automated notification engine for intelligent alerting
- Hosted data server for cleansing and downloading key Internet data

GC3 uses XML to integrate with other systems through several interfaces that perform inbound and outbound processing.

XML documents are sent to GC3 using an integration tool such as WebMethods, via HTTPS over the Internet.

To send or receive interface transmissions, a programmer creates an XML schema that matches the GLogXML schema. GLogXML Schema is the format in which you send interface transmissions to GC3. Each type of interface transmission you want to send to GC3 or receive from GC3 has a specific XML schema that must be used. This documentation describes the information that must appear in a particular schema, defines the pieces of the different schemas, and lists the data that must already exist in GC3 for the transmission to function properly.

You can read about integration both online and on paper (Integration Manual). Note that you can only view the interface diagrams and the XML Element Dictionary online. They are not part of the Integration Manual.

Interface Definition

An interface is a program that sends and receives properly formatted information from one application to another. GC3 has separate interfaces that process different types of data. For example, the Transportation Orders interface (TransOrder) can import transportation order information from a foreign system into GC3. This type of interface is called inbound since data is imported into GC3. Outbound interfaces transmit data from GC3 to other systems. For example, shipments planned in GC3 can be exported to another system for additional processing.

To send and receive transmissions from GC3, you need to understand:

- The underlying GC3 database schema. This schema defines the data elements you want to import and export.
- The rules that govern how GC3 processes data.
- How workflow can be used to automate interface processing in GC3.

GC3 XML Schema

The GC3 XML schema defines the data elements that GC3 sends or receives for each type of interface. Schema diagrams display the GC3 data elements including their parent-child relationships. By viewing the schema you can create XML documents (using data from other systems) that can be imported into GC3. Outbound data from GC3 is saved in XML documents that follow the same schema.

Note: Both the XML schema and the online help describes each element. The online help contains the XML Element Dictionary with definitions of each element to help you construct the appropriate XML documents.

Note: There are two versions of the GLog XML schema file to correspond to the different W3C schema standards from 2000 and 2001. The GLogXML.xsd schema file conforms to the following namespace:

xmlns:xsd="http://www.w3.org/2000/10/XMLSchema"

And the GLogXML-v2001.xsd schema file conforms to the following namespace:

xmlns:xsd="http://www.w3.org/2001/XMLSchema"

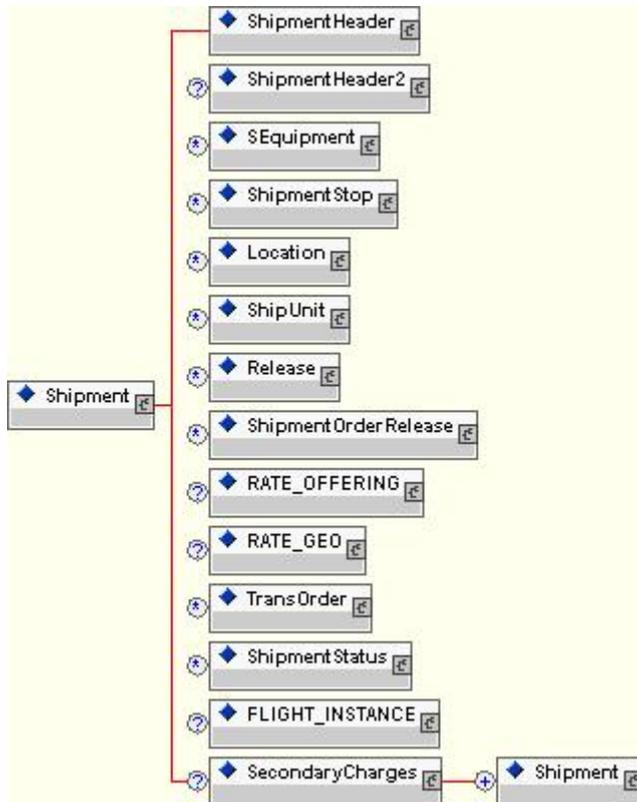
Depending on the capabilities or constraints of your integration platform or utilities, you may be restricted to using one or the other.

View the GC3 XML Schema

In XML, you must create documents that follow the structure and rules of the GC3 XML schema. The GLogXML.xsd file documents the GC3 XML schema. We recommend that you use an XML management tool to view the GLogXML.xsd file and understand the GC3 data elements and relationships. You can also view the XML schema in online help by selecting the diagram you want from the Interface Diagrams book in the table of contents.

Note: The contents of the GlogXML.xsd file is subject to change as new versions of GC3 are released. Contact G-Log Technical Support to ensure that you are using the appropriate file for constructing your interfaces.

The following is an example of an XML diagram with unexploded elements. Elements such as ShipmentHeader and ShipmentStop can be expanded to show the parent-child relationships to other elements in the schema.



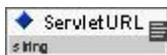
A few basics to help you understand the diagram notations are shown below:

- A question mark (?) indicates that the element is optional
- An asterisk (*) indicates 0 or more (optional)
- A plus sign (+) indicates 1 or more (required)
- A double sided arrow (<->) indicates that the element has relationships to other elements

The following diagram shows a “branch” indicating a choice of one, but not both. For example, a Location Ref is either a LocationGID (existing location information), or a Location (new location information), but not both.



An element with the following notation is a leaf. It is the lowest level element on the tree, and cannot be exploded any further.



Global IDs (GIDs)

GIDs are global identifiers that GC3 uses to define various types of information (e.g., orders, shipments, locations, payment vouchers, etc.). A GID consists of the following three parts:

- Domain name - Typically identifies a company and is used to separate data and secure it from other data in a shared, Web-based environment. For example, if you are using GC3 in an environment where many companies may be using the same GC3 installation, the domain allows you to isolate data in GC3 for each company. Therefore, many users from different companies can work in the same GC3 installation (or Web site) and use data that is private and specific to their company. If you do not include a domain name in a GID, it can be viewed across all domains in your system.
- External ID (XID) - The ID that defines the item on the external system. An external system is any system other than GC3.
- XID qualifier - An optional element that provides a category for the XID. For example, the XID Qualifier may indicate that a particular XID is a Purchase Order.

NOTE: You should not create GIDs with trailing spaces, as these records will not be able to be looked up via the UI.

Transmission Template Wrapper

The transmission template wrapper takes plain XML and turns it into a valid GC3 transmission. To send an actual shipment to GC3, it must include a wrapper surrounding the XML transmission. You can then send the actual shipment back to GC3.

2. Send Data to GC3 (Inbound)

There are various ways to send integration transmissions to GC3:

- HTTPPOST to <http://hostname/GC3/glog.integration.servlet.WMServlet> (Validation possible, Transmission XML must match schema of this GC3 version).
- HTTPPOST to <http://hostname/GC3/glog.integration.servlet.DirLoadServlet> (Faster than WMServlet, application server can be offline, validation impossible, Transmission XML must match schema of this GC3 version).
- HTTPPOST to <http://hostname/GC3/glog.integration.servlet.TransformerServlet> (Validation possible, Transmission XML can conform to other schema than this GC3 version).
- HTTPPOST to <http://hostname/GC3/glog.integration.servlet.PythonTransformerServlet> (Posted file can be a flat file).
- Upload an XML file in the Integration Manager (uses the WMServlet).
- Send data via a web service to the application tier.
- Use Oracle Advanced Queuing to send XML transmissions to GC3.

Send Data to GC3

To send a transmission with a new record to GC3, follow the instructions for the particular inbound interface for the type of record you want to send. You must send data that uses the GLogXML schema.

Send your data to this URL <http://hostname/GC3/glog.integration.servlet.WMServlet>

Send Data and Load Faster Into GC3

You can get GC3 to load your inbound transmissions into the database faster than the WMServlet and without involving the application server. This is good when you just want to load data into GC3 and process the data later, like during setup of GC3.

DirLoadServlet only supports these interfaces:

- TransOrder - You must include the GID to be able to have the application server offline.
- Shipment
- ShipmentLink
- TenderResponse
- Location
- Item
- ItemMaster
- HazmatGeneric
- HazmatItem
- ShipmentStatus
- Invoice
- Release
- ShipmentGroup
- SShipUnit
- Sku
- SkuTransaction

- Contact
- TransOrderStatus

Note: The DirLoadServlet does not raise events (like shipment - created for ActualShipment) so agents cannot be triggered. This means that to realize the benefits of the DirLoadServlet, you should only use interfaces that do not require processing. Examples of interfaces not requiring processing are Location, Contact, and Item. See the agent manager online help to learn more about what agents cannot start when using DirLoadServlet.

Note: GC3 ignores your AckSpec element. Instead, the DirLoadServlet HTTPPOSTs the TransmissionAck back to the IP address you sent your Transmission from.

To do this:

1. Make sure your transmissions only use the transaction code I.

It is possible to use other transaction codes but with the limitation that you need to make sure that no user accesses that data through the application server while you update/delete your data. If a user accesses the data, you need to restart your application server after uploading your data to refresh its caches. To use other transaction codes with the DirLoadServlet you need to enable them in glog.properties.

2. If you load many transactions and want to increase loading speed, you can increase the number of threads assigned to load the data in glog.properties.
3. Post XML transmissions to `http://hostname/GC3/glog.integration.servlet.DirLoadServlet`

Result

1. DirLoadServlet saves your data to the database
2. DirLoadServlet sets default statuses for business objects you insert.

Send Data via a Web Service to the Application Tier

In order to send data via a web service you must supply a URL and a WSDL file. The host name in the URL should be the application host, not the web host. WMSERVICE is the name of the supplied integration web service. Its URL must be: `http://host/GC3Service/WMSERVICE/call`.

The web service supports three operations. Each operation is document-style RPC. That is, it takes a single argument representing the XML document (i.e. the <Transmission>) and returns a document holding:

- the <TransmissionAck> for standard transmissions; or
- a <Transmission> holding one or more <RemoteQueryReply> transactions for queries.

The operations are:

- process – accepts a simple xsd:string parameter and returns a simple xsd:string result. The integration XML is embedded in the SOAP message.
- processAttachment – uses a text/xml MIME attachment to pass the document into GC3. Sends the reply via a similar text/xml MIME attachment
- processZip – uses an application/g-zip MIME attachment to pass a g'zipped version of the document into GC3. Send the reply via a similar application/g-zip attachment.

The processAttachment method should run slightly faster than process since it does not have to check the integration XML for well-formedness. The processZip method can significantly reduce network bandwidth for large transmissions. The process method, though, is easier to use and better for interoperability (since .NET does not understand MIME attachments).

Change Schema with XSL

You can get GC3 to transform your inbound transmissions from another XML schema to GLogXML. To do this:

3. Upload the XSL file or files that GC3 must use to transform your inbound transmissions.
4. Include this processing instruction in the beginning of every transmission that GC3 needs to transform:

```
<?gc3-int-translate stylesheet_name="stylesheet_name"?>
```

stylesheet_name is the file name of the XSL file you have uploaded. You can include multiple processing instructions in one transmission, in which case, GC3 will transform in the order the processing instructions appear in the transmission.

5. Post XML documents to `http://hostname/GC3/glog.integration.servlet.TransformerServlet` instead of `http://hostname/GC3/glog.integration.servlet.WMServlet`

Transform Flat Files into GLogXML

The `PythonTransformerServlet` lets you transform inbound and outbound data, including converting flat files to XML Transmissions, and back. If want to transform from one XML format to GlogXML format, you may use the `TransformerServlet`, which is configured using XSL instead of python.

The `glog_deploy/integration/python` directory, on your GC3 server, contains a sample python script and sample data that illustrates the use of the `PythonTransformerServlet`. The two files are:

- `SampleOrderFlatFile.txt` - example of what one of your extracted files may look like.
- `SampleOrderTransform.py` - converts a flat file, having the format of `SampleOrderFlatFile`, to a GLogXML Transmission containing `TransOrder` elements, and forwards the generated XML Transmission to the GC3 `WMServlet` for processing

Here is a sample command line to send the `SampleOrderFlatFile.txt` file to the `PythonTransformerServlet`:

```
python ClientUtil.py -command sendXMLFileViaHttpPost -fileName
SampleOrderFlatFile.txt -url
http://hostname/GC3/glog.integration.servlet.PythonTransformerServlet?s
criptName=SampleOrderTransform.py&glUserGID=GUEST.ADMIN&glPassword=CHAN
GEME&hostname=hostname&mailto=user@company.com&smtphost=mail.company.co
m
```

In the above command line, `ClientUtil` sends the `SampleOrderFlatFile` to the `PythonTransformerServlet`. The `scriptName` argument tells the `PythonTransformerServlet` to run the `SampleOrderTransform.py` script. The remaining arguments are forwarded to the `SampleOrderTransform.py` script, which it uses to build the XML Transmission and forwards it to the `WMServlet`.

The `SampleOrderTransform.py` script writes tracing information to standard output, which the `PythonTransformerServlet` captures and returns to `ClientUtil.py`. `ClientUtil.py` in turn, echoes this information to its standard output. You may parse this output to determine if something went wrong in the process.

Setup

In order for the above command to work, you must:

- Make sure python is installed on your GC3 server.

- Make sure python properties are set in glog.properties.
- Create your python transformer script.
- Upload your python transformer script to the GC3 webserver for example using the integration manager.

Transaction Codes

Transaction codes tell GC3 what to do with the transmissions it receives from other systems. In the Transaction Code element field, enter one of the following values:

- I - Insert. Use this transaction code to send new information to GC3. GC3 creates a new record.
- II - Insert. This transaction code is only valid for Location and Item Master integration messages. When the GLogXMLElement is Location or Item, the transaction code is "II," and the location or item already exists in the database, then the transaction record is not written to the i_transaction table. This will result in an updated file, instead of an insert, and it will not post a "record already exists" error message to the error log. If the location does not already exist, then the "II" is changed to a transaction code of "I," which will insert a new record.
- U - Update. GC3 updates an existing record.
- IU - Insert and Update. GC3 creates a new record unless it already exists, in which case GC3 updates the existing record with the new information.
- UI - Update and Insert. This works the same way as IU.
- D - Delete. Use this transaction code to delete an existing record.
- NP - No Persist. Use this transaction code to keep GC3 from persisting data to the database. For example, enter NP if you do not want to persist public locations.
- RC - Replace Children. Use this transaction code to delete all child data corresponding to the top level parent, update the top level parent, and insert the new child data. You use the ReplaceChildren element to specify what child elements GC3 should replace. The remaining elements are processed using the IU transaction code.

Uppercase GIDs and Xids

It is a good idea to only use uppercase GIDs and XIDs in your transmissions. This is because GC3 web pages only search for uppercase text strings. If you created a record with a lowercase XID using an XML transmission, it will be hard to find that record using GC3 web pages.

Note: You should not create GIDs with trailing spaces, as these records will not be able to be looked up via the UI.

Business Number Generator (BNG)

You can send a transmission to GC3 without entering a value in the GID elements in the XML transmission (for example, Ship Unit ID, Order Release ID, Order Base ID, etc.). GC3 generates values for these fields based on the default business number rules when the transmission comes into GC3. You can set up the BNG to create numbers that fit your needs.

Note: This only works for Transaction Code I.

Control Validation of Inbound Transmissions

After GC3 has processed a transmission, GC3 sends back a TransmissionReport to the external system with a list of validation errors.

System administrators can set the default level of validation that GC3 performs. Changing the validation level removes unnecessary queries for data that is valid.

If your GC3 installation validates all transmissions fully, you can skip validation for certain transmissions on a case-by-case basis. Just include this processing instruction in all transmissions where GC3 should skip validation:

```
<?gc3-xml-process validate_required_fields="N"?>
```

If instead your GC3 installation never validates errors or only validates when receiving persist errors from Oracle, you can get GC3 to validate certain transmissions on a case-by-case basis. Include this processing instruction in all transmissions GC3 should validate:

```
<?gc3-xml-process validate_required_fields="Y"?>
```

Blank Out Certain Fields

To delete values from certain fields in a record (without deleting the whole record), send a transmission of the record, enter the transaction code U in the Transaction Code element, then (in the field where data needs to be deleted), specify the field that needs to be deleted with a tilde (~).

For example, if a value was entered for the External System ID field in the TransOrderHeader, and that value needed to be removed in a subsequent TransOrder update, the following would be specified for the XML: <ExternalSystemId>~</ExternalSystemId>

Modify Records without GID

You can select or identify information to update or delete without using a GID by using a configurable matching integration saved query. This functionality is supported for Location, TransOrder, TransOrderLine, and Shipment.

Queries are written as SQL statements that contain references to the information in the incoming XML transmission. For example, a query for the TransOrderGID using a Refnum value with a qualifier of 'PO' may resemble the following:

```
select ob.ORDER_BASE_GID from OB_REFNUM ob where
ob.ORDER_REFNUM_QUAL_GID = 'PO' and ob.OB_REFNUM_VALUE =
' {TransOrder/TransOrderHeader/OrderRefnum[OrderRefnumQualifierGID/GID/X
id='PO' and (not(OrderRefnumQualifierGID/GID/DomainName) or
OrderRefnumQualifierGID/GID/DomainName = '' or
OrderRefnumQualifierGID/GID/DomainName = 'PUBLIC') ]/OrderRefnumValue} '
```

You can modify integration saved queries in Power Data. There are several integration saved queries that are used as defaults when certain elements are missing in your XML. If a TransOrder GID is missing, then the INT_TRANS_ORDER_GID_1 and INT_TRANS_ORDER_GID_2 saved queries are used. If a Shipment GID is missing, then the INT_SHIPMENT_GID_1 and INT_SHIPMENT_GID_2 saved queries are used. If a Location GID is missing, then the INT_LOCATION_GID_1 and INT_LOCATION_GID_2 saved queries are used.

The default integration saved queries are only used when the transaction code element has a value of U or D, and the above mentioned GID's are missing. Otherwise, any integration saved query you have defined with your XML will be applied.

The defined queries must return a single GID of the element being referenced (for example, Order_Base_GID for TransOrder, Shipment_GID for Shipment, etc.). When a query returns multiple items, it will generate an error. GC3 supports up to two queries for each interface/record. If the first query generates an error or does not resolve to a single record, the second query will be applied.

For transactions that apply to multiple GIDs, the status for each individual GID is maintained. You search for the multiple transactions in the Transmission Manager.

Including Non 7-Bit ASCII Characters

To be able to send transmissions to GC3 containing characters outside the 7-bit ASCII character set, you must:

- Make sure your database uses an encoding that can handle all the characters you need.
- Specify that same encoding in your XML file. For example, `<?xml version="1.0" encoding="UTF-8"?>`
- The default character encoding for inbound XML transmissions is UTF-8. GC3 will receive transmissions in other formats as well. To accept character encoding in ISO-8859-1 format, specify it in the XML file. For example, `<?xml version="1.0" encoding="ISO-8859-1"?>`
- Save your XML file using that same encoding. For example in UTF-8 format.

XML Spy, Textpad and Notepad (Microsoft Windows 2000 or better) can all save in UTF-8 format. If you use WebMethods or some other third party software package to http post your transmissions, see their documentation for how to send XML in UTF-8 format.

WMServlet Client

When uploading files with WMServletClient you need to specify the proper encoding on the command line. The XML must be transmitted as a stream of character data with a specified encoding of either ISO-8859-1 or UTF-8. The character stream must not be "mime-encoded". WMServlet is not designed to handle mime-encoded data. You must use the "Content-Type" attribute on the http header to indicate that it's a stream of character data with a given encoding.

GC3 Internal Processing

To understand how to automate integration and use agents, it helps if you know more about what GC3 does internally. This section lists the main internal events after you have sent a transmission to <http://hostname/GC3/glog.integration.servlet.WMServlet>.

The integration module does the following:

1. Extracts authentication information from the TransmissionHeader. This information can be in the HTTP header instead.
2. Validates username and password.
3. Splits transmission into transactions.
4. Sends a TransmissionAck to the IP address of the external system that sent the transmission.
5. Validates the contents of the transactions. The integration module validates the following:
 - Foreign keys, for example a LocationGID must exist in the Location table.
 - Data Types, for example a number only contains numeric characters.
 - TransactionCode. If set to I, the integration module checks that the primary key does not exist. If set to U or D, the integration module checks that the primary key does exist.
 - Required Elements are not NULL.
6. Saves any validation errors
7. If there are agents listening for pre-persist events, those agents kick in now. An example of this is the public Order Base - Insert agent for TransOrder transmissions.
8. Sends a TransmissionReport with validation errors; Depending on your property settings, GC3 might only send a TransmissionReport if there are errors.

9. Persists transactions to corresponding database tables. Converts strings to data types; string to Boolean, string to date, and so on.
10. If there are agents listening for post-persist events, those agents kick in now. There are a number of public agents that start at this point.

3. Send Data From GC3 (Outbound)

There are various ways to send integration transmissions from GC3:

- Some messages are sent automatically as the result of workflow notification.
- Send and schedule integration transmissions in the Process Manager.
- Re-send and schedule integration transmissions in the Process Manager.
- Send transportation records to external systems from various managers using the Go drop-down action. The type of information you can transmit is determined by the location in GC3 from which you are sending it.
- Send transportation records to external systems from various windows in the Control Center (for example, the Order Releases Window) by choosing the Send Interface Transmission action.

Note: Before you can send integration data to an external system, you must define the system in the Communication Manager.

Note: The default character encoding for outbound XML transmissions is UTF-8.

Change Schema With XSL

Do the following to have GC3 transform your outgoing transmission from GLogXML to some other XML schema.

1. Define an XSL file that transforms between the schemas.
2. Upload the XSL file.
3. Define that the XSL file should be used for a specific External System.

Transform GLogXML Into Flat Files

The PythonTransformerServlet lets you transform outbound data, including converting XML Transmissions into flat files. For example, you may want to extract certain information from the PlannedShipment information sent from GC3, put it into a flat file, and forward it to a legacy system. If want to transform from GlogXML to another XML format, you may use an XSL file instead of python.

To transform GlogXML into flat files:

1. Make sure python is installed on your GC3 server.
2. Make sure python properties are set in glog.properties.
3. Write a transformation script in python, which could be loosely based on SampleOrderTransform.py (in the glog_deploy/integration/python directory). Loosely because it would perform the reverse activitywriting a flat file from XML content, instead of building XML content from a flat file.
4. Upload the script to the GC3 webserver using the integration manager.

5. Configure an external system to post the PlannedShipment transmission to the PythonTransformerServlet. The URL in this external system would refer to the PythonTransformerServlet, and would specify the name of your transformation script using the "scriptName" argument. PythonTransformerServlet forwards any other arguments you include to your python script. Here is a hypothetical URL to use in the external system record, assuming your scriptName is "MyShipmentTransform.py".

<http://localhost/GC3/glog.integration.servlet.PythonTransformerServlet?scriptName=MyShipmentTransform.py&legacyHost=orion>

The above example assumes that the MyShipmentTransform.py script converts an XML Transmission containing a planned shipment to a flat file, and forwards the flat file to a host called "orion".

GC3 Internal Processing

To understand how to automate integration and use agents, it helps if you know more about what GC3 does internally. This section lists the main internal events when you send a transmission from GC3.

GC3 does the following:

1. Populates the generated Java classes based on a SqlQuery.
6. Converts the Java classes to XML.

Wraps the XML in Transmission elements.

Wraps the transmission in a HTTPPOST. The content type is text/xml. GC3 does not require an acknowledgment from the external system.

Posts the transmission.

Saves successfully sent transmissions to the I_TRANSMISSION table.

4. Types of Interfaces

GC3 offers the following integration interfaces:

Data Loading

Interface	Inbound	Outbound
Contact - defines a person that can be contacted through GC3.	In	-
CSVFileContent- Sends and receives data in CSV format. You can use it to send any type of integration data but the most important function is to send rate offering information to GC3.	In	-
ExchangeRate – Sends the exchange rate for a particular interface to GC3.	In	Out
HazmatGeneric - Transmits hazardous material based on the shipping name for an item.	In	-
HazmatItem - Sends and receive records for particular hazardous items.	In	-
ItemMaster - Transmits item master data to GC3. Item master data includes item numbers, descriptions, and packaging details. Item master data must exist in GC3 before you can import transportation orders.	In	Out
Location - A place where transportation related activities, such as loading and unloading freight, occur. In addition, a location is a corporation, and/or a service provider. Use the location element to transmit location information, for the Transportation Orders interface.	In	Out
Mileage - Defines the distance between points for a particular Lane.	In	-
ServiceTime - Transmits the time it takes to go between the two locations of an X Lane. Service Time can be included as part of the Mileage element or transmitted to GC3 as a stand-alone XML Element.	In	-
XLane - Defines a link from a source to a destination. The source and destination may specify either general or specific geography. For example, a source could be an exact location, or an entire state.	In	-

Transport Flow

Interface	Inbound	Outbound
TransOrder - GC3 receives transportation orders from external systems. These orders can include basic information such as IDs, pick-up and delivery dates, service providers, and details such as ship units or line items.	In	Out
OBShipUnit - contains information on ship units in an order base.	-	Out
OBLLine - contains information on lines in an order base.	-	Out

Interface	Inbound	Outbound
TransOrderStatus - sets order base status events.	In	-
BulkPlan - Describes the orders that GC3 planned and the shipments that GC3 created.	-	Out
BulkRating - Describes rating statistics on the orders that GC3 planned and the shipments that GC3 created.	-	Out
BulkTrailerBuild - Describes the shipment groups created during the bulk trailer build process.	-	Out
Release - Transmits order release information to and from GC3.	In	Out
ReleaseInstruction - Allows you to specify line items and ship units, and release specific quantities of them for a particular order base.	In	Out
ActualShipment - Third parties send actual shipments to GC3, which define the final form of a shipment.	In	-
TenderOffer - Once a shipment has been planned, GC3 sends a tender offer to a service provider. The tender offer provides a contract for the service provider to carry a particular shipment.	-	Out
TenderResponse - Receives responses from service providers regarding tender offers.	In	-
ShipmentStatus - Service providers and other third parties transmits shipment event information to GC3.	In	Out
ShipmentLink - Identifies related shipments at a consolidation or de-consolidation pool for both inbound and outbound interfaces.	In	-
ShipmentGroup - Specifies shipment group header information and the associated shipments in a group.	In	Out
ShipmentGroupTenderOffer - Notifies a service provider of a shipment group pickup.	-	Out
PlannedShipment - GC3 builds planned shipments and sends them to service providers as part of the tender process or to a warehouse management system (WMS).	-	Out
SShipUnit - Queries for and updates a Shipment/ShipUnit without information on what shipment(s) it belongs to.	In	-
OrderMoveReplace - Order Movement Replace (OMR) is used to bring in Production Lot and Delivery Lines information to carry out the necessary modifications to Order Movements.	In	-

Financial

Interface	Inbound	Outbound
Invoice - Represents what is owed to the service provider for transporting the shipment.	In	-
Billing - Sends transmissions to an accounting system for customer billing. The billing information represents the amount owed by a customer to the planner of a shipment. The billing transmission includes the customer who is being charged and details of the bill such as the amount due, the date due, and any discount information.	-	Out
Voucher - Transmits payment information. A voucher represents the cost of a shipment owed to a third party such as a service provider.	-	Out
AllocationBase - Sends order release allocation cost information to an order owner.	-	Out
FinancialSystemFeed - For future use. Sends billing and shipment cost allocation information to an external financial system.	n/a	n/a

Miscellaneous

Interface	Inbound	Outbound
TransmissionAck - Immediately upon receiving a transmission, GC3 sends a receipt back to the external system that sent the original transmission.	-	Out
TransmissionReport - Once a transmission is processed, GC3 sends a report that indicates any problems with the transmission.	-	Out
TransactionAck - Acknowledges receipt and processing of a Transaction.	In	-
RemoteQuery - Queries GC3 for rate information, based on quantity, locations, and/or dates of a shipment.	In	-
RemoteQueryReply - Provides GC3's response to a remote query about rates and shipments sent by a customer. Remote queries are used to gather information (for example, a customer can ask for rates based on quantity, locations, and dates).	-	Out
DataQuerySummary - Sends a summary of the data required by an external system.	-	Out
Job - Sends data that addresses how logistics services providers and freight forwarders manage the services they provide within GC3. A Job offers a workspace that brings together the objects and activities required of them.	-	Out
RATE_OFFERING - is a general contract with a service provider. It indicates what rate offering data was used to rate the shipment.	-	Out

Interface	Inbound	Outbound
RATE_GEO - provides specific costing or rating data from one place to another. It indicates what rate record data was used to rate the shipment.	-	Out
Schedule - Sends schedules as input to the processes for building shipments and assigning orders into batches.	In	Out
SKU - Defines a stock keeping unit including what quantities to keep in stock, and the actual amount in the warehouse.	In	-
SKUTransaction - Represents a shipment of SKUs arriving or leaving the warehouse.	In	-
Topic - Raises a topic and gets GC3 to start processing an object.	In	-
GenericStatusUpdate - Updates the external statuses of Locations, TransOrders, Payments, OrderReleases, Shipments, Vouchers, ShipmentGroups, and Schedules.	In	-

5. Setting Up Interfaces

The following general information helps you set up your interfaces. If an interface has specific setup requirements, they are found with the pages defining each interface.

To set up interfaces, you must define where to send transmissions and what to do with the transmissions GC3 receives. Information throughout GC3 acts interdependently; one piece of information depends on another to perform an action. For some interfaces to work, data from other sources must already be present in GC3. For example, before you can create a shipment, you must create itineraries.

Define External Systems

To send transmissions to other systems, you must define the systems in GC3 using the Communication Manager.

User Management

You must add service providers as users and enter user associations for them. To perform user management functions, log in to the SERVPROV with a username that contains administrator (ADMIN) rights.

- Define service providers as users in GC3.
- Define associations for the service providers.

Workflow Parameters

In Power Data, define workflow parameters that determine how GC3 responds to inbound and outbound transmissions. You define Workflow Power Data topics to define the way the tendering shipments works.

- Workflow Parameters - Use the Workflow Parameters to define how GC3 tenders shipments. You also define shipment notification messages. For example, you define information, warning, and, fatal messages that GC3 sends out as the results of status information sent by service providers about particular shipments.
- Workflow Trigger Parameters - Use the Workflow Trigger Parameters to define how often GC3 performs tender activity. This topic helps you control system performance. For example, if GC3 is performing tender actions too frequently, your system performance may be slowed.

Agent Manager

The Agent Manager lets you construct workflow agents that are key components to automate GC3. A workflow agent listens for a GC3 event, verifies a user-defined condition, and executes one or more actions that you choose from an action library.

6. Interfaces

You can view diagrams of the XML schema for the interfaces in the online help or by viewing the XSD file with an XML management tool.

ProcessInfo

ProcessInfo controls how GC3 processes GLogXMLElement elements. You can think of ProcessInfo as a transaction header.

In the WhenToProcess element, you can specify "END_OF_TRANSMISSION" or leave it unspecified. If you specify END_OF_TRANSMISSION, then GC3 processes that transaction after all other transactions in the transmission. This setting is useful for making sure that GC3 processes a Topic transaction last in a transmission.

If you leave WhenToProcess unspecified, then GC3 processes as normal and according to the other ProcessInfo elements.

Note: GC3 ignores the WhenToProcess element if you set IsProcessInSequence=Y in the TransmissionHeader.

Shipment Interfaces (INS)

Shipment interfaces work for both outbound and inbound processing. For example, you can send shipment transmissions to service providers as part of the tender process and receive actual shipment transmissions back from them representing what is actually being shipped. In addition, shipments can be sent to GC3 for processing that do not have order information associated with them.

Note: All shipments use the same interface schema diagrams.

Planned Shipments

Use this interface to send planned shipments from GC3 to an external system. Planned shipments perform two functions:

If a warehouse management system (WMS) is defined as one of the involved parties for the shipment, GC3 automatically sends a transmission containing the shipment information to the WMS to determine if the items that are being shipped are available. For example, GC3 sends a planned shipment to a warehouse, requesting 5000 pounds of food be shipped to a customer.

GC3 sends the planned shipment as part of a tender offer to the service provider associated with the shipment. Planned shipment transmissions get sent to service providers automatically when a tender offer is made or withdrawn.

Actual Shipments

Transmissions in the actual shipment interface define working shipments that are sent to GC3 by third parties, such as service providers. For example, when a shipment is tendered to a service provider, a copy of the planned shipment is included with the tender offer. The service provider responds to the tender and, if the service provider accepts, sends the actual shipment transmission back to GC3. The actual shipment represents the working shipment that is being transported (A planned shipment represents what GC3 expects the shipment to contain).

If the service provider sends a new order release as part of the actual shipment, GC3 creates an order release and order base for the new release.

An actual shipment is required to print shipment documentation such as a bill of lading or Domestic Packing List.

Updating Parts of a Shipment

When sending an actual shipment to GC3 you often want to update parts of an existing shipment. Generally the TransactionCode of the Shipment (ShipmentHeader/TransactionCode) provides the guiding rule for the child elements. Here are some examples:

Element	Description
Shipment/ShipUnit/ShipUnitContent	<p>If TransactionCode=IU, a LineNumber that does not exist will be added, otherwise updated.</p> <p>Currently, you cannot delete an individual line.</p>
Shipment/ShipmentHeader/ShipmentRefnum	<p>If TransactionCode=IU, a new QualifierValue pair will be added.</p> <p>You can delete (and replace) using the GenericStatusUpdate interface.</p>
ShipmentHeader/Remark	<p>If TransactionCode is IU and the RemarkSequence does not exist, then GC3 will automatically generate a sequence number and add the remark.</p> <p>If TransactionCode is IU and the RemarkSequence does exist, GC3 updates with a new RemarkQualifier and RemarkText.</p> <p>If you supply neither a RemarkSequence nor a RemarkQualifier, GC3 adds the RemarkText as new Remark.</p> <p>You can delete (and replace) using the GenericStatusUpdate interface.</p>

In the Shipment element, if you set the transaction code to RC and set the ReplaceChildren/ManagedChild element to "ShipmentStop", GC3 deletes all shipment stops for that shipment and replaces the deleted shipment stops with the shipment stops from your transmission.

Note: This does not apply to shipment stops marked IsPermanent (same as Permanent checkbox in GC3 web interface).

In the Shipment element, if you set the transaction code to RC and set the ReplaceChildren/ManagedChild element to ShipmentStopDetail, GC3 replaces the existing ship units with the ship units in your transmission.

Note: This does not apply to existing ShipmentStopDetails marked IsPermanent.

Note: Within ShipmentStopDetail, the removal of the reference to the ShipUnitGID(s) will not remove the S_Ship_Unit from the system. Only the reference to the object is removed.

In the Shipment element, if you set the transaction code to U and the Shipment ID is missing from either the transaction or the database, you will receive an error.

When a new shipment referencing a ship unit is added with missing ship unit data, then the ship unit data is pulled from the database. When a new shipment referencing a ship unit is added with new data, then the ship unit data passed in through integration is used.

Adding Ship Units

An added ship unit should be linked to an order release that is on a shipment (this order release must be planned on the initial shipment) and should be linked to the initial pickup location. If the flag on the Shipment Header indicates "Propagate Updates," the GC3 integration layer will call business logic to add the new ship unit to subsequent stop on the initial shipment and all affected succeeding shipments.

To add a Ship Unit to a Shipment, the following must be done in the ActualShipment XML interface:

1. Specify a flag to indicate that new Ship Unit should be applied to downstream Shipments.

```
ActualShipment.Shipment.ShipmentHeader.IntCommand.IntCommandName = "PropagateShipUnitChanges"
```

Indicate that DropOff stop should be determined for the Shipment, but not to propagate the ShipUnit changes.

```
ActualShipment.ShipmentHeader.IntCommand.IntCommandName = "DetermineShipUnitDropoff"
```

Specify the new Ship Unit.

```
ActualShipment.ShipmentHeader.Shipment.ShipUnit.ShipUnitGID =
```

Specify the Transaction Code (optional).

```
ActualShipment.ShipmentHeader.Shipment.ShipUnit.TransactionCode = "I" or "IU"
```

Specify the pickup stop for the Ship Unit.

```
ActualShipment.ShipmentHeader.Shipment.ShipmentStop.ShipmentStopDetail.Activity = "P"
```

```
ActualShipment.ShipmentHeader.Shipment.ShipmentStop.ShipmentStopDetail.ShipUnitGID = ShipUnit.ShipUnitGID
```

ShipmentFrom and ShipmentTo Locations can in the Shipment.ShipUnit element are ignored. They will be based on the Release.

Assign an SEquipment for the new ShipUnit via one of the following options:

Using the ShipUnit.SEquipmentGID element

Allow integration to assign it by using

```
ActualShipment.ShipmentHeader.Shipment.ShipUnit.SEquipmentGIDQuery.SequipGIDMatchOption = "Any"
```

Query the SEquipmentGID using the

```
ActualShipment.ShipmentHeader.Shipment.ShipUnit.SEquipmentGIDQuery.IntSavedQuery
```

Have the business logic assign it by not specifying the element in the ShipUnit

Updating Ship Units

The updating of ship units means Packaged Items can be deleted or added to those ship units. Quantities from existing items can also be changed.

The following options are available via integration:

In the SShipUnit XML interface:

```
SShipUnit.TransactionCode = "RC"
```

```
SShipUnit.ReplaceChildren.ManagedChild = "ShipUnitContent"
```

In the ActualShipment XML interface:

```
Shipment.ShipmentHeader.TransactionCode = "RC"
```

```
Shipment.ShipmentHeader.ReplaceChildren.ManagedChild = "ShipUnitContent"
```

In the Shipment.ShipUnit.SShipUnit XML interface:

```
ActualShipoment.Shipment.ShipUnit or ActualShipment.Shipment.SShipUnit  
SShipUnit adds the ability to query for the ShipUnitGID if it's not  
known
```

Deleting Ship Units

Deleting a ship unit only removes the link between the shipment stop and the ship unit, as well as the link between the ship unit and equipment. The actual ship unit will not be deleted from the database. Integration will also attach the ship unit remark, "Ship Unit Not Picked Up" to the ship unit.

A ShipUnit can be marked for removal from the Shipment via the TransactionCode as follows:

```
ActualShipment.Shipment.ShipUnit.TransactionCode = "DR"
```

where "DR" corresponds to "Delete Reference." The ShipUnit will be removed from the Shipment, but not deleted from GC3.

Alternatively, you can delete ship units from a shipment using the IntCommand via integration. You can either delete all the ship units from the shipment, or only those that are marked as non-permanent. When used, the ship unit record, its shipment stop detail record, and any corresponding equipment, is deleted.

Specify the integration command as follows:

To remove all ship units:

```
<IntCommand>  
  <IntCommandName>RemoveAllShipUnits</IntCommandName>  
</IntCommand>
```

To remove only non-permanent ship units (where IsPermanent = 'N'):

```
<IntCommand>  
  <IntCommandName>RemoveNonPermanentShipUnits</IntCommandName>  
</IntCommand>
```

To remove orphaned ship units, use the command below. This specifies that the ShipUnits that have been removed from the Shipment via the DR transaction code should be deleted if no other Shipments refer to them. Without this command, those ShipUnits are left in the system and can later be added to other Shipments.

```
<IntCommand>  
  <IntCommandName>DeleteOrphanedShipUnits</IntCommandName>  
</IntCommand>
```

Alternative Interfaces For Updating Ship Units

For alternatives to using this interface to update ship unit information see SShipUnit and TransOrder.

Tips For SAWs

Element	Description
ShipmentHeader2	In Shipment/ShipmentHeader2, the most important element is ShipmentAsWork and it should almost always be set to "Y". The exception is when:

Element	Description
	<p>1) The shipment is new</p> <p>AND</p> <p>2) There is at least one release associated with the shipment</p> <p>OR</p> <p>the shipment.ShipmentHeader2.</p> <p>autoGenerateRelease = "Y"</p> <p>To avoid confusion, set the Perspective element to "B." If Perspective is not specified, it will default to "B". All other elements in this branch are completely optional from a schema and business perspective.</p>
ShipmentHeader, use correct rate	In the Shipment/ShipmentHeader, if you can get them, it is good to provide the RateOfferingGID and the RateRecordGID. This helps GC3 use the rate for the service provider that actually took the load. If you can't get information for these elements, the ServiceProviderGID would be the next best thing to use.
sPlannedTimeFixed	If you want to send in old shipments (past dates) and want GC3 to rate with correct rates (pertaining to correct effective/expiration dates), then you may want to use the Shipment/ShipmentStop/ArrivalTime/EventTime/IsPlannedTimeFixed flag set to "Y". You only need to insert the ArrivalTime element at the first stop (only) and that the date here should be the same as the StartDate of the shipment.
SEquipment	<p>GC3 requires at least one SEquipment object. When you insert a new SAW, GC3 creates a default SEquipment if you do not provide one. If there are several ship units, the same (created equipment) is specified for each ship unit. The only thing really required in SEquipment is the SEquipmentGID. To avoid problems later, include the SEquipment element and set the SEquipmentGID to the same value as the ShipmentGID. This makes it easier to identify and manage the SEquipment, if there is ever a need in the future to specify multi-equipment, or update the Shipment with additional ShipUnit information.</p> <p>Note: When you update a SAW with a new shipunit, you must include the SEquipmentGID. GC3 cannot create one for you.</p>

Element	Description
TransOrder	The Shipment/TransOrder element is outbound only so you cannot include it. Any TransOrderHeader info should be specified in the Release/TransOrderHeader element.
Locations	When specifying source and destination locations in the Shipment/Release/ShipFromLocationRef and Shipment/Release/ShipToLocationRef elements, refer to locations already defined in GC3 instead of defining new ones (using Shipment/Release/ShipFromLocationRef/LocationRef/Location). This saves you the effort of providing all the Location elements. To refer to existing locations, use the Shipment/Release/ShipFromLocationRef/LocationRef/LocationGID element.
ShipUnits	Set ShipmentHeader2/AutoGenerateRelease to "Y" to avoid having to populate both Shipment/Release/ShipUnit and Shipment/ShipUnit. Note: GC3 generates an error if AutoGenerateRelease is set to "Y" and you still include the Shipment/Release element.

Order Centric Modifications

Most modifications via this interface are based around shipment ship units (SShipUnit). In these cases, all weight, volume, quantities, and rating are based on shipment ship units. For users who would like to modify shipments based on order information, you can do so by using the following sub-elements in the ShipmentHeader element:

- ShipmentModViaOrderLine
- ShipmentModViaOrderSU

When these two elements are used in the ShipmentHeader, the following logic will be used instead of the standard Shipment Interface logic:

1. GC3 will only interact with the order line level or order ship unit information instead of the shipment ship unit level information.
2. The logic addressing shipment modifications will change the number of order ship units involved and allocate the delta in the ship unit counts across multiple ship units.
3. The modified order ship unit count will be properly propagated and the related business objects (shipments and order movements) will be updated across legs.
4. The modified gross weight and volume will be updated per ship unit. This would then be reflected in the shipment total gross weight and volume, which impacts the shipment cost. This should only be applied when the AffectsCurrentLegOnly element is set to 'N'.

Both of these elements will only be included once on the shipment. There is no need to repeat this data for both the pickup stop and the delivery stop. Since the Shipment Interface is defined the same on the inbound and the outbound, you can only specify one way for the modification to happen, either at the order line level or the ship unit level.

ShipmentModViaOrderLine

The ShipmentModViaOrderLine element will contain all of the counts, weights, and volumes for that order (order release, order release line, or order base) that is being shipped on this shipment across all the shipment ship units.

ShipmentModViaOrderSU

The ShipmentModViaOrderSU element, GC3 will loop through all the ship units that are on the shipment that have the same order ship unit gid (ob_ship_unit_gid or or_ship_unit_gid).

The inbound XML will accept this data into GC3 when you are doing a modify transaction. When the integration brings in this modification it will call business logic that will apply allocation rules and perform the appropriate updates.

Data Requirements

To send shipments and perform planning actions, you must make decisions about the way you want GC3 to perform certain actions.

Sending Shipments (Shipment as Work)

Send shipments that do not have orders associated with them to GC3 for processing using the Shipment interface. This type of shipment is known as a shipment as work or manual shipment; it can include order level information, but not necessarily. These shipments are not bundled, re-consolidated, or re-sequenced.

A shipment as work must have at least one pickup and one delivery location. A shipment as work is not associated with an itinerary.

Note: To indicate that the shipment you are sending to GC3 is a shipment as work, enter Y in the ShipmentAsWork element.

When a Shipment as Work is received, GC3 can be set to automatically perform certain actions defined in public workflow agents in the Agent Manager.

To ensure best possible performance, you should let GC3 process your actual shipments in parallel. To do this, either send only one actual shipment per transmission or follow these steps:

1. In the TransmissionHeader, set IsProcessInSequence to N.
Send all the actual shipments in one Transmission.

See the Shipment Manager help for a detailed description of manual shipments.

If you insert a new shipment and omit the end_date, GC3 sets the end_date to the same date as the start_date.

AllocationBase Interface

The AllocationBase outbound interface sends order release allocation cost information to an external system. Allocation is a method for dividing the cost of a shipment among its order releases based on the line items and ship units on the shipment. An allocation transmission consists of an OrderRelease GID and cost information. You can send allocation information about planned and actual shipments.

You can create an agent that send the AllocationBase interface using the agent action Send Allocation Interface. You can also send this interface from the Invoice Manager, Shipment Manager, and the Order Release Manager.

You must setup allocation to follow the rules for allocating shipments used at your organization.

Process Allocations

Instruct GC3 to send an allocation transmission using the Process Manager:

- Issue Allocation

- Bulk Allocation

Accrual Interface

The Accrual interface is used to transmit the allocated freight cost accrued or paid against orders. This can be used to communicate changes or differences in an order's allocated freight cost to other external systems. These differences, for example, could be used to establish liabilities in an accounting or general ledger system.

When the ALLOCATION GENERATES ACCRUALS planning parameter is set to TRUE and the shipment status is ACCRUAL_ALLOWED, the Allocation logic will generate an accrual record. The accrual record contains the difference between the current allocated freight cost and the previously transmitted freight cost. The delta between the two is used because a single order may be on multiple shipments, which are approved for payment in different time periods. These accrual records are sent as part of this interface.

The Accrual interface is supported on the outbound only. It can also be sent via the user interface in the Process Manager, Send Integration page.

ExchangeRate Interface

You can send exchange rates from and to GC3 through this interface. You might want to do this if the default IMF feed does not work for your requirements.

Insert New Exchange Rate Into GC3

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to I.
 - See the Exchange Rate Manager for a description of the fields.
 - See the ExchangeRate Diagram to learn which elements are required.

Transmission Results

GC3 saves your exchange rate definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Modify Exchange Rate in GC3

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to U.
 - Enter data in the elements that need to be updated and in the required elements.
 - See the Exchange Rate Manager for a description of the fields.
 - See the ExchangeRate Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified exchange rate definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Delete Exchange Rate in GC3

Required Data

You must know the ExchangeRateGID of the exchange rate definition you want to delete.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to D.
Enter the ExchangeRateGID.

Transmission Results

GC3 deletes your exchange rate definition in the database.

Error Messages

If you get a TransmissionReport that reads "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION:", make sure you are not trying to delete an exchange rate definition that is used elsewhere in GC3.

If you receive a TransmissionReport, check for Integration Messages.

Send Exchange Rate From GC3

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Exchange Rate Manager.
In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes all data specified for the exchange rate definition.

Transmission Results

Error Messages

Invoice Interface

Service providers and other third parties send invoices for payments on shipments to GC3 through the Invoice interface. The invoice transmission contains details about the payment and the specific transportation activity for which payment is owed.

Invoices can be automatically matched to shipments based on the Service Provider ID and Shipment Reference Number fields. If more than one shipment is found for an invoice, the invoice must be reviewed manually and assigned to a shipment, it must be rejected. After an invoice is approved, a voucher gets created. A voucher represents what the planner agrees to pay for the shipment.

Use the Settlement Managers to create and modify invoices and customer bills.

In some cases, you may need to send the Invoice interface outbound. This is true when sending a bill to yourself for internal invoice or billing purposes. When the Invoice interface is used outbound, then it will include all shipment details, as well as any associated order information.

Consolidated Invoices

1. You must send each invoice, parent and child, as a separate transaction.

Parent invoices must enter GC3 before any child invoices.

Child invoices may be sent inbound referencing a parent in one of two ways:

Populate the invoice number on the child to be that of the parent and integration will lookup the parent id based on the invoice number.

Populate the parent invoice ID on the child.

ItemMaster Interface

The ItemMaster interface provides a way to transmit item information to GC3. Items represent the freight being shipped. The ItemMaster transmission includes packaging elements, elements that describe the item, and any NMFC, STCC, SITC, or HTS codes that apply. In addition, a general ledger GID or accessorial charges can be included.

Note: Item information must be in GC3 before it can accept TransOrders that reference the item.

Itinerary Interface

The Itinerary interface is part of the GLogXMLElement element. It is used to define the path between two locations and specifies the constraints for building the shipment. This element is supported on the inbound only.

For details on the elements, both required and optional, as well as their format and descriptions, please view the XML Element Dictionary.

Job Interface

Use the Job Interface to send data that addresses how logistics service providers and freight forwarders manage the services they provide within GC3. A Job offers a workspace that brings together the objects and activities required of them, including:

- The ability to group all objects related to a job and perform existing functions/actions against those objects, including buy shipments, sell shipments, non-freight related charges, and customer bills.
- The ability to manage Jobs from various perspectives depending on responsibility. For example, export, import, both, or consolidations.
- The ability to manage settlement functions at the job level, including profitability, expenses, revenues, and billing.

Note: The interface is supported on the outbound only.

The primary business objects in the Job Interface are:

1. Order Releases
 - For each Order Release related to the job, JOB_ORDER_RELEASE_JOIN will be added to the XML. Although orders are not required to create a job, at least one order should be related to the job to send out the interface.
2. Buy Side Costs
 - The Buy Side Costs wrapper element contains two sub elements, Buy Shipments and Buy Allocation.

- Buy Shipments: Select all related orders. For each order, select all related buy shipments where the shipment job gid equals null or it equals the current job GID. There may be zero or more buy shipments.
 - Buy Allocation: Each Allocation will be selected for each order, where the allocation Shipment Job GID is equal to the current job or it is equal to null. There may be zero or more allocations.
- 3. Sell Side Costs**
- The Sell Side Costs works exactly the same as the buy side, except the selection criteria is based on sell side perspective.
- 4. Bills**
- Each customer bill related to the job will be included in the XML. Bills can be found in the JOB_BILL table. Zero or more Bills are required.
 - Because this interface can potentially be large, redundant data has been reduced across multiple data elements included in the interface. This includes:
 - The ability to only include the Order Release GID in the shipment, allocation, and bill elements.
 - The ability to only include the Shipment GID in the allocation and bill elements.

Location Interface

The Location element specifies a location.

Insert New Location Into GC3

Required Data

If your location is associated with a corporation, you need to have that corporation defined.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

A location may be transmitted to GC3 as a stand-alone transmission, or embedded in other transmissions. Sending a location embedded in another transmission can save time.

What Data Goes Into the Transmission?

1. Set the TransactionCode to I or II.
 - See the Location Manager for a description of the fields.
 - See the Location Diagram to learn which elements are required.

Transmission Results

GC3 saves your location definition in the database.

If you send a location to GC3 with a new child domain, GC3 adds the child domain to your database automatically.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Modify Location in GC3

Required Data

Setup

You control validation of incoming location transmissions with the `glog.integration.validation.locationinterface` property.

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to U.

Enter data in the elements that need to be updated and in the required elements.

See the Location Manager for a description of the fields.

See the Location Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified location definition in the database.

Error Messages

If you receive a `TransmissionReport`, check for Integration Messages.

Delete Location in GC3

Required Data

You must know the `LocationGID` of the Location you want to delete.

Setup

You control validation of incoming location transmissions with the `glog.integration.validation.locationinterface` property.

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to D.

Enter the `LocationGID`.

Transmission Results

GC3 deletes your location in the database.

Error Messages

If you get a `TransmissionReport` that reads "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION:", make sure you are not trying to delete a Location that is used elsewhere in GC3.

If you receive a `TransmissionReport`, check for Integration Messages.

Send Location From GC3

Required Data

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Location Manager.

In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes all data specified for the location.

Transmission Results

Error Messages

Mileage Interface

Use the Mileage interface to transmit distance information to GC3. The mileage interface identifies the distance between the points in a lane. Lanes may contain specific or general geographic information, such as:

- Zip code to zip code
- City to city
- State to state
- Zip code to city
- City to state
- Address to address
- City to address
- State to address

As a result, the mileage data may enter GC3 with different level of precision with regard to specific locations.

Mileage information may be changed whenever necessary, using the Mileage interface, or by using Power Data. The mileage interface may be used to create new lane information, or update existing information or when planning an order.

Release Interface

The Release interface transmits order release information to and from GC3. An order release represents the shippable portion of a transportation order. After you send a release, GC3 automatically creates an order base for it. A release from a Transportation Order corresponds to the particular Transorder Lines, which share common transportation requirements.

TransOrders represent the demand for transportation services, and consist of header information and either line items or ship units, but not both.

Note: The TransOrder element is only supported on the outbound Release interface.

An order release contains the following information:

- Order release ID that is automatically generated by GC3.
- Order release name and type.
- Order base ID that references the base order from which the order release was created.
- Source and destination locations.
- Early/late pick up dates.
- Assigned or fixed itinerary.
- Current status.
- Package or non-package data attributes.

Release Type

Populate the ReleaseType to tell GC3 how to release ship units. If the ReleaseType is not populated, the default will be ONE_TO_ONE.

Value	Description
PREPACK	GC3 will build a single ship unit for all lines on an order base.
AUTO_CALC	The number of ship units built for an order will be defined by GC3.
ONE_TO_ONE	Will build a ship unit for each order release line.
AUTO_CALC_UNIQUE	Acts the same as AUTO_CALC, but will create a unique ship unit record for each full ship unit.

Business Number Generator (BNG)

You can send a transportation order to GC3, without the entering values in the Transorder GID, Ship Unit ID, or Order Release ID elements in the XML Transmission. GC3 generates values for these fields based on the default Business Number Rule in place when the order comes into the system. You can set up the BNG to create numbers that fit your needs.

ReleaseInstruction Interface

The ReleaseInstruction interface allows you to select specific line items and ship units, and release specific quantities of them for a particular order base.

Included in this interface are detailed instructions for creating the order release.

For details on the elements included in this interface, and which ones are required versus optional, view the ReleaseInstruction diagram in the online help system.

RemoteQuery Interface

Use remote queries to request certain kinds of information from GC3.

Note: When you create a RemoteQuery, enter QUERY in the TransmissionType element.
<TransmissionType>QUERY</TransmissionType>

ShipmentQuery

Use the ShipmentQuery element to request information about a shipment. Send GC3 the shipmentID, and receive a shipment transmission that includes all the details associated with the shipment.

RIQQuery Interface

Use the RIQQuery element to request rate information for a shipment. Ask for rates based on service provider, transportation mode, quantity, locations, and arrival or departure dates. For example, you might request a list of carriers, show best rates, or fastest routes.

For air rates, GC3 looks for known shippers by default and therefore returns cargo as well as passenger flights.

If the AvailableBy element is not passed, the current date is used.

Note: For the remote query to work properly, rates, locations, itineraries, and all other shipment-related information must be fully loaded in GC3.

Note: You must create an External System and enter a correct IP address in order to pass authentication.

Transmission ReportQuery

If you send a transmission to GC3 but do not get a TransmissionReport back, use the TransmissionReportQuery element to request the missing TransmissionReport.

Note: This only makes sense if `glog.integration.TransmissionReport` has been set to yes.

RemoteQueryReply Interface

The RemoteQueryReply contains GC3's response to your RemoteQuery. You use the RemoteQuery interface to send remote queries to GC3.

GC3 automatically sends its RemoteQueryReply to the IP:port number of the originating RemoteQuery transmission.

If you are trying to send more than one RIQ into GC3 using the RemoteQuery interface, then you need to set the `glog.integration.RemoteQuery.WrapReplyInTransmission` property to 1. Since the RemoteQueryReply interface only sends one reply back, it will drop the additional RIQs. With this property set to 1, it will wrap the reply in the XML transmission which will send all the RIQs back in the reply.

ServiceTime Interface

Use the ServiceTime interface to transmit the time it takes to go from one point of an XLane to the other. You can use this information for shipment planning.

ServiceTime transmissions can be sent as part of a Mileage interface transmission. ServiceTime may also be transmitted to GC3 as a GLogXMLElement. When identified as part of a Mileage element, GC3 ignores the TransactionCode and XLaneRef elements.

ShipmentStatus Interface (INE)

Service providers and other third parties transmit shipment event information to GC3 with the ShipmentStatus interface. Shipment status information describes activity on shipments and shipment groups. For example, you can use shipment statuses to determine whether a shipment is running on time or whether it is late. In addition, you can send vessel and flight information, and equipment service provider and order information. Based on shipment status information it receives, GC3 can re-plan a shipment.

You can also send received ship unit quantities with this interface using the SStatusShipUnit element.

Insert New Shipment Status Into GC3

Required Data

Before you can send ShipmentStatus transmissions to GC3, you must set up the following:

- User accounts for service providers in GC3.
- Shipment Status Codes
- Shipment Status Reason Codes

- Shipment Event Groups
- Shipment Reason Groups
- Corporations for service providers

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

What Data Goes Into the Transmission?

1. To ensure that GC3 processes multiple ShipmentStatus transactions in the order you intend, set `IsProcessInSequence` to Y in the TransmissionHeader.

Identify which object (shipment, shipment group etc) the status applies to. Set `StatusLevel`, `ShipmentStatusType`, `ServiceProviderAlias`, and `ShipmentRefnum` or `IntSavedQuery`.

`ShipmentStatusType` must be set to one of `Shipment` or `ShipmentGroup`. Note that it is case sensitive. The integration logic assumes that it is a `ShipmentGroup` if the value is not matched to `Shipment`.

Optionally, identify which equipment the shipment status refers to with `SStatusSEquipment` element.

Include the time when the event occurred. To be sure that GC3 can interpret the time correctly, include the `TimeZoneGID` element. Alternatives to doing this is:

- If you cannot include the `TimeZoneGID`, GC3 can set the time zone to the time zone of the Location where the event occurred.
- If you cannot do this either, set the `TimeZoneGID` to `Local`. In this case, GC3 saves and displays the event date as entered, ignoring user preferences.

Enter your status information. In some cases, shipments can only have events added to them if they are of a certain status.

Identify at what `SSStop` (number or location name) the event (shipment status) occurred. The `LocationID` = Location Reference Number and the `LocationRefnumQualifierGID` = Location Reference Qualifier in the Location Manager.

If you have a Shipment Agent Type with the Recalc Estimated Stop Times Action, then you must include a `RATE_GEO` element for GC3 to be able to recalculate your estimated stop times and/or re-drive your shipment. If you omit the `RATE_GEO` element, GC3 only resets the stop times you provide.

See the Shipment Event Manager for a description of the fields.

See the ShipmentStatus Diagram to learn which elements are required.

Transmission Results

GC3 saves your information in the database.

Agents might have been set up to act upon receiving certain shipment statuses.

Error Messages

If you receive a `TransmissionReport`, check for Integration Messages.

Send Shipment Status From GC3

You can forward a received `ShipmentStatus` transmission to an external system with an agent. See the agent action called `SEND SHIPMENT STATUS XML`.

Match Events to an Object

You can use one of these methods:

- If you need the object (shipment or shipment group) to match many reference numbers, use IntSavedQuery.
- If you need the object to only match one out of a set of reference numbers, use ShipmentRefnums, or ShipmentGroupRefnums.

IntSavedQuery

If you specify the IntSavedQuery element, only that query is applied. You can define a query to search for shipments or shipment groups that shipment status applies to. To do this, set:

- IntSavedQueryGID to specify which query you want to use. If the query you specify here does not return any results, GC3 generates an error message. No other queries are applied. You must have created this query in Power Data beforehand.
- IntSavedQueryArg to arguments that can be referred to in the queries. For example, BM=YELLOW-0000007. If you omit this element, your IntSavedQueryGID must point to a query that uses XPath instead.
- IsMultiMatch to N to forbid multiple records to be returned from the query. If your query happens to return multiple records, GC3 generates an error message.

Refnums

If you omit the IntSavedQuery element, GC3 tries to match your shipment status with:

- The ShipmentRefnum elements to the shipment_refnum table in the database.
- The SSEquipment/ EquipmentIdentificationNum element to the S_Equipment.Equipment_Number field in the database
- The standard integration saved query INT_SHIPMENT_STATUS_GID_1
- The standard integration saved query INT_SHIPMENT_STATUS_GID_2

You can optionally enforce a rule that a give shipment may have only one shipment reference number with a given qualifier. The update_flag column in the shipment_refnum_qual table indicates if the rule is in effect or not. The valid values for the update_flag are:

- UPDATE_OK: Only one value is allowed for a give qualifier, the value of which can be modified.
- UPDATE_NOT_OK: Only one value is allowed for a give qualifier, the value of which cannot be modified.
- MANY: a given shipment can have multiple values for the same qualifier.

Match Events to a Shipment Stop

For GC3 to match an event to a stop on a shipment, you must include the SSSStopSequenceNum element.

Another way of matching event to shipment stop is to include the LocationID where the event occurred and the LocationRefnumQualifierGID in SSStop/SSLocation. This only works if you have enabled this feature in your glog.properties file. As long as GC3 can match your LocationID to a stop number, your shipment status saves as if you had supplied a stop number.

Note: If GC3 cannot match the event to a location, GC3 still saves the information but not for a specific stop and only as informational. You can also have GC3 send you a TransmissionReport if the LocationID is missing altogether (controlled by glog.properties). GC3 also set the time zone for the event to local.

Correspondingly, if the event is not related to a shipment stop to begin with, GC3 saves the event as informational with a local time zone.

A single stop related shipment event can be applied to multiple shipments, regardless of whether their stop numbers or location IDs are the same. This will allow for situations where you want to apply a single shipment stop event to stop 2, but stop 2 of shipment 1 and stop 1 of shipment 2 are both

Philadelphia. Stop related events are applied to all the shipments specified in the ShipmentStatus interface. To work successfully, the ShipmentStatus XML must include an IntSavedQuery element that will return two shipments. Logically, this is similar to having specified the ShipmentStatus message multiple times in the Transmission XML.

ShipStop Interface

The ShipStop interface is used to modify stop related information for a Shipment.

It is an easier alternative to updating shipment stop information than doing it directly through the Shipment interface.

There are four main elements to the ShipStop interface:

SendReason: Used to indicate the reason the notification/data/information is being sent to the external system.

IntSavedQuery: See online help for details.

ShipmentGID: It is a shipment global identifier. It uniquely identifies a shipment within the GC3.

ShipmentStop: They are the pickup and delivery points for a shipment. Ship units and lines represent the freight and packaging carried on a shipment from one stop to another. Sub-elements of the ShipmentStop element mirror the fields found in the Shipment Stops Manager.

TenderOffer Interface

Tender a planned shipment to a service provider.

The service provider's reply to the TenderOffer is sent through the TenderResponse interface.

Send New TenderOffer From GC3

Required Data

- Define an external system where GC3 should send the TenderOffer transmissions.
- Associate the contact of your service provider with the external system.
- Choose HTTPPOST or EDI as the main communication method for the contact of your service provider.
- Choose HTTPPOST or EDI as the main communication method for the logistics contact on the shipment. Choose the same communication method as for the contact of your service provider.
- Set up shipment planning and processing.

Setup

Set parameters in power data that determine how many tender offers are automatically sent for single shipment and how much time you want to allow before a tender times out.

How To Send the Transmission?

You can either use the Tender action in the Shipment Manager, or create an agent.

What Data Goes Into the Transmission?

Transmission Results

When you tender a shipment, GC3 performs the following actions:

- Sends notice of the tender offer to the service provider.
- Starts a timer that defines how long the service provider has to respond to the tender before it is withdrawn.
- Updates the shipment status to SECURE RESOURCES_TENDERED.

If the service provider declines the tender offer, GC3 automatically re-tenders the shipment and re-initiates the tender process by sending a tender transmission to a new service provider. If no other service provider is available, the shipment status is updated to SECURE RESOURCES_NO_RESOURCES.

If the tender offer times out, GC3 notifies the service provider of the tender withdrawal, and re-tenders the shipment to another service provider. A tender offer times out when the amount of time established for a service provider to respond to a tender expires.

Error Messages

Cancel TenderOffer

Required Data

You must have sent a new TenderOffer.

Setup

How To Send the Transmission?

Shipment Manager, Withdraw Tender action

What Data Goes Into the Transmission?

GC3 sets the TransactionCode to D.

Transmission Results

Error Messages

Batch Process Tender Offers

GC3 can use a batch process to tender multiple shipments.

TenderResponse Interface

Responds to a TenderOffer.

GC3 sends out a TenderOffer asking if a particular service provider wants to carry a shipment. Service providers send back a TenderResponse stating whether they agree to carry the shipment.

Insert New TenderResponse Into GC3

Required Data

- You need to know the ITransactionNo from the TenderOffer you are accepting or declining.
- See the online help topic: Configuring Online Booking and Tendering.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Enter the ITransactionNo from the TenderOffer.
2. Set the ActionCode to A (Accept) or D (Decline).

3. See the Location Manager for a description of the fields.
4. See the TenderResponse Diagram to learn which elements are required.

Transmission Results

When you accept a tender, GC3 performs the following actions:

1. Updates the shipment status to SECURE RESOURCES_ACCEPTED. For a Pickup Notification, GC3 sends pickup information to the service provider including where and when the pickup must occur.

Cancels the tender time-out alarm. The tender time-out alarm defines the amount of time in which a service provider can respond to a tender.

You can have GC3 send notification to involved parties when a tender is accepted.

If the tender is declined, GC3 performs the following actions:

1. Updates the shipment status to SECURE RESOURCES_DECLINED.

Creates a Response to Tender Log entry for the shipment.

Identifies the Declined Route so that the same service provider is not offered the shipment a second time.

Accesses re-tender rules. The re-tender log contains user-defined rules for how alternate service providers are evaluated and how many times a shipment gets tendered automatically by GC3.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

TransmissionReport Interface

Lists why the transmission, sent to GC3, was not processed successfully.

Send Transmission Report From GC3

Required Data

An external system must have sent a transmission to GC3.

That transmission must contain a Transmission/TransmissionHeader/AckSpec with a return URL or email address.

Setup

`glog.integration.TransmissionReport` controls what kind of errors trigger GC3 to send a TransmissionReport. You can override these settings with the AckSpec element of your transmission.

You can speed up the generation of TransmissionReports by omitting the TransmissionSummary element with the `glog.integration.transmissionreport.includesummarydetail` property.

How To Send the TransmissionReport?

GC3 sends the TransmissionReport after the transmission has been processed.

GC3 sends the TransmissionReport via either email or HTTPPOST depending on what the AckSpec element in the TransmissionHeader of the original transmission specifies.

What Data Goes Into the TransmissionReport?

The TransmissionReport consists of a transmission number identifying the transmission, a sender number used for acknowledgement, as well as integration log messages and summary information. The TransmissionReport details the errors that must be corrected before the data can be re-transmitted. For example, if the transmission uses a location that is not already in the database, the transmission report would include a foreign key error.

Transmission Results

-

Error Messages

If you are not getting a TransmissionReport, check the following properties:

```
glog.integration.transmissionReport.readResponse  
glog.integration.TransmissionReport
```

TransOrder Interface (INO)

Create, modify, or delete order information through the TransOrder interface.

Insert New Order and Release Order Line

This procedure shows you how to:

- insert a new order
- release all or part of an order line
- build shipments from the order release

Required Data

To send an order to GC3, certain information related to the order must already exist in GC3. For example, you must have a valid itinerary, rate, locations, and so on.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

Specify if GC3 should release based off of weight, volume or item count with the `glog.integration.Transorder.TransOrderLine.IsShippable.DefaultReleaseType` property.

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to I.

A transaction code of UI or IU works too.

If you do not want to enter values for the `TransOrderGID`, `TransOrderLineGID`, `ShipUnitGID`, or `OrderReleaseGID` elements, you can have GC3 automatically generate GIDs. Automatic generation of GIDs only works for a transaction code of I.

Note: If a transaction code of IU is used, then a `TransOrderGID` must be provided.

Populate the `ProcessingCodeGID` to tell GC3 how to plan the shipments from the order release.

Populate the `TransOrderLineDetail` element, including the `PackagedItemCount`, `WeightVolume/Weight`, and `WeightVolume/Volume` under `TransOrderLineDetail/TransOrderLine/ItemQuantity/` to specify the order lines. You can set all but one of them to 0, if your setup uses the same kind of quantity to release.

Set `TransOrderLineDetail/TransOrderLine/ItemQuantity/IsShippable = N`.

Populate the `ReleaseType` to tell GC3 how to release ship units. If the `ReleaseType` is not populated, the default will be `ONE_TO_ONE`.

Populate the amount to release in the `TransOrderHeader/ReleaseInstruction/QuantityToRelease` element.

If you omit the `ReleaseInstruction`, set `TransOrderLineDetail/TransOrderLine/ItemQuantity/IsShippable = Y` to have GC3 create an order release for all of your order lines.

If your OrderBase is coded in a format other than GLogXML you need to transform your TransOrder transmission into the GLogXML schema, you can use GC3's transform feature to do this.

If you want to change the level of validation for this transmission, you can include a processing instruction to set the desired level. By default, TransOrder validation is turned on.

See the Order Base Manager for a description of the fields.

See the TransOrder Diagram to learn which elements are required.

Transmission Results

1. GC3 receives your transmission and starts to process it internally.

GC3 starts the public Order Base - Insert agent.

If the current date is outside the effective date/expiration date window of your TransOrder, the agent cannot create order releases. You must release the TransOrder via the process manager. There you can release all orders which have release instructions, but whose release has not been processed.

If you use the UI or IU transaction codes and the record exists already, GC3 starts the public Order Base - Modify agent instead.

GC3 raises events that in turn can trigger Notifications to be sent.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Insert New TransOrder and Release ShipUnit

Auto-releasing ship units is consistent with order base lines. This procedure shows you how to:

- insert a new order
- release all or some ship units on the order base
- build shipments from the order release

Required Data

To send an order to GC3, certain information related to the order must already exist in GC3. For example, you must have a valid itinerary, rate, locations, and so on.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to I.

A transaction code of UI or IU works too.

If you do not want to enter values for the TransOrderGID, ShipUnitGID, or OrderReleaseGID elements, you can have GC3 automatically generate GIDs. Automatic generation of GIDs only works for a transaction code of I.

Note: If a transaction code of IU is used, then a TransOrderGID must be provided.

Populate the ProcessingCodeGID to tell GC3 how to plan the shipments from the order release.

Populate the TransOrder/ShipUnitDetail element.

To be able to track your ship units as they propagate through GC3 as order release ship units and shipment ship units, you might want to include a unique ID in the ShipUnitDetail/ShipUnit/ShipUnitContent/ItemQuantity/ItemTag1 element. Also, there is a TransOrderShipUnitGID element in Release/ShipUnit that can help you track ship units.

Populate the ReleaseType to tell GC3 how to release ship units. If the ReleaseType is not populated, the default will be ONE_TO_ONE.

Set ShipUnitDetail/ShipUnit/IsShippable to Y to have GC3 create an order release for all your order base ship units.

If you omit the IsShippable element or set it to N, you need to populate the amount to release in the TransOrderHeader/ReleaseInstruction/QuantityToRelease element. With this option, you can specify the number of ship units to be released in the ReleaseInstruction/ShipUnitReleaseCount element.

You can override all dates and locations from the ShipUnitDetail with other settings in the ReleaseInstruction.

If you want to change the level of validation for this transmission, you can include a processing instruction to set the desired level. By default, TransOrder validation is turned on.

See the Order Base Manager for a description of the fields.

See the TransOrder Diagram to learn which elements are required.

Transmission Results

1. GC3 receives your transmission and starts to process it internally.

GC3 starts the public Order Base - Insert agent.

It finds the unprocessed release instructions with a release date <= the current date.

If the current date is outside the effective date/expiration date window of your TransOrder, the agent cannot create order releases. You must release the TransOrder via the process manager. There you can release all orders which have release instructions, but whose release has not been processed.

If you use the UI or IU transaction codes and the record exists already, GC3 starts the public Order Base - Modify agent instead.

GC3 raises events that in turn can trigger Notifications to be sent.

Modify Order Base With Lines

In this scenario, you can just update the information in an order base or you can update and release the full amount specified for the TransOrderLine.

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation.orderinterface` property.

Specify if GC3 should release based off of weight, volume or item count with the `glog.integration.Transorder.TransOrderLine.IsShippable.DefaultReleaseType` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to U.

A transaction code of UI or IU works too.

If your update is to delete only a couple of fields in the OrderBase, use the Value to Null Field symbol.

Populate the ReleaseType to tell GC3 how to release ship units. If the ReleaseType is not populated, the default will be ONE_TO_ONE.

If you want GC3 to release all your order lines, set `IsShippable = Y`.

With `IsShippable=Y`, you should omit the `ReleaseInstruction` element, GC3 releases the full weight, volume, or count (depending on `glog.properties`). If you set `IsShippable=Y` and include a `ReleaseInstruction`, GC3 releases your order twice. One full order release based on the parameter in `glog.properties` and another order release based on the `ReleaseInstruction` element.

If you want to change the level of validation for this transmission, you can include a processing instruction to set the desired level. By default, `TransOrder` validation is turned on.

See the `Order Base Manager` for a description of the fields.

See the `TransOrder Diagram` to learn which elements are required.

To update date fields with NULL values, submit a value of '~' in the date element(s) of the inbound `TransOrder XML`.

Transmission Results

1. GC3 receives your transmission and starts to process it internally.

GC3 starts the public `Order Base - Modify` agent.

If you use the UI or IU transaction codes and the record does not exist already, GC3 starts the public `Order Base - Insert` agent instead.

GC3 raises events that in turn can trigger Notifications to be sent.

Error Messages

If you receive a `TransmissionReport`, check for `Integration Messages`.

Modify ShipUnits

There are three ways to update the ship unit information (quantities, weights, volumes, etc) on a shipment via integration:

- Use `ActualShipment`. This interface provides complete control of all the fields in the `Shipment`.
- Use `SShipUnit`.
- Send another `TransOrder` with the `IsUpdateShipmentOnly` element.

The `TransOrder` interface together with the `IsUpdateShipmentOnly` element supports uploading a slightly modified `TransOrder` and has it update only the `Shipment/SShipUnit`. `IsUpdateShipmentOnly` indicates that the `TransOrder` should update the shipment only, and not the order base information.

Note: To update date fields with NULL values, submit a value of '~' in the date element(s) of the inbound `TransOrder XML`.

Using the `IsUpdateShipmentOnly` element can help you reduce the need to implement a separate `SShipUnit` or `ActualShipment` interface. The use of this flag with the `TransOrder` interface is restricted as follows:

The original order base should have been created using the `ShipUnitDetail` (not the `TransOrderLineDetail`).

The information you can update is restricted to the `SShipUnit` element. The `TransOrderHeader` is ignored, and none of the other `Shipment` related information is updated.

The specific `S_Ship_Unit(s)` to be modified are identified by using the `ShipUnitGID` in the new `TransOrder` and searching for the related `Release/ShipUnit` (via the `OB_SHIP_UNIT_GID` on `SHIP_UNIT` table) and then the `Shipment.ShipUnit(s)` (via the `SHIP_UNIT_GID` field in the `S_SHIP_UNIT` table). The search requires those reference pointers to exist.

Delete Orders

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation.orderinterface` property.

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to D.

If you do not know the GID of the record you want to delete, you can use integration saved queries instead.

If you want to change the level of validation for this transmission, you can include a processing instruction to set the desired level. By default, `TransOrder` validation is turned on.

See the `Order Base Manager` for a description of the fields.

See the `TransOrder Diagram` to learn which elements are required.

Transmission Results

1. GC3 receives your transmission and starts to process it internally.
2. Depending on what kind of record you are deleting an agent might start. For example, if you are deleting an `Order Base`, the `public Order Base - Delete` agent starts.
3. GC3 raises events that in turn can trigger `Notifications` to be sent.

Error Messages

You cannot delete an order that is assigned to a shipment after a service provider accepts a tender on the shipment. If you try to do this, GC3 might send a `TransmissionReport` stating the problem.

If you receive a `TransmissionReport`, check for `Integration Messages`.

Bulk Plan Orders

Required Data

You must create a saved query that points out the `Order Releases` you want to include.

Setup

You control validation of incoming transmissions with the `glog.integration.validation.orderinterface` property.

What Data Goes Into the Transmission?

If you can keep all your `TransOrders` within one transmission follow these steps:

1. Set `IsProcessInSequence=N`.

This ensures maximum performance because GC3 can process `TransOrders` belonging to different order bases in parallel.

2. Include all `TransOrders` that should be bulk planned.
3. Create an order release for every `TransOrder` either with `IsShippable=Y` and omit the `ReleaseInstruction`, or with `IsShippable=N` and include a `ReleaseInstruction`.
4. Include a `Topic` element as the last element in the transmission to start the bulk planning. Set `TopicArgName` to 'savedQuery' and `TopicArgValue` to a `Query_Name`. The saved query must point out the `Order Releases` you want to include.
5. In the `GLogXMLElement` holding the `Topic` element, include a `ProcessInfo` element with `WhenToProcess=END_OF_TRANSMISSION`.

This tells GC3 to wait to start the bulk planning until the end of the transmission.

Note: GC3 plans all order releases that match the saved query, not just the ones within the transmission.

Note: The Topic element must be the last element in the transmission. If it is not, GC3 will plan incorrectly.

If you cannot keep all your TransOrders within one Transmission follow these guidelines:

1. For every transmission with TransOrder, set IsProcessInSequence=N.
2. Create an order release for every TransOrder either with IsShippable=Y and omit the ReleaseInstruction, or with IsShippable=N and include a ReleaseInstruction.
3. For every TransOrder that GC3 should bulk plan later, set the ProcessingCodeGID to NOPLN.

If you instead set the ProcessingCodeGID to PLN on each TransOrder in a transmission, GC3 bulk plans these orders on each transmission. Also, GC3 cannot supply a bulk plan history in this case.

4. When GC3 has received all TransOrders to be bulk planned, send a Topic element as the last element in the transmission to start the bulk planning. Set TopicArgName to 'savedQuery' and TopicArgValue to a Query_Name. The saved query must point out the Order Releases you want to include. If you want to supply your own bulk plan ID, in addition, set TopicArgName to 'bulkPlanID' and TopicArgValue to your desired bulk plan ID.

To be reasonably sure that GC3 has received all your transmissions, allow sufficient amount of time between sending the last TransOrder Transmission and sending the Topic element.

Note: GC3 plans all order releases that match the saved query, not just the ones within the last transmissions.

Note: The Topic element must be the last element in the transmission or group. If it is not, GC3 will plan incorrectly.

Transmission Results

When GC3 completes the bulk planning, GC3 sends the results of the bulk plan in a BulkPlan element.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Incrementally Release TransOrder Line From Existing TransOrder

In this scenario, you already have a TransOrder with a large amount of goods in a TransOrderLine in GC3 but now you want to release small amounts of that TransOrderLine with multiple subsequent TransOrders.

To incrementally release TransOrderLines from an order already in GC3 via an integration transmission, do the following:

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation.orderinterface` property.

What Data Goes Into the Transmission?

1. Make sure the public Order Base - Modify - Incremental Release agent is active.
2. Send a transmission of the record and enter the transaction code U in the TransactionCode element.
3. All your TransOrderLines must be marked IsShippable=N.

4. Always keep IsShippable=N between all these TransOrders.
5. Include a TransOrderHeader/ReleaseInstruction to release a fraction of the amount specified on the original TransOrderLine. If you omit the ReleaseInstruction element, GC3 only saves your order base since you have IsShippable set to N.
6. For each modified TransOrder you send, update the ReleaseInstruction/SequenceNumber and make it unique. If you do not, GC3 keeps the old releases but replaces the content of the release instruction.
7. Populate the ReleaseType to tell GC3 how to release ship units. If the ReleaseType is not populated, the default will be ONE_TO_ONE.
8. See the Order Base Manager for a description of the fields.
9. See the TransOrder Diagram to learn which elements are required.

Transmission Results

1. GC3 receives your transmission and starts to process your transmission internally.
2. GC3 starts the public Order Base - Modify - Incremental Release agent. GC3 creates one ship unit per TransOrderLine per default. See the ReleaseType element.
3. GC3 raises events that in turn can trigger Notifications to be sent.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Send TransOrder From GC3

Required Data

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Order Base Manager.

In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes all data specified for the order base.

Transmission Results

Error Messages

Processing Codes

When you send an order to GC3, you can indicate whether you want GC3 to perform planning functions on it. If GC3 plans orders, it creates shipments from the orders and then executes the shipments as soon as it receives them. If you want to execute orders into shipments at a particular time or after you receive a certain number of orders, do not run the planning function.

Control the details of planning orders in GC3 in the Agent Manager.

In the ProcessingCodeGID element, enter one of the following values:

- **NOPLN** – Instructs GC3 not to plan shipments from the order. This is the default if you omit this element.
- **PLN** – Instructs GC3 to plan shipments from the order release. GC3 will plan multi-stop shipments if appropriate. You must have your TransOrder set up to create an order release for this to work.
- **MSPLN** – Obsolete.

XLane Interface

Use the XLane interface to transmit lane information to GC3. An XLane connects two geographic points. Associate XLanes with rate records to establish rates between particular locations or areas. The geographic points can be specific, such as a street address, or more general, such as a city, state, country, or region. You can include mileage interface information in the lane transmission.

XLanes provide the basic geographic framework for shipment activity. When you define a lane with specific geographic locations, fewer shipments can use the lane. When you define a lane with less specific geographic information, more shipments qualify for it but processing time on the system may be slowed.

Data Requirements

Before you can transmit lane information to GC3, you must enter or transmit the location information associated with the lanes.

Billing Interface

Use the Billing interface to send transmissions to an accounting system for customer billing. The billing information represents the amount owed by a customer to the planner of a shipment. The billing transmission includes the customer who is being charged and details of the bill such as the amount due, the date due, and any discount information.

The elements included in the Billing interface transmission are the same as those in the invoice interface. GC3 sends the bill to the involved parties specified on the order.

For consolidated invoices, when you send the Billing interface, all child invoices are also sent.

GC3 sends Billing transmissions to the URL you specify in `glog.properties`.

Bills can be generated in the Shipment Manager or in the Process Manager.

Voucher Interface

A Voucher approves the payment of an invoice. A voucher represents the cost of a shipment owed to a third party such as a service provider. GC3 sends a Voucher transmission to a financial system after it has matched a third party charge to a shipment and approved the charge for payment.

GC3 sends Voucher transmissions to the URL you specify in `glog.properties`.

You can create an agent that send the Voucher interface using the agent action Send Voucher Interface. You can also send this interface from the Invoice Manager.

Note: You can send a Voucher transmission that cancels or edits a previous voucher.

GC3 determines to whom a payment is due based on the involved parties defined on the order release.

The Shipment element is only included when generating vouchers for parent invoices. When generating a Voucher for a child invoice, the Shipment element is not included.

You can optionally use the ShipmentGID element instead of the full Shipment element in order to reduce the size of the Voucher XML.

Process Vouchers

Vouchers are generated in two locations:

The Control Center
The Process Manager

CSVFileContent Interface

The CSVFileContent element embeds the contents of a CSV file. This element should only be used for setup activities; it is not intended for operational activity.

Insert New CSVFileContent Into GC3

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

What Data Goes Into the Transmission?

Each CSVFileContent element can contain only one CSV File. CSVFileContent only supports inserts into the database.

1. Refer to the Data Management Guide document for details on the CSV file format.
2. See the CSVFileContent Diagram to learn which elements are required.

Transmission Results

GC3 saves your CSV records in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

DataQuerySummary Interface

Contains the GID of a business object record.

Some external systems may not be prepared for GC3 to send large amounts of data. The DataQuerySummary interface provides a mechanism to send only a summary of the data. The external system can request the individual records from GC3 at appropriate times (e.g. idle times, overnight) by referencing the GID.

Send DataQuery Summary From GC3

Required Data

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

Mark the Send Summary checkbox when sending from one of these managers:

- Order Base Manager
- Order Release Manager
- Shipment Manager
- Sell Side Shipment Manager

- Shipment Group Manager
- Billing Manager
- Service Provider Manager
- Location Manager
- Rate Offering Manager
- Rate Record Manager.
- Item Manager
- Invoice Manager
- In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes only the GID of the record.

Transmission Results

Error Messages

FinancialSystemFeed Interface

The FinancialSystemFeed interface allows you to use shipments (either buy or sell) as the final object for managing financials. This alleviates the need to use invoices or bills as the final object for managing financials.

For details on the data requirements and format of this interface, please see the FinancialSystemFeed diagram.

You will use either the SellSideFinancials element or the BuySideFinancials element depending on whether you are using a buy or a sell shipment to manage your financials. All related orders will be passed through based on the allocation information passed through the AllocationBase element.

GLogXMLElement

You can send many transactions in or out of GC3 in one transmission but to separate the transactions, every transaction must be wrapped in a GLogXMLElement.

A TransmissionBody element wraps one or more GLogXMLElement elements in a Transmission.

HazmatGeneric Interface

The HazmatGeneric element specifies a hazardous material. See the Hazardous Material manager for more information.

Note: To send hazardous material data to GC3 based on specific item information, use the HazmatItem interface.

Insert New Hazmat Into GC3

Required Data

You have to define a technical name for certain hazmats.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

What Data Goes Into the Transmission?

1. Set the TransactionCode to I.
2. See the Hazardous Material Manager for a description of the fields.
3. See the HazmatGeneric Diagram to learn which elements are required.

Transmission Results

GC3 saves your hazmat definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Modify Hazmat in GC3

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to U.
2. Enter data in the elements that need to be updated and in the required elements.
3. See the Hazardous Material Manager for a description of the fields.
4. See the HazmatGeneric Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified hazmat definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Delete Hazmat in GC3

Required Data

You must know the HazmatGenericGID of the hazmat you want to delete.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to D.
2. Enter the HazmatGenericGID.

Transmission Results

GC3 deletes your hazmat in the database.

Error Messages

If you get a TransmissionReport that reads "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION:", make sure you are not trying to delete a hazmat that is used elsewhere in GC3.

If you receive a TransmissionReport, check for Integration Messages.

HazmatItem Interface

The HazmatItem element specifies an item containing a hazardous material. See the Hazardous Item manager for more information.

Note: To specify a hazardous material, use the HazmatGeneric interface.

Insert New HazmatItem Into GC3

Required Data

You need to define the following before sending a HazmatItem to GC3:

- STCC ID (49...)
- Package Type
- Hazmat Region
- For which transport modes this item is considered a hazardous item.
- All hazardous materials

In addition, you may need to define the following:

- Hazmat Approval Exemption
- Hazmat Transport Message

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to I.
2. See the Hazardous Item Manager for a description of the fields.
3. See the HazmatItem Diagram to learn which elements are required.

Transmission Results

GC3 saves your hazardous item definition in the database.

Error Messages

If you receive a `TransmissionReport`, check for Integration Messages.

Modify HazmatItem in GC3

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the `TransactionCode` to U.
2. Enter data in the elements that need to be updated and in the required elements.
3. See the Hazardous Item Manager for a description of the fields.
4. See the HazmatItem Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified hazardous item definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Delete HazmatItem in GC3

Required Data

You must know the HazmatItemGID of the hazardous item you want to delete.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to D.
2. Enter the HazmatItemGID.

Transmission Results

GC3 deletes your hazardous item definition in the database.

Error Messages

If you get a TransmissionReport that reads "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION:", make sure you are not trying to delete a hazardous item definition that is used elsewhere in GC3.

If you receive a TransmissionReport, check for Integration Messages.

RATE_GEO Interface

Contains a Rate Record.

RATE_GEO is "database centric" since Oracle auto-generates the schema. The element names directly correspond to the table and column names.

Send RATE_GEO From GC3

Required Data

For details on what data is required and what is not, as well as the format of the data, please reference the RATE_GEO interface diagram.

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

- In the Rate Record Manager.
- In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes all data specified in the Rate Record.

Insert Rate Records Into GC3

To import Rate Records use the CSV utility.

RATE_OFFERING Interface

Contains a Rate Offering.

RATE_OFFERING is "database centric" since Oracle auto-generates the schema. The element names directly correspond to the table and column names.

Send RATE_GEO From GC3

Required Data

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Rate Offering Manager.

In the Process Manager, Send Integration Page.

What Data Goes Into the Transmission?

GC3 includes all data specified in the Rate Offering.

Transmission Results

Error Messages

Insert Rate Records Into GC3

To import Rate Offerings use the CSV utility.

Schedule Interface

This element is supported both for inbound and outbound, and contains parameters used in the Batch Balance algorithm. The schedule is used as input to build shipments and assign orders into batches. Each order (TransOrder) can be assigned to a Schedule for processing. The ScheduleStatus and Batch elements in the Schedule element are outbound only.

ShipmentGroup Interface

Use this interface to specify shipment group header information and the associated shipments in a group. The ShipmentGroup element is supported for both inbound and outbound messages.

ShipmentGroupTenderOffer

The ShipmentGroupTenderOffer interface is used to notify a service provider of a shipment group pickup. This interface is a wrapper around the ShipmentGroup element, and currently does not accept response back from the service provider.

For details on the elements included in this interface, and which ones are required versus optional, view the ShipmentGroupTenderOffer diagram in the online help system.

ShipmentLink (Related Shipments) Interface

The ShipmentLink interface identifies related shipments and acts as an inbound interface.

With the ShipmentLink interface you can link shipments that you send to GC3 via integration. Use the ShipmentLink interface to identify related shipments using cross-dock and pool de-consolidation locations. The ShipmentLink interface includes the GID for each linked shipment and identifies the stop sequence for the shipments. For instance, you can:

1. Send in info for Shipment 1

2. Send in info for Shipment 2
3. Send in a ShipmentLink linking Shipment 1 and Shipment 2

TransactionAck Interface

This element is inbound only. An external system sends a TransactionAck to GC3 to acknowledge receipt and processing of a transaction.

The TransactionAck contains the original transmission's unique ProcessControlRequestID. This identifies which transaction the TransactionAck acknowledges receipt and processing of.

Transmission Interface

XML documents imported into GC3 must start with a Transmission element. Think of sending the transmission element as a substitute for logging on to GC3 and manually entering your user data.

The Transmission element tag tells GC3 where to start and end the transmission. The beginning and ending tags must look as follows, respectively: <Transmission>, </Transmission>. A Transmission element consists of the TransmissionHeader and the TransmissionBody.

Transmission Header

The TransmissionHeader contains several elements.

AckSpec

The TransmissionHeader holds the AckSpec element that determines how GC3 confirms that it has processed your Transmission. GC3 sends its receipt of transmission acknowledgement in the TransactionAck element and processing acknowledgement in the TransmissionReport element.

The AckOption elements let you specify when to receive a TransmissionReport. If unspecified, GC3 uses your settings in glog.properties instead.

- ERROR = Send Transmission Report only when there are errors.
- YES = Send Transmission Report in all cases.
- NO = Do not send Transmission Report, even if there are errors.

Note: If you enter ComMethodGID = HTTPPOST and set ServletURL to an email forwarding URL make sure you use "&" instead of "&" characters in your URL.

Optional Password

UserName and Password are optional elements because there are alternatives for specifying them:

Note: If you are loading the XML while logged into GC3 using the "Upload an XML/CSV Transmission" page, then the upload can use the user name and password of the user that is logged in and GC3 does not require UserName and Password in the XML.

Note: When the system is operational and either an Enterprise Application Integration tool or a script generates the XML and posts the XML files to the GC3 Integration Servlet, then you can specify user name and password in one of the following ways:

1. Specify the UserName and Password in the TransmissionHeader element of the XML
2. Specify user name and password in the HTTPPOST Header. This must be coded into the Enterprise Application Integration tool or script, provided that the script or tool supports this.

3. Specify only the user name in the TransmissionHeader as defined above, and use IP Authentication to identify the password.

To do this, define an External System in the domain of the user who appears in the TransmissionHeader. In that external system definition, specify the IP address from which the transmissions will be sent. There are a few caveats however. IP address authentication does not work in conjunction with proxy servers. When a proxy server is used, all transmissions appear to come from the proxy server instead of from the original sender. Also, IP address authentication will not work unless the sender has a fixed IP address.

As a result of these alternatives, UserName and Password are optional in the schema. Not to mention that when GC3 posts out a Transmission, it does not include the UserName or Password for security reasons.

Transmission Body

The TransmissionBody wraps one or more GLogXMLElement elements in a Transmission.

TransmissionAck Interface

Confirms that GC3 received the transmission.

Send Transmission Ack From GC3

Required Data

An external system must have sent a transmission to GC3.

Setup

Your external system must be set up to read response codes to its HTTPPOSTs, otherwise it will not receive a TransmissionAck.

How To Send the TransmissionAck?

Immediately upon receiving a transmission, GC3 automatically echoes a TransmissionAck back to the external system that sent the transmission.

What Data Goes Into the TransmissionAck?

The TransmissionAck contains a copy of the original transmission's TransmissionHeader and a reference number (i_transmission_no) assigned to the transmission by GC3.

Exceptions

The StackTrace element is used when there is an exception with staging the inbound XML.

Bulk Continuous Move Interface

After building a bulk continuous move, GC3 sends this element to an External System. BulkContMove is used to provide statistics about shipments that were selected and linked during a given run of bulk continuous move. This element is supported on the outbound only.

BulkPlan Interface

After finishing a bulk planning session, GC3 sends this element to an External System. BulkPlan contains statistics about the orders that were planned and the shipments that were created.

BulkRating Interface

After finishing a bulk rating session, GC3 sends this element to an External System. BulkRating contains statistics about the orders that were planned and the shipments that were created.

BulkTrailerBuild Interface

After finishing a bulk trailer build, GC3 sends this element to an External System. BulkTrailerBuild contains statistics about the shipment groups that were created during the bulk trailer build process. This element is supported on the outbound only.

GenericStatusUpdate Interface

This element expands on and replaces the following elements:

- LocationStatusUpdate
- TransOrderStatusUpdate
- PaymentStatusUpdate
- OrderReleaseStatusUpdate
- ShipmentStatusUpdate
- VoucherStatusUpdate
- ShipmentGroupStatusUpdate
- ScheduleStatusUpdate

This element updates the external statuses of the corresponding objects. It can update Refnum(s), Remark(s), Status(es), and Indicator(s).

You use the GID and the SequenceNumber elements to identify the object to update. The GID specifies the primary key of the object (e.g. ShipmentGID for the SHIPMENT object). The SequenceNumber, together with the GID element, identifies the object when the GID is insufficient. For example, the S_SHIP_UNIT_LINE object has a S_SHIP_UNIT_LINE_NO field as part of its primary key, so the SequenceNumber would correspond to the S_SHIP_UNIT_LINE_NO. Other objects requiring the sequence number include the INVOICE_LINEITEM and SHIPMENT_STOP.

When updating voucher reference numbers, you can only update a single voucher reference number per transaction.

The Role of the Transaction Code

The TransactionCode specifies whether the information should be inserted, or updated/replaced. For the Refnum objects that have the qualifier and value as part of the primary key, the TransactionCode indicates whether the new qualifier/value pair should be added (Insert), or used to replace all of the current records with the same qualifier (Update).

For example, the Shipment_Refnum table has a composite primary key made up of the ShipmentGID, RefnumQualifier, and RefnumValue. Assume a Shipment has the following ShipmentRefnum Qualifier/Value pairs in the system: CO/A-12345, CO/B-89387, CN/C-83920. If you send a new refnum qualifier/value of CO/D-23849 using the GenericStatusUpdate interface, the TransactionCode would affect the change as follows:

- TransactionCode = I - The new refnum would be added, resulting in all of the following being present in the table: CO/A-12345, CO/B-89387, CN/C-83920, CO/D-23849
- TransactionCode = U - The current refnums with the same qualifier would be deleted, and replaced by the new one. In this case, the result would leave the following in the table: CN/C-83920, CO/D-23849

The TransactionCode is only applicable for the Refnum and Remark elements. It is not used for the Status or Indicator elements, which are only intended to be updated.

Topic Interface

This inbound interface allows you to raise a topic and get GC3 to start processing an object. Currently GC3 supports BuildBuySideShipments and BuildSellSideShipments that allows you to start bulk planning.

Note: Make sure GC3 has released all your TransOrders before sending the Topic element to GC3.

Note: When including other transactions in the same transmission as the Topic transaction, make the Topic transaction the last in the transmission.

The table lists what each element should contain.

TopicAliasName	TopicArgName	TopicArgValue
BuildBuySideShipments	savedQuery	query_name, e.g. YELLOW_ORDER_REL
BuildSellSideShipments	savedQuery	query_name, e.g. YELLOW_ORDER_REL

SShipUnit Interface

The SShipUnit element allows you to identify and update s_ship_unit information on a shipment, without having to identify the individual shipment. SShipUnit supports the use of a defined integration saved query to lookup the s_ship_unit_gid. It also supports updates to multiple s_ship_unit(s) that match the query constraints.

Typically you do not know the Shipment/ShipUnit/ShipUnitGID when a shipment has been built as a result of a TransOrder since GC3 generates the Shipment/ShipUnit/ShipUnitGID arbitrarily. Instead you may know the TransOrder/ShipUnitDetail/ShipUnit/ShipUnitGID. You can define a query to search for the Shipment/ShipUnit/ShipUnitGID that GC3 generated from the original TransOrder.

Alternative Interfaces

For alternatives to using this interface see ActualShipment and TransOrder.

How to Use

To use this element, set:

- IntSavedQueryGID to specify which query you want to use. If the query you specify here does not return any results, GC3 generates an error message and stops processing the SShipUnit. If you omit the IntSavedQuery element altogether, GC3 just inserts or updates (depending on your TransactionCode) the information in your SShipUnit element. GC3 contains two predefined queries that you can change.
- IntSavedQueryArg to arguments that can be referred to in the queries. For example, TRACKING_TAG1=A123456789. If you omit this element, your IntSavedQueryGID must point to a query that uses XPath instead.

- IsMultiMatch to Y or N to allow multiple ship unit records to be returned from the query or not. If you specify N and your query returns multiple ship unit records, GC3 generates an error message.
- TransactionCode to I, IU, U, D, or RC. You can only delete a ship unit if it is not referenced by for example a shipment.
- ReplaceChildren/ManagedChild to what part or parts of the ShipUnit element you want to update. If you omit this element and specify TransactionCode = RC, GC3 replaces all information in the existing ShipUnit(s) with the information in your inbound SShipUnit/ShipUnit.

Then you can enter your updated information in the ShipUnit element.

After receiving an SShipUnit transmission, GC3 searches for the ShipUnitGID (GC3 ignores the ShipUnitGID in your ShipUnit element). Based on the TransactionCode, GC3 then updates the ShipUnit(s) that it finds.

TransOrderStatus Interface

Service providers and other third parties transmit order base event information to GC3 with the TransOrderStatus interface.

Insert New TransOrder Status Into GC3

Required Data

Before you can send TransOrderStatus transmissions to GC3, you must set up the following:

- User accounts for service providers in GC3.
- Order Base Status Codes
- Order Base Status Reason Codes
- Order Base Event Groups
- Order Base Reason Groups
- Corporations for service providers

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

What Data Goes Into the Transmission?

1. To ensure that GC3 processes multiple TransOrderStatus transactions in the order you intend, set `IsProcessInSequence` to Y in the `TransmissionHeader`.
2. Identify which object the status applies to. Set `StatusLevel`, `OrderRefnum` and `ServiceProviderAlias`.

If you try to match your TransOrderStatus against a reference number and GC3 finds multiple matches for the reference number you supplied, GC3 gives you an error.

3. Include the time when the event occurred. Your best option is to include the `TimeZoneGID`. If you cannot do this, set the `TimeZoneGID` to Local. In this case, GC3 saves and displays the event date as entered, ignoring user preferences.
4. Enter your status information.
5. See the Order Base Event Manager for a description of the fields.
6. See the TransOrderStatus Diagram to learn which elements are required.

Transmission Results

GC3 saves your information in the database.

Agents might have been set up to act upon receiving certain statuses.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Contact Interface

The Contact element specifies a contact. A location may have multiple contacts.

Insert New Contact Into GC3

Required Data

If you want to associate your contact with a GC3 user ID, location, or external system you must have defined these first.

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

How To Send the Transmission?

A contact may be transmitted to GC3 as a stand-alone transmission, or embedded in other transmissions. Sending a contact embedded in another transmission can save time.

What Data Goes Into the Transmission?

1. Set the TransactionCode to I.
2. See the Contact Manager for a description of the fields.
3. See the Contact Diagram to learn which elements are required.

Transmission Results

GC3 saves your contact definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Modify Contact

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation.locationinterface` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to U.
2. Enter data in the elements that need to be updated and in the required elements.
3. See the Contact Manager for a description of the fields.
4. See the Contact Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified contact definition in the database.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Delete Contact

Required Data

You must know the ContactGID of the Location you want to delete.

Setup

You control validation of incoming transmissions with the `glog.integration.validation.locationinterface` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to D.
2. Enter the ContactGID.

Transmission Results

GC3 deletes your contact in the database.

Error Messages

If you get a TransmissionReport that reads "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION:", make sure you are not trying to delete a Contact that is used elsewhere in GC3.

If you receive a TransmissionReport, check for Integration Messages.

ContactGroup Interface

The ContactGroup Interface represents a list of contacts used for notification. The elements of the interface mirror the fields found in the Contact Group Manager.

A contact group is a collection of contacts that can act as a broadcast mechanism to a set of email, fax, or HTTP addresses using common language, communication method, and preferences. Or it can be used to notify several people at one time about an event that has occurred with contact-specific language, communication, and preference settings.

Sku Interface

Sku defines a stock keeping unit including what quantities to keep in stock, and the actual amount in the warehouse.

Insert New

Required Data

You need to have the following defined in GC3:

- PackagedItem
- Location of the warehouse
- Supplier and owner corporation of the SKU
- ShipUnit holding the SKU
- Contact information for the involved party

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to I.

2. See the Inventory Manager for a description of the fields.
3. See the Sku Diagram to learn which elements are required.

Transmission Results

GC3 saves your SKU information in the database.

You can set up involved parties to be notified when certain changes (events) occur.

You can also set up an agent to monitor the quantity on hand and notify involved parties when necessary.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Updates Throughout The Day

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to IU.
2. Enter data in the elements that need to be updated and in the required elements.
3. See the Inventory Manager for a description of the fields.
4. See the Sku Diagram to learn which elements are required.

Transmission Results

GC3 saves your modified information in the database.

You can set up involved parties to be notified when certain changes (events) occur.

You can also set up an agent to monitor the quantity on hand and notify involved parties when necessary.

Note: This will NOT delete any child records from the `sku_descriptor` table. See the next section if you want to completely replace an individual SKU.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

Replace an Individual SKU

Required Data

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

1. Set the TransactionCode to D for the first transaction and I for the second.
2. Enter data in the elements that need to be updated and in the required elements.
3. See the Inventory Manager for a description of the fields.
4. See the Sku Diagram to learn which elements are required.

Transmission Results

GC3 deletes your existing SKU in the database and then inserts your new information.

You can set up involved parties to be notified when certain changes (events) occur.

You can also set up an agent to monitor the quantity on hand and notify involved parties when necessary.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

How To Structure Your Data

If you have large amounts of highly complex, nested inventory information, you should use the XML column in the SKU_DESCRIPTOR table to store that information, rather than using nested SKU_DESCRIPTOR records. However, it will not be possible to search for SKUs using the XML info. You will only be able to search on the non-XML columns in the SKU and SKU_DESCRIPTOR tables.

If you have small or medium amounts of less complex inventory information, you can use nested SKU_DESCRIPTOR records instead. Using this method, it will be possible to find a SKU by a sub-descriptor.

SKU Table

The following sample SKU record shows a part used to make Novelty phones. The Novelty stock code is 2002, which is used to form the Xid. This corresponds to the packaged_item novelty.8946. The warehouse is novelty.wh1. The supplier is General Electric, who also currently owns the inventory.

```
Skus_id = novelty.2002-wh1
Skus_xid = 2002-wh1
Packaged_item_id = novelty.8946
Warehouse_location_id = novelty.wh1
Supplier_corporation_id = novelty.ge
Owner_corporation_id = novelty.ge
Quantity_on_hand = 1800
Min_level = 100
Max_level = 2000
Domain_name = novelty
```

SKU_DESCRIPTOR table - BLOB

GC3 cannot show BLOBs in tree view of the inventory manager.

This section illustrates the relational approach to storing Sku descriptor and sub-descriptor information in using the SKU_DESCRIPTOR table. This method would be used when it is necessary to use standard SQL to search Sku descriptor data.

The example below shows a top-level SKU_DESCRIPTOR record. Notice that the parent_sku_descriptor_seq is null.

```
Skus_id = novelty.2002-wh1
Sku_descriptor_seq = 1
Sku_descriptor_type = status
Sku_descriptor_value = held
Sku_descriptor_quantity = 1000
Parent_sku_descriptor_seq = null
```

Domain_name = novelty

The example below shows a level-2 SKU_DESCRIPTOR record. The parent_sku_descriptor_seq is set to 1, pointing to the previous example.

```
Sku_gid = novelty.2002-wh1
Sku_descriptor_seq = 2
Sku_descriptor_type = reason
Sku_descriptor_value = damaged
Sku_descriptor_quantity = 600
Parent_sku_descriptor_seq = 1
Domain_name = novelty
```

The example below shows a level-3 SKU_DESCRIPTOR record. The parent_sku_descriptor_seq is set to 2, pointing to the previous example.

```
Sku_gid = novelty.2002-wh1
Sku_descriptor_seq = 3
Sku_descriptor_type = batch
Sku_descriptor_value = 001
Sku_descriptor_quantity = 250
Parent_sku_descriptor_seq = 2
Domain_name = novelty
```

```
Sku_gid = novelty.2002
Sku_descriptor_seq = 4
Sku_descriptor_type = batch
Sku_descriptor_value = 002
Sku_descriptor_quantity = 300
Parent_sku_descriptor_seq = 2
Domain_name = novelty
```

```
Sku_gid = novelty.2002
Sku_descriptor_seq = 5
Sku_descriptor_type = batch
Sku_descriptor_value = 003
Sku_descriptor_quantity = 50
Parent_sku_descriptor_seq = 2
Domain_name = novelty
```

SKU_DESCRIPTOR Table - XML

If the sku descriptor information need not be fully searchable using standard SQL, then the XML column in the SKU_DESCRIPTOR table may be used to represent the information at level 2 and below.

In other words, it would be possible to use standard SQL to search for a sku descriptor, but not for a sku sub-descriptor.

An example situation where the XML method may not be appropriate would be where the top level SKU is a combination of shoes of different styles. The top level SKU_DESCRIPTOR records would have one row for each style. The level 2 SKU_DESCRIPTOR would have counts of sizes within each style. A query to determine the total inventory of size 9 shoes across all styles would not be possible using the XML method. You can think of similar examples for the auto industry, i.e. find the inventory of all cars with anti-lock brakes, etc.

When using the XML method for representing detailed SKU_DESCRIPTOR information, each client implementation will be responsible for developing their own industry-specific XML schema for that information. By default, the UI will display this information in a nicely formatted manner. The UI provides a mechanism whereby you can install custom XSL for formatting information. However, this XSL file is purely optional.

Below is a snippet of how the information from the previous section might appear in the database if the XML approach is used instead of the nested SKU_DESCRIPTOR method. In this case, the parent_sku_descriptor_seq column is always null, and the XML column is used instead. In this case, the top level status information is available relationally. However, the lower level descriptors within that status are represented inside the XML.

```
Sku_gid=novelty.2002-wh1
Sku_descriptor_seq = 1
Sku_descriptor_type = status
Sku_descriptor_value = held
Sku_descriptor_quantity = 1000
Domain_name = novelty
Xml =
<SkuDescriptor>
  <type>damaged</type>
  <value>001</value>
  <quantity>600</quantity>
<SkuDescriptor>
  <type>batch</type>
  <value>001</value>
  <quantity>250</quantity>
</SkuDescriptor>
<SkuDescriptor>
  <type>batch</type>
  <value>002</value>
  <quantity>300</quantity>
</SkuDescriptor>
... etc ...
</SkuDescriptor>
```

SkuTransaction Interface

SkuTransaction represents a shipment of SKUs arriving or leaving the warehouse. This is separate from shipments created in GC3. Also, SkuTransactions do not update the SKU table.

Ship SKU To or From the Warehouse

Required Data

You need to have the following defined in GC3:

- Sku
- PackagedItem
- Location of the warehouse
- supplier and owner corporation of the sku

Setup

You control validation of incoming transmissions with the `glog.integration.validation` property.

What Data Goes Into the Transmission?

You can only insert SkuTransactions, so there is no TransactionCode.

1. See the Inventory Manager for a description of the fields.
2. See the SkuTransaction Diagram to learn which elements are required.

Transmission Results

GC3 saves your information in the database.

You can set up involved parties to be notified when certain changes (events) occur.

You can also set up an agent to monitor the quantity on hand and notify involved parties when necessary.

Error Messages

If you receive a TransmissionReport, check for Integration Messages.

OBLLine Interface

This is used to send out the order base line information.

Send OBLLine From GC3

Required Data

You must have created the order base line.

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Order Base Line Manager.

With an agent. See the agent action called Send Integration.

What Data Goes Into the Transmission?

GC3 includes all data specified for the order base line.

OrderMovementReplace Interface

Some itineraries contain pre-transport legs, ocean legs, and customer delivery legs. When an order is scheduled onto an itinerary, it will be split into component order movements corresponding to each leg it is routed on. Production lot schedule information will be used to further split the first leg order movement into multiple order movements, all corresponding to the same leg and indicating how the order is available for movement on that leg. Similarly, the delivery line information will be used to split the delivery transport leg into multiple order movements all corresponding to that leg.

The OrderMovementReplace (OMR) interface is used to bring in the production lot and delivery line information and use it to carry out the necessary modifications to the order movements on the corresponding legs. This interface is only supported on the inbound.

The OrderMovementReplace interface has the following elements/attributes:

Name	Description
OMR Name	Name of this set of information.
Process Time	Indicates the time at which the information contained is current.
OMR Type	Indicates whether it is supply information or demand information.
Time Interval Type	Indicates whether the span between the early and late times represents a times window or availability or of continuous flow. Available values are "window" and "flow."
Description	For informational use only.
Order Release ID	The order release id to which order movements are related.
Order Ship Unit ID	The field is optional.
Count	The quantity of the ship unit.
Early Time	Early available time.
Late Time	Late available time.
Time Series Type	Indicates whether this information is about the past or future. Available values are "future" and "history."
Unit Weight	The weight of each unit in the ship unit.
Unit Volume	The volume of each unit in the ship unit.
Unit Length	The length of each unit in the ship unit.
Unit Height	The height of each unit in the ship unit.
Unit Width	The width of each unit in the ship unit.
Unit Diameter	The diameter of each unit in the ship unit.

OBShipUnit Interface

This is used to send out order base ship unit information.

Send OB Ship Unit From GC3

Required Data

You must have created the order base ship unit.

Setup

You must have created the External System you want to send to.

How To Send the Transmission?

In the Order Base Ship Unit Manager.
With an agent. See the agent action called Send Integration.

What Data Goes Into the Transmission?

GC3 includes all data specified for the order base ship unit.

Transmission Results

Error Messages

Voyage Interface

The Voyage interface is used to send world-wide vessel schedule information to External Systems. This interface is supported on the outbound only.

The elements of this interface mirror the fields found in the Voyage Manager. Voyage schedules define the rotation of a carrier's vessel as the vessel goes from a set of loading points (departure ports) to a set of unloading ports (arrival ports).

Since this element is supported on the outbound only, a common way to add voyage data is via the Voyage Manager in the user interface (good for smaller updates), or via the Voyage Data API (good for larger updates), which is described in detail in the Data Management Guide.

BookingLineAmendment Interface

The BookingLineAmendment interface is used to send booking line changes out of the system. This interface is supported on the outbound only.

A BookingLineAmendment can be initiated when an order or a portion of an order is added or removed from a Shipment, thereby changing the Charter Voyage to which it was assigned. The BookingLineAmendment will contain either the BookLineAmendViaRelease or the BookLineAmendViaServiceProvider, but not both. The selection is based on the agent used to send the notification for the message.

CharterVoyage Interface

The CharterVoyage interface is used to specify the charter voyage for creating a consol shipment. It is supported on both the inbound and the outbound.

A charter voyage represents an ocean transport movement by a carrier from a loading port to a discharge port. Within a charter voyage, there are several Stowage Modes, which represent, at a

conceptual level, separate “compartments” within the charter voyage. There is also capacity associated with each Stowage Mode as defined on a consol that you create for each Stowage Mode defined on the charter voyage. This capacity controls the orders that can be booked on the charter voyage.

For a charter voyage, and each of its defined stowage modes, you can create a consol that has a single empty shipment attached. For each voyage, one consol is automatically created for each stowage mode defined on the voyage. A shipment is also created for each consol at the same time.

Most of the elements included in the CharterVoyage interface follow the fields available in the Charter Voyage manager () and the Charter Voyage Stowage Details.

Consol Interface

The Consol interface is used to specify the shipment consolidator. It is supported on both the inbound and the outbound. A consol can be created for a charter voyage or air schedule (flight).

A charter voyage consol represents the weight, volume, FEU/TEU capacities of a specific stowage mode on a specific charter voyage. It captures the allocated, maximum, committed, booked, and produced capacity values when the status of a consol is changed as a result of booking orders on a shipment that is related to the consol.

For a freight forwarder, the consol is considered a group of house bills or a set of sell shipments. All actions related to manipulating a consol should be performed from the perspective of a sell shipment. For example, adding freight to a consol would be performed by selecting sell shipments to add to consol.

For example, a freight forwarder starts with a group of house bills or a set of sell shipments. They have also reserved flights. For each flight reservation, there is a consol for defining the reserved capacity of the flight. The sell shipments are then booked to consols to create buy shipments.

Claim Interface

The Claim interface is used to specify damage claims. This interface is supported on both the inbound and the outbound.

A Claim contains information for GC3 or non-GC3 damaged shipments, can be used to notify parties of their involvement with a claim, and can tracks status changes that occur throughout the claim process. A claim consists of any freight damage that occurs to a shipment prior to taking ownership/responsibility of the shipment. Claims in GC3 are not dependent on pre-existing GC3 orders or shipments. GC3 can create a claim about a non-related GC3 order as well as pull data from existing GC3 shipments and orders.

Document Interface

The Document interface provides a consistent way to send and receive business documents in and out of the system. It is supported on both the inbound and the outbound.

Business documents are objects that contain the contents of a traditional document, like a bill of lading for example, in electronic format. This enables you to send and receive the business documents via integration.

Some of the data included in the Document interface includes information relating to a document's owner, its content, its parameters, and any involved parties.

SkuEvent Interface

The SkuEvent interface specifies a SKU event, which describes activities on SKU's. This enters order events to inform planners, shippers, order owners, and other involved parties about actions related to an SKU.

TransOrderLink Interface

The TransOrderLink interface is used to establish a link between Order Base objects. This provides the ability to maintain orders in various states along with their relationships. Within the interface, the PrevObjectGID element and the NextObjectGID element refer to TransOrderGID(s). This interface is supported on the inbound only.

7. Integration Messages

This chapter lists integration messages, describes why the message occurs, and describes what you need to do as a result of receiving the message.

You might find these error messages in a `TransmissionReport` element. (`ILogMan.java`).

Heading	Data
Message:	<code>public final static String Invalid Date Format Text = "THE DATE ELEMENT {0} WITH VALUE {1} IS NOT OF FORMAT YYYYMMDDHHMMSS";</code>
Occurs When:	An invalid date format error occurs when the date is not provided in the format <code>YYYYMMDDHHMMSS</code> .
Corrective Action:	Enter the date using the required format.

Heading	Data
Message:	<code>public final static String dataConversionErrorText = "DATA CONVERSION FAILED FOR THE ELEMENT {0} WITH VALUE {1}";</code>
Occurs When:	A data conversion error occurs when character data cannot be converted to an internal data type.
Corrective Action:	Eliminate extraneous characters from the data element.

Heading	Data
Message:	<code>public final static String duplicateKeyErrorText = "THE ELEMENT(S) {0} WITH VALUE(S) {1} IS A DUPLICATE PRIMARY KEY";</code>
Occurs When:	A duplicate Key error occurs when the primary key for a given element already exists in the G-Log database.
Corrective Action:	Change the Transaction Code element from I to IU.

Heading	Data
Message:	<code>public final static String PKNotFoundErrorText = "THE PRIMARY KEY ELEMENT(S) {0} WITH VALUE(S) {1} COULD NOT BE FOUND IN TABLE {2} COLUMN(S) {3}";</code>
Occurs When:	A <code>PKNotFoundError</code> most often occurs when an attempt is made to update or delete data that does not exist in the G-Log database.

Heading	Data
Corrective Action:	If your Transaction Code is U, then use UI instead. If your Transaction Code is D, then there is no corrective action.

Heading	Data
Message:	<code>public final static String FKNotFoundErrorMessageText = "THE FOREIGN KEY ELEMENT {0} WITH VALUE {1} COULD NOT BE FOUND IN TABLE {2} COLUMN {3}";</code>
Occurs When:	A FK Not Found Error occurs when a referenced primary key does not exist in the GLog database.
Corrective Action:	Correct the XML data value such that it refers to a primary key that does exist in the G-Log database.

Heading	Data
Message:	<code>public final static String missing RequiredElementErrorMessageText = "THE REQUIRED ELEMENT {0} IS MISSING";</code>
Occurs When:	A missing required element error occurs when a required element has been omitted from a GLogXML element.
Corrective Action:	Provide the missing required element in your XML data.

Heading	Data
Message:	<code>public final static String ITransactionNoNotFoundErrorMessageText = "THE I_TRANSACTION_NO WITH VALUE {0} DOESN'T EXIST IN THE DATABASE";</code>
Occurs When:	An ITransactionNoNotFoundErrorMessage occurs when a GLogXMLElement, such as a Tender Response, refers to a transaction number that does not exist in the G-Log I_TRANSACTION table.
Corrective Action:	Refer to an existing transaction number.

Heading	Data
Message:	<code>public final static String invalidTransactionCodeErrorMessageText = "THE TRANSACTION CODE {0} is not valid. Valid codes are I,U,D,IU,UI,NP";</code>

Heading	Data
Occurs When:	An invalid transaction code error occurs when the Transaction Code element is specified with an invalid value.
Corrective Action:	Specify a valid Transaction Code in your XML data.

Message:	public final static String transactionCodeNotSupportedText = "THE TRANSACTION CODE {0} IS NOT SUPPORTED IN THIS INTERFACE. VALID CODES ARE {1}";
Occurs When:	A transactionCodeNotSupported occurs when the TransactionCode element is specified with an unsupported value.
Corrective Action:	Correct the xml data to specify a valid TransactionCode.

Heading	Data
Message:	public final static String conflictingElementErrorText = "THE ELEMENT {0} AND THE ELEMENT {1} CANNOT BOTH BE SPECIFIED";
Occurs When:	A conflicting element error occurs when two elements have been provided in a G-Log XML Element, when only one out of the two may be used.
Corrective Action:	Eliminate one of the two conflicting elements in your XML data.

Heading	Data
Message:	public final static String invalidNumberFormatErrorText = "THE NUMBER ELEMENT {0} WITH VALUE {1} IS NOT IN A NUMBER FORMAT";
Occurs When:	An invalid number format error occurs when non-numeric characters are specified in a numeric element.
Corrective Action:	Eliminate the non-numeric characters in your XML data.

Heading	Data
Message:	public final static String missingElementErrorText = "WE REQUIRE A {0} ELEMENT WITH VALUE {1} IN THE {2}

Heading	Data
	ELEMENT";
Occurs When:	A missing element error occurs when an element with a particular value is required.
Corrective Action:	Provide the element with the required value as indicated in the error message.

Heading	Data
Message:	<code>public final static String invalidBooleanErrorText = "THE BOOLEAN ELEMENT {0} WITH VALUE {1} MUST BE EITHER Y or N";</code>
Occurs When:	An invalid Boolean error occurs when a Boolean element is provided with a value other than Y or N.
Corrective Action:	Provide either Y or N in the indicated Boolean element in your XML data.

Heading	Data
Message:	<code>public final static String invalidActionCodeErrorText = "THE ACTION CODE {0} is not valid. Valid codes are A, D";</code>
Occurs When:	An invalid action code error occurs when an action code is specified with a value other than A or D.
Corrective Action:	Provide either A or D in your XML data.

Heading	Data
Message:	<code>public final static String invalidCodeErrorText = "THE ELEMENT {0} WITH VALUE {1} is not valid. Valid codes are {2}";</code>
Occurs When:	An invalidCodeError occurs when a code is specified that is not valid for that element
Corrective Action:	Correct the xml data to provide a valid value.

Heading	Data
Message:	<code>public final static String invalidActivityErrorText = "THE</code>

Heading	Data
	ACTIVITY {0} is not valid. Valid codes are D, P or O";
Occurs When:	An invalidActivityError occurs when an activity is specified with a value other than P, D or O.
Corrective Action:	Correct the xml data to provide anyone of D, P or O.

Heading	Data
Message:	public final static String transactionProcessorExceptionText = "CAUGHT THE FOLLOWING EXCEPTION WHILE PROCESSING TRANSACTION: {0}";
Occurs When:	A transactionProcessorException occurs when the integration layer validation method has not checked for a given error condition, and the condition is caught by the underlying database. Most often this error occurs when an attempt is made to update the GC3 database so that one or more database referential integrity constraints are violated. For example, this error occurs if you attempt to delete a transportation order after one or more releases have been created.
Corrective Action:	No particular correction can be defined. Analyze the error based on the requirements of the data in the underlying database.

Heading	Data
Message:	public final static String maxLengthExceededErrorText = "ELEMENT {0} VALUE {1} HAS LENGTH {2} WHICH EXCEEDS THE MAX LENGTH {3} OF TABLE {4} COLUMN {5}";
Occurs When:	The length of an element value exceeds the length of the corresponding database column
Corrective Action:	Correct the xml data to provide a value which does not exceed the maximum length.

Heading	Data
Message:	public final static String maxLengthExceededErrorText3 = "ELEMENT {0} VALUE {1} EXCEEDS THE MAX LENGTH {2}";
Occurs When:	The length of an element value exceeds the length of the

Heading	Data
	corresponding database column
Corrective Action:	Correct the xml data to provide a value which does not exceed the maximum length.

Heading	Data
Message:	public final static String validateMaxLengthErrorText = "ERROR VALIDATING MAX LENGTH OF ELEMENT {0} VALUE {1} - CHECK TABLE NAME {2} COLUMN NAME {3}";
Occurs When:	The specified table/column information could not be found.
Corrective Action:	Call Support.

Heading	Data
Message:	public final static String transactionSuccessText = "TRANSACTION NUMBER {0} APPLICATION {1} PRIMARY KEY {2} TRANSACTION CODE {3} SUCCESSFULLY PROCESSED";
Occurs When:	A transaction success informational message occurs when a transaction has been successfully processed.
Corrective Action:	No action needed.

Heading	Data
Message:	public final static String matchMultipleShipmentErrorText = "UNABLE TO PROCESS DUE TO MULTIPLE SHIPMENTS MATCHED ON {0}";
Occurs When:	A matchMultipleShipment error message occurs when ShipmentRefnums/EquipmentNumber match different Shipment_GID. This type of error happens when receiving a TenderResponse or a ShipmentStatus.
Corrective Action:	Correct the xml data to provide ShipmentRefnum values which correspond to the same Shipment.

Heading	Data
Message:	public final static String missingRequiredDataErrorText = "WE REQUIRE A {0} ELEMENT WITH A VALUE MATCHING A

Heading	Data
	{1} IN THE {2} TABLE";
Occurs When:	A missingRequiredDataError occurs when an element with a particular value is missing from the database table.
Corrective Action:	Correct the database data to provide the value as indicated in the error message.

Heading	Data
Message:	public final static String orderNotModifiableText = "ORDER {0} IS NOT MODIFIABLE AND SO COULD NOT BE MODIFIED OR DELETED.";
Occurs When:	An orderNotModifiable informational message occurs when the status on an order is not "WKFLW_ORDER_OB_MODIFIABLE". This can occur if an order is in a state that restricts it from being modified, or an agent is setup to restrict modification.
Corrective Action:	If you want to be able to modify the order, you may have to change the state of the order or modify the agent that handles order modifications.

Heading	Data
Message:	public final static String reDoTransmissionErrorText = "UNABLE TO raiseNewXMLTopicsForRedoTransmissions, STACK TRACE: {0}";
Occurs When:	
Corrective Action:	None.

Heading	Data
Message:	public final static String savedQueryNoDataFoundErrorText = "THE SAVED QUERY {0} RETURNS NO DATA";
Occurs When:	The saved query in the SShipUnit element did not return any values.
Corrective Action:	Verify that the integration saved queries are correct and that the desired shipunits exist.

8. Oracle Advanced Queuing

Oracle Advanced Queuing (OAQ) provides an alternate way of sending and receiving XML transmissions to/from GC3. The main benefit to using OAQ is the added levels of guaranteed messaging.

Once the OAQ functionality is enabled, a series of database queues and tables are used to receive and send XML messages.

Enable OAQ Functionality

The OAQ functionality is enabled via the following property:

```
glog.integration.oaq = true
```

By default, the parameter is set to FALSE. Enabling this property will activate the Internal Queue Listener in the application server for processing the XML. The listener also retrieves messages from the inbound_aq queue, and submits messages to the other queues listed below. The listener is automatically started when the property above is set to true, but you can also manually start and stop the listener.

To manually start the listener from SQLPlus, run the following utility:

```
begin pkg_queue_management.install_queue_listener; end;
```

To manually stop the listener, run the following utility:

```
begin pkg_queue_management.stop_queue_listener; end;
```

Queue Database Table

To support OAQ, there is a database table call INTG_QUEUE. The primary fields of this table are Q_NAME and USER_DATA (there are other fields in this table). There is a data type called INTG_QUEUE_MESSAGE for the USER_DATA field. The definition of the INTG_QUEUE_MESSAGE is:

ID	Type	Description
refnum	varchar2(101)	Can be assigned by client system for message referencing.
subject	varchar2(500)	Arbitrary text field definable by the client.
transmission_no	number	GC3 assigned transmission number.
external_system_id	varchar2(101)	Overrides the external system gid in the TransmissionHeader.
user_name	varchar2(128)	Used for user authentication instead of in the TransmissionHeader.
password	varchar2(128)	Used for user authentication instead of in the TransmissionHeader.
Xml	clob	Contains the XML transmission.

Default Queues

There are five default queues created upon installation:

- `inbound_aq` - This is the inbound xml queue. Inbound GC3 XML Transmissions, including RIQ, should be sent to this queue. A database listener will listen to the queue. The XML in the queue is persisted to the `I_transmission` and `I_transaction` tables. If there is an exception, it will be written to the `exception_aq` queue. Upon the completion of staging, it creates an acknowledgement for the `ack_aq` and
- `xml_stage_aq` - queues to notify CG3 to process the Transmission. `xml_stage_aq` - This is the internal staging queue for the application server. A GC3 agent will be listening to this queue and raise a newXMLTopic for messages in the queue. The XML will then be processed. Once the XML is processed, a transmission report is written to the queue specified in the external system or contact elements.
- `ack_aq` - This is the acknowledgement queue. It contains the TransmissionAck XML, which acknowledges that GC3 received a transmission. In some cases, there may not be a need to receive the `ack_aq`. To suppress this, the SuppressTransmissionAck element in the TransmissionHeader should be set to Y.
- `exception_aq` - This is the exception queue. During staging, all exceptions will be written into this queue. The exceptions include invalid user, invalid password, or null user name and password.
- `query_reply_aq` - This is the default RIQ query response queue. For RIQ (and other query transmissions), the response will be sent to the queue defined in the TransmissionHeader. If the queue is not specified, the response will be sent to this queue.

Queue Management Utilities

Using a SQL tool, such as SQLPlus, the following utilities can be used for managing the queues:

To drop a queue:

```
begin pkg_queue_management.drop_queue ('your_queue_name'); end;
```

To delete all queue entries for a given queue in the `intg_queue` table:

```
begin pkg_queue_management.delete_queue_entries ('your_queue_name'); end;
```

To remove every entry for all the queues in the queue table:

```
begin pkg_queue_management.empty_queue_table; end;
```

To start all the queues in the external system table:

```
begin pkg_queue_management.start_external_system_queues; end;
```

To start all the default queues:

```
begin pkg_queue_management.start_default_queues; end;
```

Inbound Processing

There are several steps that take place when XML is sent to GC3:

- User Validation - The `INTG_QUEUE_MESSAGE` datatype supports specifying the user name and password as part of the message. This alleviates having to set it in the TransmissionHeader of the XML.

- Transmission and TransmissionAck Correlation - There are several options available to correlate the Transmission XML sent to GC3 and the TransmissionAck XML that will be available in the acknowledgement queue:
- Use Sender Transmission Number: You must send a unique value in the TransmissionHeader.SenderTransmissionNo element in the transmission before sending it to the queue. The value is echoed back in the TransmissionAck.
- Use refnum field in INTG_QUEUE_MESSAGE: You must set the refnum field in the queue message before queuing. The value is echoed back in the TransmissionAck.
- Use JMSCorrelationID Header Option: A column exists in the INTG_QUEUE table for correlation id (table column name is CORRID). This field is also set in the acknowledgement queue when the response is queued.
- Persisting XML - The internal queue message in the database handles the persisting of the XML in the I_Transmission and I_Transaction tables.
- Transmission Report - The process supports sending the TransmissionReport to a queue by setting the following in the TransmissionHeader:

```
AckSpecComMethodGID = 'QUEUE'
```

The AckSpec.ContactGID element should be specified. GC3 will look for Contact > External System > IntQueueName. The process also supports specifying a ContactGID for which the TransmissionReport should be sent. The ComMethodGID specifies the method of sending.

Outbound Processing

Sending outbound XML via OAQ is supported through the External System Manager. This has a section to define a Queue Name. The application server will initiate the creation and enabling of the queue for a new value. The queue name should not contain the character ".". Oracle generally considers the first portion before the "." as a schema owner.

Optional Oracle Settings

The following Oracle parameters can be specified in init.ora or spfile.

- aq_tm_process = 1 (to perform time monitoring on queue messages)
- job_queue_processes = 6 (to set the number of job queue processes started in an instance)

