

Sterling Parcel Carrier Adapter

Guide

Release 7.9

October 2006



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Preface

This document describes how to use Sterling Parcel Carrier Adapter Release 7.9 (Carrier Adapter 7.9).

Intended Audience

This document is intended for use by application developers, system administrators, and users who use Sterling Parcel Carrier Adapter to provide carrier-related functionalities in a central place.

Structure

This document contains the following sections:

Chapter 1, "Introduction"

This chapter introduces the Sterling Parcel Carrier Adapter and its architecture.

Chapter 2, "Configuring Sterling Parcel Carrier Adapter"

This chapter provides a detailed description about configuring Sterling Parcel Carrier Adapter.

Chapter 3, "Sterling Parcel Carrier Adapter Technical Details"

This chapter describes the programming components of the Sterling Parcel Carrier Adapter.

Chapter 4, "Integrating Sterling Parcel Carrier Adapter with ConnectShip"

This chapter describes the integration of Sterling Parcel Carrier Adapter with ConnectShip.

Chapter 5, "Troubleshooting Connectivity Issues"

This chapter provides information for solving problems that can occur using Sterling Parcel Carrier Adapter.

Sterling Supply Chain Applications Documentation

For more information about the Sterling Supply Chain Applications Platform[®] components, see the following manuals in the Sterling Supply Chain Applications[®] documentation set:

- *Sterling Supply Chain Applications[®] Release Notes*
- *Sterling Supply Chain Applications[®] Installation Guide*
- *Sterling Supply Chain Applications[®] Upgrade Guide*
- *Sterling Supply Chain Applications[®] Performance Management Guide*
- *Sterling Supply Chain Applications[®] High Availability Guide*
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- *Sterling Supply Chain Applications® Glossary*
- *Sterling Parcel Carrier Adapter® Guide*
- *Sterling Application Server® Installation Guide* (for optional component)

Conventions

The following conventions may be used in this manual:

Convention	Meaning
. . .	An ellipsis represents information that has been omitted.
< >	Angle brackets indicate user-supplied input.
mono-spaced text	Mono-spaced text indicates a file name, directory path, attribute name, or an inline code example or command.

Convention	Meaning
/ or \	Slashes and backslashes are file separators for Windows, UNIX and LINUX operating systems. The file separator for the Windows operating system is "\" and the file separator for Unix and Linux systems is "/". The Unix convention is used unless otherwise mentioned.
<YANTRA_HOME>	User-supplied location of the Sterling Supply Chain Applications installation directory.
<YFS_HOME>	Location of the generated <YANTRA_HOME>/Runtime directory.
<YANTRA_HOME_OLD>	User-supplied location of the Sterling Supply Chain Applications installation directory for previously installed releases. This is only applicable for Release 7.7 or above.
<YFS_HOME_OLD>	This is the <YANTRA_HOME_OLD>/Runtime directory of previously installed releases.

Introduction

Sterling Parcel Carrier Adapter (Carrier Adapter) provides applications with an interface for their carrier-related functionality. It helps companies to quickly meet the changing requirements initiated by both carriers and customers, in the most efficient way.

Sterling Parcel Carrier Adapter has a data driven design, with functionality defined in terms of the relationship between entities stored as data elements in the database. Carriers having similar functionality can be incorporated into an installation with minimal engineering effort.

This chapter provides:

- [Technology Overview](#)
- [Functionality Overview](#)

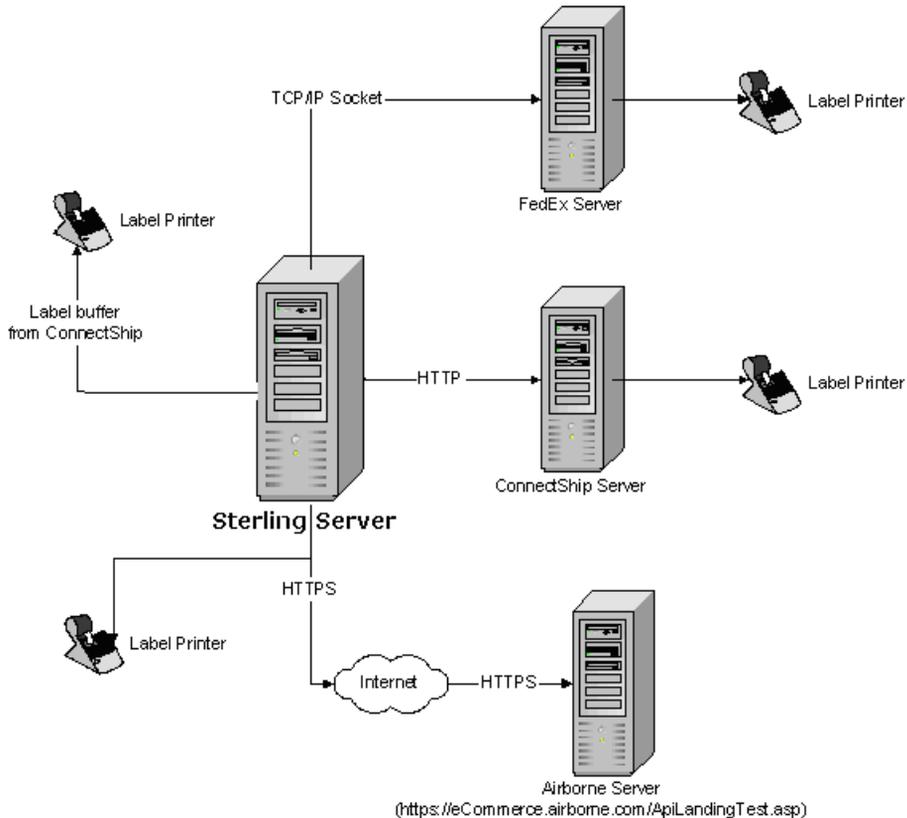
1.1 Technology Overview

This section explains the Carrier Adapter architecture and default printers that Carrier Adapter supports.

1.1.1 Sterling Parcel Carrier Adapter Architecture

[Figure 1–1](#) illustrates Carrier Adapter integration with FedEx, Airborne, and ConnectShip server through TCIP/IP socket and HTTP.

Figure 1–1 Carrier Adapter Architecture



FedEx

Carrier Adapter communicates with the FedEx PowerShip server (FXRS0563) through TCP/IP sockets. The FedEx PowerShip server and Carrier Adapter are part of same LAN/WAN. Labels can be printed directly from the FedEx server. The FedEx server can also return a label buffer, but the current WMS or Carrier Adapter integration does not support printing this buffer.

Airborne

Sterling Parcel Carrier Adapter communicates with Airborne through HTTPS over the internet. Airborne does not require any special installation at the warehouse. However, since Airborne server is

connected through internet, labels cannot be directly printed by Airborne. Instead Airborne always returns label buffer in a PNG format and Sterling Parcel Carrier Adapter prints this label.

ConnectShip (UPS)

Sterling Parcel Carrier Adapter communicates with ConnectShip through HTTP. The ConnectShip server is installed on a machine that is part of the same LAN or WAN as that of the Sterling Parcel Carrier Adapter. Labels can be printed directly from the ConnectShip server.

1.1.2 Printers

The Sterling Parcel Carrier Adapter supports the following default printers:

Table 1–1 Printers Supported

Carrier	Printer
FedEx	– Eltron LP2844
ConnectShip	– ConnectShip supports most printers. For more details about the ConnectShip supported printers, see Chapter 4, "Integrating Sterling Parcel Carrier Adapter with ConnectShip" .
Airborne	– Airborne has no separate printer requirements and supports most standard printers.

1.2 Functionality Overview

Sterling Parcel Carrier Adapter supports:

- [ConnectShip Compliance Functionality](#)
- [FedEx Express Compliance Functionality](#)
- [Airborne Compliance Functionality](#)

1.2.1 ConnectShip Compliance Functionality

The Sterling Parcel Carrier Adapter functionalities provided for ConnectShip compliance are:

- Open Manifest
- Ship Carton
- Delete Carton
- Close Manifest

ConnectShip is used for shipping UPS packages.

1.2.2 FedEx Express Compliance Functionality

The Sterling Parcel Carrier Adapter functionalities provided for FedEx compliance are:

- Open Manifest
- Generation of Transaction 020 (Global Ship request/reply)
- Generation of Transaction 023 (Delete Carton Request/reply)
- Generation of Transaction 007 (End Of Day Request/Reply)

1.2.3 Airborne Compliance Functionality

The Sterling Parcel Carrier Adapter functionalities provided for Airborne compliance are:

- Generate Shipment (Request/Reply) transaction
- void Shipment (Request/Reply) transaction

Configuring Sterling Parcel Carrier Adapter

This chapter describes the configuration of Sterling Parcel Carrier Adapter (Carrier Adapter).

Although, Carrier Adapter comes with pre-installed carrier configuration data. Carriers may modify their service offerings based on business plans. This may require you to modify the configuration data at such times.

Configuring Carrier Adapter deals with:

- [Setting Up the Sterling Parcel Carrier Adapter Properties](#)
- [Standard Configurations Packaged](#)
- [Pre-Configured Carriers](#)

2.1 Setting Up the Sterling Parcel Carrier Adapter Properties

Carrier Adapter requires relevant values for the following parameters:

- ConnectShip Server URL
- FedEx logon parameters
- AIRB logon parameters
- XML Logging
- Parameters for AIRB label print

These values are stored in the `<YANTRA_HOME>/Applications/Foundation/Resources/ycs.properties` file. To modify these parameters, edit this file or rerun the install script.

2.2 Standard Configurations Packaged

As a part of Carrier Adapter, factory setup data is provided for the following carriers:

- Federal Express (FedEx)
- Airborne (AIRB)
- United Parcel Service United States (UPSN)
- United Parcel Service Canada (UPSC)
- United Parcel Service Europe (UPSE)
- United Parcel Service Asia Pacific (UPAC)
- United Parcel Service Latin America (UPSL)

2.3 Pre-Configured Carriers

The Carrier Adapter application is pre-configured for the following carriers:

- [Federal Express \(FedEx\) Services and Special Services](#)
- [Airborne \(AIRB\) Services and Special Services](#)
- [United Parcel Service \(UPS\) Services and Special Services](#)

2.3.1 Federal Express (FedEx) Services and Special Services

Services

Carrier Adapter supports the following carrier services for FedEx:

- FedEx Ground
- FedEx Home Delivery
- FedEx Priority Overnight
- FedEx 2nd Day
- FedEx Standard Overnight
- FedEx First Overnight

- FedEx Express Saver
- Extra Hours
- FedEx 1Day Freight
- FedEx 2Day Freight
- FedEx 3Day Night
- Extra Hours

Special Services

Carrier Adapter supports the following special services for FedEx:

- Saturday Delivery
- Saturday Pickup
- COD
- Ship Alert

2.3.2 Airborne (AIRB) Services and Special Services

Services

Carrier Adapter supports the following carrier services for Airborne:

- Airborne Express Delivery
- Airborne Next Afternoon
- Airborne Second Day
- Airborne Ground

Special Services

Carrier Adapter supports the following special services for Airborne:

- COD
- Saturday Delivery
- Hold At Airborne

2.3.3 United Parcel Service (UPS) Services and Special Services

United Parcel Service United States (UPSN)

Services

Carrier Adapter supports the following carrier services for UPSN:

- UPS NEXT DAY AIR
- UPS NEXT DAY AIR SAVER
- UPS 2ND DAY AIR
- UPS 2ND DAY AIR A.M.
- UPS GROUND
- UPS 3 DAY SELECT
- UPS EARLY A.M.
- UPS WORLWIDE EXPEDITED
- UPS WORLWIDE EXPRESS
- UPS WORLWIDE EXPRESS PLUS

Special Services

Carrier Adapter supports the following special services for UPSN:

- Declared Value Insurance
- Collect on Delivery
- Tagless COD
- Signature Required
- Adult Signature Required
- Delivery Confirmation
- Shipment Notification
- Saturday Delivery
- Saturday Pickup

United Parcel Service Canada (UPSC)

Services

Carrier Adapter supports the following carrier services for UPSC:

- CANADA UPS EXPRESS
- CANADA UPS EXPRESS SAVER
- CANADA UPS EXPEDITED
- CANADA UPS STANDARD
- CANADA UPS EXPRESS EARLY A.M.

Special Services

Carrier Adapter supports the following special services for UPSE:

- Declared Value Insurance
- Collect on Delivery
- Tagless COD
- Signature Required
- Adult Signature Required
- Delivery Confirmation
- Shipment Notification
- Saturday Delivery
- Saturday Pickup

United Parcel Service Europe (UPSE)

Services

Carrier Adapter supports the following carrier services for UPSE:

- EUROPE UPS EXPRESS
- EUROPE UPS EXPRESS SAVER
- EUROPE UPS EXPEDITED
- EUROPE UPS STANDARD

Special Services

Carrier Adapter supports the following special services for UPSE:

- Declared Value Insurance
- Collect on Delivery
- Tagless COD
- Signature Required
- Adult Signature Required
- Delivery Confirmation
- Shipment Notification
- Saturday Delivery
- Saturday Pickup

United Parcel Service Asia Pacific (UPSA)

Services

Carrier Adapter supports the following carrier services for UPSA:

- APAC UPS EXPRESS
- APAC UPS WORLDWIDE EXPEDITED
- APAC UPS WORLDWIDE EXPRESS
- APAC UPS WORLDWIDE EXPRESS PLUS

Special Services

Carrier Adapter supports the following special services for UPSA:

- Declared Value Insurance
- Collect on Delivery
- Tagless COD
- Signature Required
- Adult Signature Required
- Delivery Confirmation
- Shipment Notification

- Saturday Delivery
- Saturday Pickup

United Parcel Service Latin America (UPSL)

Services

Carrier Adapter supports the following carrier services for UPSL:

- LATAM UPS EXPRESS
- LATAM UPS WORLDWIDE EXPEDITED
- LATAM UPS WORLDWIDE EXPRESS
- LATAM UPS WORLDWIDE EXPRESS PLUS

Special Services

Carrier Adapter supports the following special services for UPSL:

- Declared Value Insurance
- Collect on Delivery
- Tagless COD
- Signature Required
- Adult Signature Required
- Delivery Confirmation
- Shipment Notification
- Saturday Delivery
- Saturday Pickup

Sterling Parcel Carrier Adapter Technical Details

Sterling Warehouse Management System provides the ability to integrate parcel carriers as a part of the manifesting process within a node.

Sterling WMS integrates with carriers when:

- Opening a manifest for a carrier
- Adding containers to an open manifest
- Removing containers from an open manifest
- Closing a manifest

The carrier integration is built over an abstraction layer called Sterling Parcel Carrier Adapter (Carrier Adapter). This layer abstracts the integration details to various carriers from the applications. Carrier Adapter exposes internal APIs corresponding to the Sterling WMS carrier integration as listed (above) to the application layer. For example, in Sterling WMS, Carrier Adapter takes a standardized XML, use configuration data specific to carriers to massage the data and pass data to the carriers using specific protocols.

Carrier Adapter is preconfigured to integrate directly with FedEx and AirBorne, and UPS through ConnectShip.

This chapter provides technical details of Carrier Adapter. It contains descriptions and usage information for the Carrier Adapter tables, User Exits, and XML.

This chapter includes:

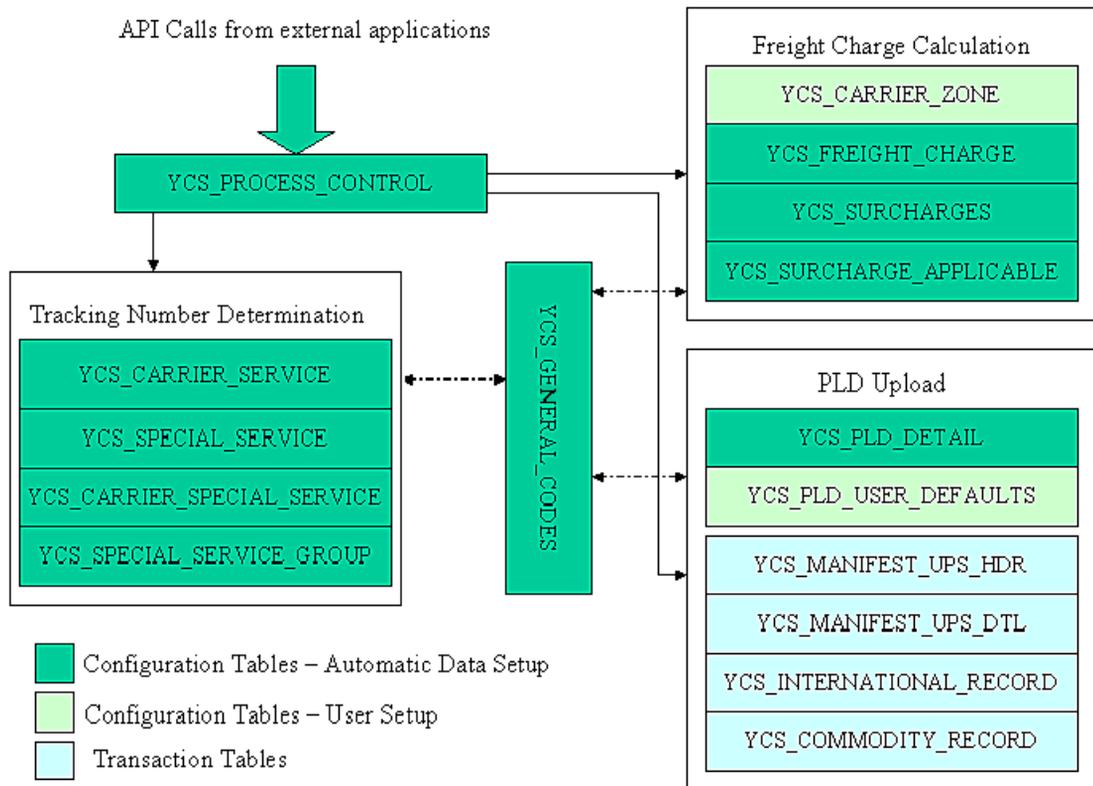
- [Introduction to Sterling Parcel Carrier Adapter Tables](#)

- [Carrier Adapter Integration Details](#)
- [Integrating a New Carrier with Sterling Parcel Carrier Adapter](#)
- [Field-Level Mapping for FedEx](#)
- [Field-Level Mapping for Airborne](#)

3.1 Introduction to Sterling Parcel Carrier Adapter Tables

The Carrier Adapter is designed with a data driven approach. The business logic is defined in terms of relationships between entities stored as data elements in the database. [Figure 3–1](#) illustrates the Carrier Adapter tables.

Figure 3–1 Sterling Parcel Carrier Adapter Tables



3.1.1 Configuration Tables

Carrier Adapter uses the following configuration tables:

- YCS_Carrier_Service
- YCS_Special_Service
- YCS_Carrier_Special_Service
- YCS_Special_Service_Group
- YCS_General_Codes
- YCS_Process_Control

- YCS_PLD_Detail
- YCS_PLD_User_Defaults

The Carrier Adapter Process Control table defines the mechanism or protocol for integration of Sterling WMS to a carrier for a specific API.

Table 3–1 Carrier Adapter_Process_Control

Attribute	Description
CARRIER	Carrier Code same as in Sterling WMS
API_NAME	Name of the Carrier Adapter API corresponding to each Console (OPENMANIFEST, SHIPCARTON,DELETECARTON,CLOSEMANIFEST)
LOGIC_SWITCH	Logic Switch associated with the API (This identifies the mechanism or protocol for integration to the carrier for the specific Console or API)

Table 3–2 Logic switches for Carrier Integration

Sterling WMS API	Carrier Adapter API	FedEx	ConnectShip	AirBorne
openManifest	OPENMANIFEST	None	None	None
addContainerToManifest	SHIPCARTON	020	CS_SHIP	GENERATE_SHIPMENT
removeContainerFromManifest	DELETECARTON	023	CS_VOID	VOID_SHIPMENT
closeManifest	CLOSEMANIFEST	007	CS_CLOSE_MANIFEST	Not Supported

Table 3–3 Carrier Adapter_General_Codes

Attribute	Description
CARRIER	Carrier Code same as in Sterling WMS
CODE	A Data value passed to Carrier Adapter that needs to be translated to the carrier specific value

Table 3–3 Carrier Adapter_General_Codes

Attribute	Description
VALUE	Carrier specific value to which a Carrier Adapter data value is translated to
DESCRIPTION	Value of Field_Name in YCS_Pld_Detail table

The YCS PLD Detail table provides mapping between Carrier Adapter XML attributes and the external Carrier Adapter attributes for the processes of add or remove package, and open or close manifest.

Table 3–4 Carrier Adapter_PLD_Detail

Attribute	Description
CARRIER	Carrier Code same as in Sterling WMS
FIELD_NAME	Carrier Adapter API Attribute Name (It is either the complete XPATH to the Carrier Adapter input XML, for example ConnectShip or only the leafattribute value, for example, FEDX and AIRB.)
FIELD_LOCATION	Numeric Value Based on the Attribute Name that identifies the Fedex Attribute ID. (For example, 498 -> ShipperAccountNumber)
FIELD_TYPE	Number/String
FIELD_LENGTH	Length of Attribute
DECIMAL_DIGITS	Decimal digits only if FIELD_TYPE is Real
REQUIRED_FLAG	R - Required field for the carrier
DEFAULT_TYPE	SYSTEM: Use the value specified in DEFAULT_VALUE column. MAPPING: Use the specified value passed in Carrier Adapter input and get the value from YCS_General_Codes table. Blanks: No Defaulting. Use the value from Carrier Adapter input XML.
DEFAULT_VALUE	Specific Value depending on DEFAULT_TYPE

Table 3–4 Carrier Adapter_PLD_Detail

Attribute	Description
CARRIER_FIELD_NAME	<p>Used in AirBorne and ConnectShip, to specify the complete XML path. Both AirBorne and ConnectShip do not use element attributes. They only use Nodes with child nodes or Node values, as:</p> <pre data-bbox="611 425 1268 928"><eCommerce> <Shipment> <Shipment Detail> <ShipDate>20051229</ShipDate> <Weight>12</Weight> </ShipmentDetail> <Reciever> <Address> <City>Boston</City> </Address> </Reciever> </Shipment> </eCommerce></pre> <p>For example, AirBorne: eCommerce/Shipment/ShipmentDetail/ShipDate ConnectShip: SHIPMENTREQUEST/DEFATTRIBUTES/SHIPDATE</p>
TXN	Transaction or Process. Primarily Logic switches corresponding to Add/Remove package, Open/Close Manifest.
SUB_TXN	Send or Receive Input or Output Data (Request/Reply)

3.2 Carrier Adapter Integration Details

Generally, carriers are integrated with Carrier Adapter when manifesting. Sterling Warehouse Management System supports the following carriers:

- FedEx

- AirBorne
- UPS

During manifest, Sterling WMS integrates a carrier as follows:

1. The Sterling Supply Chain Applications check if the carrier integration is required or not based on the configuration present in YFS_Scac and YFS_Scac_Ex tables. If carrier integration is required, Sterling WMS calls the relevant Carrier Adapter API.
2. Carrier Adapter sequentially checks for integration with each carrier. Each API that Sterling WMS supports is known by an internal Carrier Adapter API name. A corresponding logic switch is defined for each carrier. [Table 3–2](#) explains the logic switches for all carriers.
3. The logic switches determine the input and output XMLs passed between the carrier’s server and Carrier Adapter. If a specific integration is required between them, Carrier Adapter creates input data needed for these XMLs based on the mapping details provided in [Table 3–4](#), and sends it to the carrier’s server.

Note: Note that the `openManifest` API does not support any carrier integration.

3.3 Integrating a New Carrier with Sterling Parcel Carrier Adapter

Although the Sterling Supply Chain Applications, by default, support carrier integrations for FedEx, UPS and Airborne. This can be extended to provide carrier integrations for other carriers too.

The two ways to integrate other carriers to Sterling Parcel Carrier Adapter:

- [Using ConnectShip](#)
- [Using User Exits](#)

3.3.1 Using ConnectShip

The field-level mapping for Carrier Adapter XML and the ConnectShip SHIPMENTREQUEST API input and output are provided in [Table 3–5](#).

Mapping is done between the Input XML that is passed to Carrier Adapter and the input required for ConnectShip. The TransactionId is "CS_SHIP" and the SubTransaction Id is "Request". Pld Mapping provided here is only for the Carrier (United Parcel Service Unites States). In our factory setup, this data has been duplicated with a few modifications for other UPS carriers (UPSC, UPSE, UPSA, UPSL).

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PKGWEIGHT/WEIGHTUNITS	UPSPLD/PackageLevelDetail@UOMWeight	Shipment.Carrier.Locale.WeightUOM
SHIPMENTREQUEST/PACKAGES/PKG/PKGWEIGHT/WEIGHTVALUE	UPSPLD/PackageLevelDetail@PackageActualWeight	Container.Container_Gross_Weight
SHIPMENTREQUEST/PACKAGES/PKG/DIMENSION/DIMUNITS	UPSPLD/PackageLevelDetail@UOMDim	Shipment.Carrier.Locale.DimensionUOM
SHIPMENTREQUEST/PACKAGES/PKG/DIMENSION/DIMVALUE	UPSPLD/PackageLevelDetail@PackageLength	Container.PackageLength
SHIPMENTREQUEST/PACKAGES/PKG/REFERENCE/MISREFERENCE1	UPSPLD/PackageLevelDetail@ShipmentNumber	Shipment.ShipmentNo
SHIPMENTREQUEST/PACKAGES/PKG/TRACKINGNUMBER	UPSPLD/PackageLevelDetail@PackageTrackingNumber	Container.Tracking_No
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/SATDELIVERY	UPSPLD/PackageLevelDetail@SatDeliveryInd	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "SATDELI" exist, then the value is set to "1"
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/DECLAREDVALUE/CURRENCYCODE	UPSPLD/PackageLevelDetail@CurrencyCode	Shipment.Currency

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/DECLAREDVALUE/MONETARYVALUE	UPSPLD/PackageLevelDetail@DeclaredValueInsurance	Container.Declared_Value
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/COD/CODAMOUNT/CURRENCYCODE	UPSPLD/PackageLevelDetail@ShipmentCODCurrencyCode	Shipment.Currency
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/COD/CODAMOUNT/MONETARYVALUE	UPSPLD/PackageLevelDetail@CODAmount	Container.COD_Amount
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/COD/CODPAYMENTMETHOD	UPSPLD/PackageLevelDetail@CODFundsInd	Shipment.COD_Pay_Method
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/HAZARDOUS/HAZMAT	UPSPLD/AccessorialRecord@HazMat	Shipment.HazardousMaterialFlag
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/INTL/COMMODITYCONTENTS/CONTENT/PRODUCTCODE	UPSPLD/CommodityRecord@PartNumber	Container.ContainerDetail.Item.Item_Id
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/INTL/COMMODITYCONTENTS/CONTENT/QUANTITY	UPSPLD/CommodityRecord@LineQuantity	Container.ContainerDetail.Quantity
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/INTL/COMMODITYCONTENTS/CONTENT/UNITMEASURE	UPSPLD/CommodityRecord@LineQtyUOM	Container.ContainerDetail.UOM

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/UNITWEIGHT	UPSPLD/CommodityRecord@CommodityWeight	Container.ContainerDetail.OrderLine.Item_Weight * Container.ContainerDetail.Quantity
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/UNITVALUE	UPSPLD/CommodityRecord@LineUnitAmtPrice	Container.ContainerDetail.OrderLine.Unit_Price * Container.ContainerDetail.Quantity
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/PRODUCTDESCRIPTION	UPSPLD/CommodityRecord@LineMerchDesc1	Container.ContainerDetail.Item.Description
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/ORIGINCOUNTRY	UPSPLD/CommodityRecord@LineOriginCountry	Container.ContainerDetail.Item.Country_Of_Origin
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/HARMONIZED CODE	UPSPLD/CommodityRecord@CommodityCode	Container.ContainerDetail.Item.Harmonized_Code
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/LICENSENUMBER	UPSPLD/CommodityRecord@LineLicenseInfo	Container.Export_License_No
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ COMMODITYCONTENTS/ CONTENT/LICENSEEXPDATE	UPSPLD/CommodityRecord@LineLicenseExpDate	Container.Export_License_Exp_Date

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/COMMODITYCONTENTS/CONTENT/ECCN	UPSPLD/CommodityRecord@ECCN	Container.ContainerDetail.Item.ECCN
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/DECLAREDVALUECUSTOMS	UPSPLD/InternationalRecord@ShipmentInsuranceDeclaredValue	Container.Declared_Value
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/ULTIMATEDESTCOUNTRY	UPSPLD/InternationalRecord@UltimateDestCountry	Shipment.ShipToPersonInfo.Country
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/INTL/INTLDESCRIPTION	UPSPLD/InternationalRecord@DescriptionOfGoods	Container.ContainerDetail.Item.NMFC_Code or Container.ContainerDetail.Item.NMFC_Class
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/SUNDAY_DELIVERY	UPSPLD/ExtraFieldsRecord@SunDeliveryInd	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "SUNDELI" exist, then the value is set to "1"
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/COMPANY	UPSPLD/PackageLevelDetail@ConsigneeCompanyName	Shipment.ShipToPersonInfo.Company
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/CONTACT	UPSPLD/PackageLevelDetail@ConsigneeAttention	Shipment.ShipToPersonInfo.Name
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/ADDRESS1	UPSPLD/PackageLevelDetail@ConsigneeAddress1	Shipment.ShipToPersonInfo.Address_Line1
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/ADDRESS2	UPSPLD/PackageLevelDetail@ConsigneeAddress2	Shipment.ShipToPersonInfo.Address_Line2
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/ADDRESS3	UPSPLD/PackageLevelDetail@ConsigneeAddress3	Shipment.ShipToPersonInfo.Address_Line3

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/CITY	UPSPLD/PackageLevelDetail@ConsigneeCity	Shipment.ShipToPersonInfo.City
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/STATEPROVINCE	UPSPLD/PackageLevelDetail@ConsigneeStateProv	Shipment.ShipToPersonInfo.State
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/POSTALCODE	UPSPLD/PackageLevelDetail@ConsigneePostalCode	Shipment.ShipToPersonInfo.Zip_Code
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/RESIDENTIAL	UPSPLD/PackageLevelDetail@ResInd	If Shipment.ShipToPersonInfo.Company is "Blank", then value "1" is passed. Otherwise, value "0" is passed.
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/PHONE	UPSPLD/PackageLevelDetail@ConsigneePhone	Shipment.ShipToPersonInfo.Day_Phone
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/COUNTRYSYMBOL	UPSPLD/PackageLevelDetail@ConsigneeCountry	Shipment.ShipToPersonInfo.Country
SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/CONSIGNEEACCOUNT	UPSPLD/PackageLevelDetail@ConsigneeUPSACctNumber	Shipment.CustCarrier_Account_No
SHIPMENTREQUEST/DEFATTRIBUTES/SHIPPERINFO/SHIPPER	UPSPLD/PackageLevelDetail@ShipperAccountNumber	Container.Manifest.Manifest.Shipper_Account_No
SHIPMENTREQUEST/PACKAGES/PKG/TERMS	UPSPLD/PackageLevelDetail@ShipmentChgType	Shipment.FreightTerms.ChargesPaidBy. If this value is "BUYER", then the Carrier Adapter attribute is set to "COL". Otherwise, it is set to "PRE"
SHIPMENTREQUEST/DEFATTRIBUTES/SHIPDATE	UPSPLD/PackageLevelDetail@PickupDate	Container.Manifest.Manifest_Date
SHIPMENTREQUEST/PACKAGES/PKG/LABELPRINT/PORT	UPSPLD/ExtraFieldsRecord@ThermalLabelPrinterID	PrinterId for Carrier Label Document Id (FEDX_CARRIER_LABEL or UPSN_CARRIER_LABEL)
SHIPMENTREQUEST/SHIPMENTSERVICE/SCS	UPSPLD/PackageLevelDetail@UPSServiceType	Shipment.SCAC.SCACAndService.Electronic_Code

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/SHIPNOTIFICATION/CARRIERSHIPNOTIFICATION/CSNNUMBER_OR_EMAIL	UPSPLD/AdvisoryInformationRecord@SNEmailAddressDestination1	Shipment.ShipTo.PersonInfo.EmailId
SHIPMENTREQUEST/PACKAGES/PKG/SHIPNOTIFICATION/CARRIERSHIPNOTIFICATION/CSNADDRESS/CSNCOMPANY	UPSPLD/AdvisoryInformationRecord@SNCompanyName1	Shipment.ShipToPersonInfo.Company
SHIPMENTREQUEST/PACKAGES/PKG/SHIPNOTIFICATION/CARRIERSHIPNOTIFICATION/CSNADDRESS/CSNCONTACT	UPSPLD/AdvisoryInformationRecord@SNAttnName1	Shipment.ShipToPersonInfo.Name
SHIPMENTREQUEST/PACKAGES/PKG/SHIPNOTIFICATION/CARRIERSHIPNOTIFICATION/CSNADDRESS/CSNPHONE	UPSPLD/AdvisoryInformationRecord@SNContactPhone1	Shipment.ShipToPersonInfo.Day_Phone
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/PROOF/PROOFFLAG	UPSPLD/PackageLevelDetail@DCISType	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "DELCONF" exist, then the value is set to "1"
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/PROOF/PROOFSIGNATURE	UPSPLD/PackageLevelDetail@DCISType	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "DELCONF" exist, then the value is set to "2"
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/PROOF/PROOFADULTSIGNATURE	UPSPLD/PackageLevelDetail@DCISType	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "DELCONF" exist, then the value is set to "A"
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/BILLTHIRDPARTY/BTPCOMPANY	UPSPLD/AlternatePartyRecord@CompanyName	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Company

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPADDRESS1	UPSPLD/AlternatePartyRecord@Address1	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Address_Line1
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPADDRESS2	UPSPLD/AlternatePartyRecord@Address2	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Address_Line2
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPADDRESS3	UPSPLD/AlternatePartyRecord@Address3	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Address_Line3
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPCITY	UPSPLD/AlternatePartyRecord@City	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.City
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPSTATEPROVINCE	UPSPLD/AlternatePartyRecord@StateProv	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.State
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPPOSTALCODE	UPSPLD/AlternatePartyRecord@PostalCode	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Zip_Code
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPCOUNTRYSYMBOL	UPSPLD/AlternatePartyRecord@Country	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Country
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPPHONE	UPSPLD/AlternatePartyRecord@Phone	Shipment.ShipNode.SCACEX.THIRDPARTYORGANIZATION.Phone

Table 3–5 Field-Level Mapping for ConnectShip

Carrier Field Name	Carrier Adapter Attribute	Database Attribute
SHIPMENTREQUEST/PACKAGES/PKG/PACKAGE SERVICEOPTIONS/BILLTHIRDPARTY/BTPACCOUNT	UPSPLD/AlternatePartyRecord@ID_AcctNumber	Shipment.ShipNode.SCACEX.Account1
SHIPMENTREQUEST/PACKAGES/PKG/REFERENCE/NOFN_SEQUENCE	UPSPLD/PackageLevelDetail@NOFNSequence	Sequence of Container within the shipment
SHIPMENTREQUEST/PACKAGES/PKG/REFERENCE/NOFN_TOTAL	UPSPLD/PackageLevelDetail@NOFNTotal	Total no of containers in shipment

3.3.2 Using User Exits

User exits are provided in Carrier Adapter to facilitate the implementation of different logic.

The following user exits are supported for Carrier Adapter:

- YCSshipCartonUserExit
- YCScloseManifestUserExit
- YCSdeleteCartonUserExit

For more information about these user exits, see the *Sterling Supply Chain Applications Javadocs*.

Implementation

There is a class for each user exit, which is called from the application.

For example: A user wants to use a user exit shipCarton user exit for a ShipCarton Transaction. There is a Java interface for this transaction for which the user exit has been defined. That is, shipCarton is defined in the Java interface YCSshipCartonUserExit.

This file has to be compiled and the path of the class file should be specified using the User Exit Management in the Sterling Supply Chain Applications Configurator. For more information about User Exit Management, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

3.4 Field-Level Mapping for FedEx

For FedEx integration, the following internal methods of Carrier Adapter are invoked:

- openManifest
- shipCarton
- deleteCarton
- closeManifest

The field-level mappings for FedEx are provided in [Table 3–6](#).

Table 3–6 *Field-Level Mapping for FedEx*

ID	Name	Carrier Adapter Attribute	Database Attribute
4	Shipper Company Name	ShipperCompanyName	Shipment.ShipFrom.Country
5	Shipper Address 1	ShipperAddress1	Shipment.ShipFrom.Address1
6	Shipper Address 2	ShipperAddress2	Shipment.ShipFrom.Address2
7	Shipper City	ShipperCity	Shipment.ShipFrom.ShipperCity
8	Shipper State	ShipperState	Shipment.ShipFrom.ShipperState
9	Shipper Postal Code	ShipperPostalCode	Shipment.ShipFrom.ShipperPostalCode
11	Recipient Company	ConsigneeCompanyName	Shipment.ShipToPersonInfo.Company
13	Recipient Address 1	ConsigneeAddress1	Shipment.ShipToPersonInfo.Address_Line1
14	Recipient Address 2	ConsigneeAddress2	Shipment.ShipToPersonInfo.Address_Line2
15	Recipient City	ConsigneeCity	Shipment.ShipToPersonInfo.City
16	Recipient State/Province	ConsigneeStateProv	Shipment.ShipToPersonInfo.State
17	Recipient Postal Code	ConsigneePostalCode	Shipment.ShipToPersonInfo.Zip_Code
18	Recipient Phone Number	ConsigneePhone	Shipment.ShipToPersonInfo.Day_Phone

Table 3–6 Field-Level Mapping for FedEx

ID	Name	Carrier Adapter Attribute	Database Attribute
20	Payer or Account Number	ConsigneeUPSACctNumber	Shipment.CustCarrier_Account_Number
21-#	Package/Shipment Weight	PackageActualWeight	Container.Container_Gross_Weight
23	Payment Code	ShipmentChgType	Shipment.FreightTerms.ChargesPaid By. If this value is "BUYER", then the Carrier Adapter attribute is set to "COL". Otherwise, it is set to "PRE"
24	Ship Date	PickupDate	Container.Manifest.Manifest_Date
26	Declared / Carriage Value	DeclaredValueInsurance	Container.Declared_Value
27	COD Flag	CODInd	
32	Shipper Contact Name	ShipperContactName	Shipment.ShipFrom.ShipperContact Name
50	Recipient Country Code	ConsigneeCountry	Shipment.ShipToPersonInfo.Country
53	COD Amount	CODAmount	Container.COD_Amount
57-#	Package height	PackageHeight	Container.PackageHeight
58-#	Package width	PackageWidth	Container.PackageWidth
59-#	Package length	PackageLength	Container.PackageLength
74	Country of Ultimate Destination	UltimateDestCountry	Shipment.ShipToPersonInfo.Country
79-#	Description	DescriptionOfGoods	Container.ContainerDetail.Item.NMFC_Code or Container.ContainerDetail.Item.NMFC_Class
80-#	Country of Manufacture	LineOriginCountry	Container.ContainerDetail.Item.Country_Of_Origin
82-#	Quantity	LineQuantity	Container.ContainerDetail.Quantity
117	Shipper Country	ShipperCountry	Shipment.ShipNodePersonInfo.Country
119	Total Customs Value	InvoiceLineTotals	Sum of ContainerDetail.Quantity* Unit_Price from OrderLine

Table 3–6 Field-Level Mapping for FedEx

ID	Name	Carrier Adapter Attribute	Database Attribute
183	Shipper Phone Number	ShipperPhoneNumber	Shipment.ShipFrom.ShipperPhoneNumber
440	Residential Delivery Flag	ResInd	If Shipment.ShipToPersonInfo.Company is set to "Blank", then the value is set to "1". Otherwise, it is set to "0"
498	Meter Number	ShipperAccountNumber	Container.Manifest.Manifest.Shipper_Account_No
537	Thermal Label Printer ID	ThermalLabelPrinterID	PrinterId for Carrier Label Document Id (FEDX_CARRIER_LABEL or UPSN_CARRIER_LABEL)
1139	Sender IRS/EIN Number	ShipperEIN	Container.Manifest.Ship_Node.Export_Taxpayer_Id
1204-#	Ship Alert Email Address	SNEmailAddressDestination1	Shipment.ShipTo.PersonInfo.EmailId
1248	Sunday Delivery Flag	SunDeliveryInd	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "SUNDELI" exist, then the value is set to "1"
1266	Saturday Delivery Flag	SatDeliveryInd	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "SATDELI" exist, then the value is set to "1"
1274	Service Type	UPSServiceType	Shipment.SCAC.SCACAndService.Electronic_Code

3.5 Field-Level Mapping for Airborne

For Airborne integration the following internal methods of Carrier Adapter are invoked:

- shipCarton
- deleteCarton

The field-level mappings for Airborne are provided in [Table 3–7](#).

Table 3–7 Field-Level Mapping for Airborne

Field Name	Carrier Adapter Attribute	Database Attribute
Shipment/ShippingCredentials/ShippingKey	Configuration for ShipperAccountNumber. 1:1 mapping between ShipperAccountNumber and Shipping Key. One installation can have multiple meter numbers. Each meter number will have a corresponding Shipping Key.	Container.Manifest.Manifest.Shipper_Account_No
Shipment/ShippingCredentials/AccountNbr	ShipperAccountNumber	Container.Manifest.Manifest.Shipper_Account_No
Shipment/ShipmentDetail/ShipDate	PickUpDate	Container.Manifest.Manifest_Date
Shipment/ShipmentDetail/Service/Code	UPSServiceType	Shipment.SCAC.SCACAndService.Electronic_Code
Shipment/ShipmentDetail/Weight	PackageActualWeight	Container.Container_Gross_Weight
Shipment/ShipmentDetail/ContentDesc	DescriptionOfGoods	Container.ContainerDetail.Item.NMFC_Code or Container.ContainerDetail.Item.NMFC_Class
Shipment/ShipmentDetail/Dimensions/Length	PackageLength	Container.PackageLength
Shipment/ShipmentDetail/Dimensions/Width	PackageWidth	Container.PackageWidth
Shipment/ShipmentDetail/Dimensions/Height	PackageHeight	Container.PackageHeight
Shipment/ShipmentDetail/AdditionalProtection/Value	Declared Value Insurance	Container.Declared_Value
Shipment/ShipmentDetail/SpecialServices/SpecialService/Code	SatDeliveryInd	Shipment.SpecialServiceRef.SpecialServiceCode. If a special service with value "SATDELI" exist, then the value is set to "1"

Table 3–7 Field-Level Mapping for Airborne

Field Name	Carrier Adapter Attribute	Database Attribute
Shipment/Billing/Party/Cod e	ShipmentChgType	Shipment.FreightTerms.ChargesPaidBy. If this value is "BUYER", then the Carrier Adapter attribute is set to "COL". Otherwise, it is set to "PRE"
Shipment/Billing/AccountN br	ConsigneeUPSacctNumbe r	Shipment.CustCarrier_Account_No
Shipment/Billing/CODPaym ent/Value	CODAmount	Container.COD_Amount
Shipment/Sender/PhoneNb r	SenderPhone	Shipment.ShipNodePersonInfo.Day_Pho ne
Shipment/Receiver/Addres s/CompanyName	ConsigneeCompanyName	Shipment.ShipToPersonInfo.Company
Shipment/Receiver/Addres s/Street	ConsigneeAddress1	Shipment.ShipToPersonInfo.Address_Li ne1
Shipment/Receiver/Addres s/StreetLine2	ConsigneeAddress2	Shipment.ShipToPersonInfo.Address_Li ne2
Shipment/Receiver/Addres s/City	ConsigneeCity	Shipment.ShipToPersonInfo.City
Shipment/Receiver/Addres s/State	ConsigneeStateProv	Shipment.ShipToPersonInfo.State
Shipment/Receiver/Addres s/Country	ConsigneeCountry	Shipment.ShipToPersonInfo.Country
Shipment/Receiver/Addres s/PostalCode	ConsigneePostalCode	Shipment.ShipToPersonInfo.Zip_Code
Shipment/Receiver/AttnTo	ConsigneeCompanyName	Shipment.ShipToPersonInfo.Company
Shipment/Receiver/PhoneN br	ConsigneePhone	Shipment.ShipToPersonInfo.Day_Phone

Integrating Sterling Parcel Carrier Adapter with ConnectShip

This chapter explains the integration of Sterling Parcel Carrier Adapter (Carrier Adapter) with ConnectShip for UPS.

ConnectShip provides a suite of products to integrate with various carriers. At the core of this product line is Prologistics, which provides full functionality access to many parcel carriers (including UPS, USPS, Airborne, and FedEx) in a carrier independent approach. Prologistics conforms to Microsoft's Internet technologies like ASP, COM/DCOM and requires Windows-based systems running IIS.

ConnectShip Toolkit, another product of ConnectShip, provides XML over HTTP-based APIs to access these Prologistics features.

Carrier Adapter use APIs provided by ConnectShip Toolkit to integrate with all carriers, specifically UPS. For more information about ConnectShip capabilities, see <http://www.connectship.com>

4.1 Installing ConnectShip Toolkit

ConnectShip Toolkit can be downloaded from 'members area' of ConnectShip website (<http://www.connectship.com>).

- ConnectShip requires the installation of IIS. For more information about installing ConnectShip, see ConnectShip website.
- While installing choose all the relevant Carrier components, like UPS Domestic, UPS Europe, UPS Canada, UPS Latin America (including Mexico), and UPS Asia Pacific.
- Also choose the relevant printer device models, like Eltron, Zebra, and Windows Printer.

4.2 Configuring ConnectShip for use with Sterling Parcel Carrier Adapter

On successful installation, ConnectShip ToolKit is accessible through IIS. This is installed under C:\Inetpub\wwwroot\Prologistics and is accessible with Internet Explorer at <http://localhost/Prologistics/ASP/index.asp> (This link is relative to the server where this software is installed).

Some minimal configuration is required on ConnectShip, including creating Shippers, and registering the Shippers with Carriers. This configuration is available under Prologistics configuration link.

In configuring a shipper, ensure that Shipper abbreviation is mapped to ShipperAccountNumber on Carrier Adapter.

WMS sets the ShipperAccountNumber Carrier Adapter XML attribute with the Shipping Account Number in ScacEx setup for ShipNode & Enterprise.

Keep the Abbreviation attribute on ConnectShip exactly the same as that of ShipperAccountNumber. But it would be better if there is a mapping created on Carrier Adapter (through YCS_General_Codes table) between Abbreviation on ConnectShip with ShipperAccountNumber from WMS.

4.3 Printing Labels and Documents in ConnectShip

Labels and documents can be printed by ConnectShip to a network printer or to a local printer. Alternatively, ConnectShip can also return a label buffer to the Carrier Adapter for printing. For more information about printing labels, [Section 4.4.2.6, "Printing UPS labels"](#).

4.4 Software Components for Sterling Parcel Carrier Adapter

4.4.1 Open Manifest

ConnectShip does not have a corresponding API. It automatically opens a new manifest for the pickup date and the Shipper when the first package is being manifested. While Carrier Adapter allows multiple open

manifests for a given day for UPS packages, ConnectShip does not support this. ConnectShip allows only one open manifest for a Shipper for a given day. To open a second manifest, first one has to be closed. So, if WMS/Carrier Adapter allows multiple open manifests for a given day, ConnectShip would not allow us to close the second manifest without adding at least one more carton to it. So, while integrating with ConnectShip, Carrier Adapter will ensure that only one open manifest exists for UPS for a given day. And to identify if ConnectShip integration is being used, Carrier Adapter will check the existence of Logic_Switch attribute with "CS_SHIP" and Api_Name attribute with SHIPCARTON in YCS_PROCESS_CONTROL.

4.4.2 Add Containers to Manifest

ConnectShip provides two APIs called SHIPREQUEST and SHIPMENTREQUEST for manifesting a package. Both have similar XMLs and Carrier Adapter uses the SHIPMENTREQUEST API. Apart from manifesting the package, it also returns tracking number, rating details, and prints labels. This API accepts Shipper, Carrier and Service, Consignee details, and Package & Special Services details as input.

Carrier Adapter exposes CS_SHIP as a Transaction (in YCS_PLD_DETAIL table and Logic_Switch in YCS_PROCESS_CONTROL table). If this is configured for the Carrier in which the package is being shipped, then ConnectShip integration will be called.

By default, this integration is provided for UPS. FedEx and Airborne will continue to communicate directly to PowerShip and Airborne servers respectively.

This component of Carrier Adapter transforms the input XML to ConnectShip's requirements based on configuration present in YCS_PLD_DETAIL table. Factory defaults will be provided for YCS_PLD_DETAIL for UPS/CS_SHIP.

4.4.2.1 Shipping international Shipments from USA

These are shipments originating from USA to a consignee in a different country. Carrier Adapter integration with ConnectShip for international shipments is different from domestic shipments in the US.

For international shipments, integration with ConnectShip occurs at a Shipment level and not at the Package level. This is required since freight

charges at Shipment level is less than the sum of freight charges for individual packages.

Carrier Adapter internally calls ConnectShip SHIPMENTREQUEST API, which prints a label for the package and also manifest it. However, in the case of international shipments, ConnectShip is called only after all the packages in the shipment are manifested.

Labels for all packages along with Commercial invoice for Shipment is printed when the last package in the shipment is manifested. The `IsLastPackageInShipment` attribute has been added to `PackageLevelDetail` in `shipCarton` input XML.

Logic for determining whether a package requires Shipment/Package level integration is determined based on Carrier Service code. `YCS_CARRIER_SERVICE` table has a column called `Is_Shipment_Level_Intg_Reqd` based on which the switch occurs.

Note that International shipments have different Service codes as compared to Domestic Services. This is because UPS Ground shipments would sometimes require Shipment level integration.

Other additional setup required is:

Mapping between Country codes sent by WMS and the Country Symbol code as required by ConnectShip. In `YCS_PLD_DETAILS` table, two ConnectShip XML nodes, `SHIPMENTREQUEST/PACKAGES/PKG/CONSIGNEE/COUNTRYSYMBOL` and `SHIPMENTREQUEST/PACKAGES/PKG/PACKAGESERVICEOPTIONS/INTL/COMMODITYCONTENTS/CONTENT/ORIGINCOUNTRY` require this mapping. These fields are mapped to `UPSPLD/PackageLevelDetail@ConsigneeCountry` and `UPSPLD/CommodityRecord@LineOriginCountry` attributes on the input XML.

As a factory setup, Carrier Adapter only provides the mapping for US, passed in the input XML by WMS, to "UNITED_STATES", as required by ConnectShip. Similar mappings would be required for other countries. The Carrier Code to be passed to ConnectShip is `TANDATA_UPS.UPS`.

Carrier Service Codes are different for international shipments and domestic shipments. ConnectShip provides three service codes for International shipments: `WEPD`, `WEXPPLS` & `WEXP`. Only these Services can be passed. Default factory data is provided for this mapping based on default WMS configuration. `WEPD` is mapped to 08, `WEXPPLS` to 54 and `WEXP` to 71.

ConnectShip treats UPS Carrier code for Shipments from Canada, Europe, APAC, Latin America and US all differently.

4.4.2.2 Shipments from Canada

UPS Carrier Code for Canada is `TANDATA_UPSCANADA.UPS`.

4.4.2.3 Shipments from Europe

UPS Carrier Code for Shipments from Europe is `TANDATA_UPSINTL.UPS`.

4.4.2.4 Shipments from APAC

UPS Carrier Code for Shipments from Asia Pacific region is `TANDATA_UPSAPAC.UPS`.

4.4.2.5 Shipments from Latin America (including Mexico)

UPS Carrier Code for Shipments from Latin America is `TANDATA_UPSLATAM.UPS`.

4.4.2.6 Printing UPS labels

ConnectShip enables automatic printing of UPS labels for the package being manifested. ConnectShip supports printing of US Domestic MaxiCode labels, Canada MaxiCode labels as well as Standard UPS label for shipments from other countries. The factory setup provided by WMS supports printing of MaxiCode labels for US Domestic Shipments and Canada shipments. For rest of the countries, the printing utilizes Standard labels.

Table 4–1 Label Format Codes

Carrier Code	Domestic/International	Label Format
UPSN	DOMESTIC	<code>TANDATA_UPS_MAXICODE_US_DOMESTIC.STANDARD</code>
UPSN	INTERNATIONAL	<code>TANDATA_UPS_MAXICODE_US_INTL.STANDARD</code>
UPSC		<code>TANDATA_UPS_MAXICODE_CANADA.STANDARD</code>
UPSE		<code>TANDATA_STDLABEL.STANDARD</code>

Table 4–1 Label Format Codes

Carrier Code	Domestic/International	Label Format
UPSA		TANDATA_STDLABEL.STANDARD
UPSL		TANDATA_STDLABEL.STANDARD

The label format to be printed is determined as follows:

- Carrier Adapter internally sets the "UPSPLD/ExtraFieldsRecord@LabelFormatValue" input XML attribute to either DOMESTIC/INTERNATIONAL based on origin and destination countries.
- Carrier Adapter looks up YCS_PLD_DETAIL table to get the mapping for CarrierFieldName SHIPMENTREQUEST/PACKAGES/PKG/LABELFORMAT and it's DefaultType & DefaultValue.
- For UPSN, the DefaultType is set as MAPPING and mapped to "UPSPLD/ExtraFieldsRecord@LabelFormatValue" input XML attribute.
- In the YCS_GENERAL_CODES table, DOMESTIC has been mapped to "TANDATA_UPS_MAXICODE_US_DOMESTIC.STANDARD" and INTERNATIONAL to "TANDATA_STDLABEL.STANDARD".
- For other Carriers (UPSC, UPSE, UPSA & UPSL), the DefaultType is set to SYSTEM and DefaultValue to TANDATA_STDLABEL.STANDARD.

ConnectShip supports printing labels on many printers. Significant among them are many models of Zebra printers as well as Eltron printer models.

ConnectShip values for various printer model are mentioned below:

- ELTRON_2044
- ELTRON_2348
- ELTRON_2543
- ZEBRA_90XIII
- ZEBRA_170XIII
- ZEBRA_105SE
- ZEBRA_140
- ZEBRA_105

- ZEBRA_170
- ZEBRA_220
- ZEBRA_S300
- GENERIC.WINDOWSPRINTER

Irrespective of whether the Printer is a Zebra/Eltron or a different model, ConnectShip will print to that printer if printer driver is installed on the machine where ConnectShip is installed, by passing the PrinterModelSymbol as "GENERIC.WINDOWSPRINTER".

ConnectShip can also return the label string back to Carrier Adapter if the Printer Port is passed as "STRING" instead of a PrinterName. Label string that ConnectShip returns is based on the PrinterModel that is passed to it. However Port cannot be passed as "STRING" if PrinterModelSymbol is passed as "GENERIC.WINDOWSPRINTER". PLD setup provided in factory setup for printing is listed below. In B2C scenarios where a shipment is predominantly a single package shipment, implementations can pass the value "STRING" in the "UPSPLD/ExtraFieldsRecord@ThermalLabelPrinterID" Carrier Adapter input XML attribute to get back the Printer string and print this UPS label as a part of a A4 Packing slip.

Table 4–2 PLD Factory Setup For Printing

Carrier Field Name	Field Name	Default Value
SHIPMENTREQUEST/PACKAGES/PKG/LABELPRINT/PORT	UPSPLD/ExtraFieldsRecord@ThermalLabelPrinterID	
SHIPMENTREQUEST/PACKAGES/PKG/LABELPRINT/STOCKSYMBOL		THERMAL_LABEL_8
SHIPMENTREQUEST/PACKAGES/PKG/LABELPRINT/PRINTERMODEL		GENERIC.WINDOWSPRINTER

4.4.2.7 Printing other Documents

ConnectShip also prints shipment documents like Commercial Invoice, SED, and Certificate of Origin. These documents are valid only for

international shipments, as integration at shipment level occurs only for international shipments. Carrier Adapter prints these documents only when the last international package is being manifested.

Shipment Level documents that need to be printed can be configured in YCS_PLD_Detail. Carrier Adapter provides printing of Commercial Invoice in the Factory setup. Additional documents can just be similarly added. The attribute `ShipmentDocumentPrinterID` added to Carrier Adapter input XML, obtains the printer details for printing these documents.

4.4.2.8 Configuration Dependencies

YCS_Process_Control

Table 4–3 YCS Process Control

Carrier	API Name	Logic Switch
UPSN/UPSE/UPSL/UPSA/UPSC	SHIPCARTON	CS_SHIP

YCS_General_Codes

Table 4–4 YCS General Codes

Carrier	Input XML Field Name	Notes
UPSN/UPSE/UPSL/UPSA/UPSC	UPSPLD/PackageLevelDetail@ShipperAccountNumber	ShipperAccountNumber sent from WMS should be mapped to Shipper setup on ConnectShip.

4.4.3 Close Manifest

ConnectShip provides an API called “CloseOutRequest” to close the manifest. Carrier Adapter accepts Carrier, Manifest#, and ShipperAccountNumber as inputs for closing a manifest. Carrier Adapter changes the status of manifest and also deletes all packages (YCS_MANIFEST_UPS_DTL) on Carrier Adapter database and then calls ConnectShip’s CloseOutRequest API.

Carrier Adapter additionally checks to see if all printed packages are manifested. If any of the packages have not been manifested, this API will throw an error. Such packages will have to be removed from the manifest (either by User or by WMS) and reprinted (by manifesting them). For shipment level integration, actual manifestation of packages with ConnectShip happens when the last carton in the shipment is manifested on WMS. However, if user is trying to close the manifest even before all the packages in a shipment are manifested, then Carrier Adapter will automatically call ConnectShip's SHIPMENTREQUEST API to close all these shipments. Note that WMS will actually disallow closure of Manifest if all packages are not manifested. But this will help in situations where all packages in a Shipment are manifested by user and when WMS fails to specify the last package to Carrier Adapter. This would typically happen if the last package was deleted from WMS before it was manifested.

4.4.3.1 Configuration Dependencies

YCS_Process_Control

Table 4–5 YCS Process Control

Carrier	API Name	Logic Switch
UPSN	VOIDCARTON	CS_SHIP

YCS_General_Codes

Table 4–6 YCS General Codes

Carrier	Input XML Field Name	Notes
UPSN/UPSE/UPSL/UPSA/UPSC	Manifest@ShipperAccountNumber	ShipperAccountNumber sent from WMS should be mapped to Shipper setup on ConnectShip.

YCS_PId_Details

Table 4–7 YCS PId Details

Carrier: UPSN	Transaction: CS_CLOSE_MANIFEST	Sub Transaction: Request
Carrier Field Name	Field Name	Default Value
CLOSEOUTREQUEST/LOGIN/LOGINID		TEST
CLOSEOUTREQUEST/LOGIN/PASSWORD		TEST
CLOSEOUTREQUEST/CLOSEOUT/SC	Manifest@Carrier	
CLOSEOUTREQUEST/CLOSEOUT/SHIPPER	Manifest@ShipperAccountNumber	
CLOSEOUTREQUEST/CLOSEOUT/CLOSEOUTITEM	Manifest@PickupDate	

4.4.4 Remove Containers From Manifest

ConnectShip provides an API called "Void Request". VoidRequest ConnectShip API requires Shipper# and MSN (Master Sequential Number). ConnectShip identifies a package using MSN and it returns this MSN when a package is included into a manifest using SHIPMENTREQUEST API.

4.4.4.1 Configuration Dependencies

YCS_Process_Control

Table 4–8 YCS Process Control

Carrier	API Name	Logic Switch
UPSN	VOIDCARTON	CS_SHIP

YCS_General_Codes

Table 4–9 YCS General Codes

Carrier	Input XML Field Name	Notes
UPSN/UPSE/UPSL/UPSA/UPSC	DelPackage@ShipperAccountNumber	ShipperAccountNumber sent from WMS should be mapped to Shipper setup on ConnectShip.

YCS_Pld_Details

ConnectShip/Carrier Adapter XML mapping is mentioned below. Mapping is done from getXML output of the YCS_UPS_Pld_Detail table (for the Tracking# passed in input XML to Carrier Adapter) to input required for ConnectShip. Root node for YCS_UPS_Pld_Detail.getXML is the same as input XML passed to Carrier Adapter.

Table 4–10 YCS Pld Details

Carrier: UPSN	Transaction: CS_SHIP	Sub Transaction: Request
Carrier Field Name	Field Name	Default Value
VOIDREQUEST/LOGIN/LOGINID		TEST
VOIDREQUEST/LOGIN/PASSWORD		TEST
VOIDREQUEST/SC	DelPackage@Carrier	
VOIDREQUEST/SHIPPER	DelPackage@ShipperAccountNumber	

4.4.5 Print Container Labels

The Carrier Adapter component generates tracking # and prints the carton label without actually manifesting it. WMS implementations could want Carrier Carton labels to be printed during Wave release itself or at the time of manifest. Implementations that need these labels to be printed during wave release can use this component.

ConnectShip allows user to generate Tracking# and return rating information without actually manifesting it using SHIPMENTREQUEST API in

a special mode (by omitting CLOSEOUTMODE element). But it does not generate any package label in this mode. Carrier Adapter calls ConnectShip in this mode.

During actual manifestation, Carrier Adapter also checks to see if the package has been modified after it was printed. If package was modified, then it would return an error to inform the user to void the package and reprint it. To determine if Package is modified, it would check to see if the following attributes have changed or not:

- PackageActualWeight
- ConsigneeAddress1
- ConsigneeAddress2
- ConsigneeCity
- PickupDate

4.4.5.1 Configuration Dependencies

YCS_Process_Control

Table 4–11 YCS Process Control

Carrier	API Name
UPSN	TRACK_AND_PRINT

YCS_Pld_Details

Since this component internally calls ConnectShip's SHIPMENTREQUEST API, Carrier Adapter uses "CS_SHIP" transaction's PLD setup. For more information, see [Section 4.4.2, "Add Containers to Manifest"](#).

4.5 ConnectShip Integration for Other Carriers

The Sterling Supply Chain Applications provide support for integrating with ConnectShip for UPS carriers. ConnectShip also provides integration for many other parcel carriers, for example, USPS, Purolator, and BAX Global. The Sterling Supply Chain Applications can be easily configured to integrate with ConnectShip to support any carriers. For Sterling Supply Chain Applications integration with ConnectShip for any other carriers:

4. Copy all records from the YCS_Pld_Detail table with Carrier code as UPSC and modify the Carrier to the new Carrier.
5. Copy all records from the YCS_Process_Control table with Carrier code as UPSC and modify the Carrier to the new Carrier.
6. Copy all records from the YCS_General_Codes table with Carrier code as UPSC and modify the Carrier to the new Carrier.
7. The YCS_General_Codes table provides translation of the Sterling Supply Chain Applications XML attribute values to ConnectShip specific values for some of the attributes. Most of these attributes like Sunday Delivery required, Residential Flag, Consignee Country are not specific to any particular carrier, and can be copied from UPSC. However, attributes like Carrier Service code is specific to each carrier and such records must be modified with appropriate ConnectShip values. [Table 4–12](#) lists attributes to be updated with ConnectShip carrier specific values. For more information about ConnectShip capabilities, see <http://www.connectship.com>

Table 4–12 Additional Mapping Configuration in YCS General Codes

ConnectShip Attribute	Sterling Supply Chain Applications Attribute	Description
EODFILEREQUEST/SHIPMENT/DOCFORMAT	Manifest@DocFormat	This attribute is used for passing the Manifest document that ConnectShip prints. The document Id that prints differs from each carrier.
SHIPMENTREQUEST/SHIPMENTSERVICE/SCS	UPSPLD/PackageLevelDetail@UPSServiceType	This record translates the Sterling Supply Chain Applications data for Carrier Service Code to ConnectShip data.

Table 4–12 Additional Mapping Configuration in YCS General Codes

ConnectShip Attribute	Sterling Supply Chain Applications Attribute	Description
EODFILEREQUEST/SHIPMENT/SC	Manifest@Carrier	This record translates the Sterling Supply Chain Applications data for Carrier Code to ConnectShip data when the manifest is closed on the Sterling Supply Chain Applications.
CLOSEOUTREQUEST/CLOSEOUT/SC	Manifest@Carrier	This record translates the Sterling Supply Chain Applications data for Carrier Code to ConnectShip data when the manifest is closed on the Sterling Supply Chain Applications.
VOIDREQUEST/SC	DelPackage@Carrier	This record translates the Sterling Supply Chain Applications data for Carrier Code to ConnectShip data when a package is removed from the Manifest on the Sterling Supply Chain Applications.

Troubleshooting Connectivity Issues

This chapter describes some issues that are commonly encountered with Sterling Parcel Carrier Adapter (Carrier Adapter). It also includes some tips discovered during the development of the Carrier Adapter Framework.

5.1 Dumping inXML on Carrier Adapter

The following setup is required for dumping inXML on the Carrier Adapter:

1. Go to the `<YANTRA_HOME>/Applications/Foundation/Resources` directory

```
cd <YANTRA_HOME>/Applications/Foundation/Resources
```

The `ycs.properties` file is located in this directory.

2. Open the `ycs.properties` file. Ensure that the `ycs.xmlDump.directory` property points to the directory, where you want the inXML file to be dumped.

5.2 SaxParseException Encountered While Manifesting a Container

The following error is displayed while manifesting a container:

```
org.xml.sax.SAXParseException
```

Cause

If a `SaxParseException` is encountered while manifesting a container, it may be due to the address line or fax number exceeding 35 and 15 characters respectively.

Resolution

This problem can be fixed by ensuring that the address line and fax number fields do not exceed 35 and 15 characters respectively.

5.3 FedEx Issues

The section describes some issues that are commonly encountered with FedEx.

5.3.1 Dumping the FedEx Input String

The flag for dumping the XML and reply buffer to a file is set to "N" by default.

In the `YCS_GENERAL_CODES` table, the `VALUE` field has to be set to "Y" for the record with the `CARRIER` value of "FEDX" and the `CODE` value of "FEDEXINXMLDUMP".

The naming convention for the dumped file name is as follows:

`<CARRIER><CartonNo>.txt` or `<CARRIER><PalletSCM>.txt`, depending on whether it is a carton SCM or pallet SCM.

For example: The name of the file maybe `FEDX0000201001.txt`

(Where 0000201001 is the carton number and FEDX is the Carrier)

The file is dumped into the `XMLlog` directory.

5.3.2 Dumping the FedEx Output String

The flag for dumping the XML and reply buffer to a file is set to "N" by default.

In the `YCS_GENERAL_CODES` table, the `VALUE` field has to be set to "Y" for the record with the `CARRIER` value of "FEDX" and the `CODE` value of "FEDEXREPLYDUMP".

The naming convention of the dumped file name is as follows:

<CARRIER><CartonNo>.txt OR <CARRIER><PalletSCM>.txt, depending on whether it is a carton SCM or pallet SCM.

For example: The name of the file may be FEDX0000201001.txt

(Where 0000201001 is the carton number and FEDX is the Carrier)

The file is dumped into the XMLLog directory.

5.3.3 Label Not Getting Printed

Carton is getting manifested, but the label is not getting printed.

Cause A

The printer associated with the station is not configured, or is incorrect.

Cause B

The printer is not online or out of labels.

5.3.4 Unable to Compute Freight Charge Error

You receive an "Unable to compute freight charge" error.

Cause

- In the carrier setup, external server type is not set to "F2".
- The shipping key is invalid.

Cause

The account number in the carrier code setup is wrong or the shipping key mapping in the YCS_GENERAL_CODES table is wrong. Account ID 2 in the carrier setup is not linked to the shipping key in the YCS_GENERAL_CODES tables.

5.4 Airborne Issues

The section describes some issues that are commonly encountered with Airborne.

5.4.1 Dumping the Airborne Input XML

The flag for dumping the inXML and outXML to a file is set to "N" by default.

In the YCS_GENERAL_CODES table, the VALUE field has to be set to "Y" for the record with the CARRIER value of "AIRB" and the CODE value of "AIRBINXMLDUMP".

The naming convention for the dumped file name is as follows:

<CARRIER><CartonNo>.txt or <CARRIER><PalletSCM>.txt, depending on whether it is a carton SCM or pallet SCM.

For example: The name of the file maybe AIRB0000201001.txt

(Where 0000201001 is the carton number and AIRB is the Carrier)

The file is dumped into the XMLlog directory.

5.4.2 Dumping the AIRB Output XML

The flag for dumping the XML and reply buffer to a file is set to "N" by default.

In the YCS_GENERAL_CODES table, the VALUE field has to be set to "Y" for the record with the CARRIER value of "AIRB" and the CODE value of "AIRBREPLYDUMP".

The naming convention of the dumped file name is as follows:

<CARRIER><CartonNo>.txt or <CARRIER><PalletSCM>.txt, depending on whether it is a carton SCM or pallet SCM.

For example: The name of the file may be AIRB0000201001.txt

(Where 0000201001 is the carton number and AIRB is the Carrier)

The file is dumped into the XMLlog directory.

5.4.3 Invalid Shipping Key

The cause for this may be that the account number in the carrier code setup is wrong or the shipping key mapping in the YCS_GENERAL_CODES table is wrong. The Account ID 2 in the carrier setup is not linked to the shipping key in the YCS_GENERAL_CODES tables.

5.4.4 Service Code Invalid

The cause for this may be that the service code is not set up properly in the carrier code setup.

5.4.5 COD Return Tracking Number Error

An error "COD Return Tracking number" is shown.

Cause

If you get this error, also check the response XML. This error may be due to an incorrect user ID or password.

5.4.6 Global Ship Transaction Invoke Failed

The cause of this failure may be that the URL to connect to the Airborne server is not correct, or the Airborne server is down.

5.4.7 Carton Getting Manifested But Label Not Printing

Cause A

The printer associated with the station is not configured, or is incorrect.

Cause B

The printer is not online or is out of labels.

Cause C

The Label type is not set to "PNG" or the Network Print Enabled flag is not set to "Y".

5.5 ConnectShip Issues

The section describes some issues that are commonly encountered with ConnectShip.

5.5.1 Manifesting Cartons that are Modified After Carrier Label Print

Carrier specific labels can be printed during Wave release using the `getTrackingNoAndPrintLabel` API.

If these cartons are modified (for example, units are added or removed from the package) before they are manifested, then Carrier Adapter stops the user from manifesting such cartons.

The way to handle this situation is to undo the label print by calling the `voidTrackingNo` API and then manifest the package.

5.5.2 Closing a Manifest When Some Expected Cartons are Not Manifested

When a package label is printed during a Wave Release, a Manifest is automatically opened for the Expected Shipment Date of the package.

If the Node is unable to ship the package on that date and has to close the Manifest for the remaining packages, the label and tracking # generated for all such un-manifested packages have to be voided by calling the `voidTrackingNo` API.

5.5.3 Cancellation of Last Carton in an International Shipment After Rest of Them are Manifested

For international shipments, all the labels are printed only when the last package is manifested. However, if after manifesting all but one package in the shipment, the last package is deleted, then the labels for the remaining packages are printed only when the manifest is closed.

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