



How to Configure Automated Freight Calculations

DOCUMENT SUMMARY SHEET

Document Type:	How To
Document Title:	Automated Freight Calculations in ADempiere
Document Summary:	This is the Adaxa HowTo Template which is used for the creation of HowTo documents. Proposals, white papers, reports, etc. will use the Adaxa Report Template
File Name:	
Created on:	Thursday, 9 September 2010
Created by:	
Last Modified on:	Wed, 11 April 2012
Last Modified by:	Martin Fuggle

NOTES

1. Responsibility is disclaimed for any loss or damage (including but not limited to damage resulting from the use by the client of the document) suffered by any other person for any reason at all including but not limited to negligence by ADAXA Pty Ltd (ADAXA).
2. Whilst this document is accurate to the best of our knowledge and belief, ADAXA cannot guarantee the completeness or accuracy of any description or conclusions based on the supplied information.
3. The recommendations contained in the document are advisory and ADAXA has no responsibility for the management or operation of any recommendations that may be implemented by the client.
4. This document is licensed under the terms shown at <http://creativecommons.org/licenses/by-nc-nd/3.0/au/legalcode>.

Table of Contents

Introduction

1.1 Document Purpose.....	iii
---------------------------	-----

Configuration

2.1 General.....	iv
2.2 Warehouse Configuration.....	iv
2.3 Product Configuration.....	iv

Calculation of Freight Value

3.1 Specifying the Calculated Freight.....	vi
3.2 Business Partner – Freight Cost Rule.....	vi

Definition of Freight Regions

4.1 Shipper's Freight Regions.....	viii
4.2 Locations in Freight Region.....	viii
4.3 Importing Freight Regions.....	ix
4.4 Possible Imported Data Errors.....	ix

Freight Calculations

5.1 Freight Charge Definition	x
5.2 Freight Charge Calculation.....	x
5.3 What Triggers Freight Calculation?.....	xi
5.4 Calculated Freight on the Order.....	xii
5.5 Enabling the Freight Calculation.....	xiii

Conclusion

6.1 Summary.....	xiv
------------------	-----

Adaxa's Offices and Contacts

7.1 Australia.....	xv
7.2 New Zealand.....	xv
7.3 United States of America.....	xv

1.1 Document Purpose

ADempiere's freight handling functionality is quite simplistic. This extension to ADempiere seeks to provide richer functionality and to allow freight to be automatically calculated and added to a Sales Order without user intervention.

There are many charging algorithms used by freight companies and there will certainly be charging methods which are not addressed by this new functionality, however this additional functionality provides greater flexibility in enabling the automatic calculation of freight charges and can be further enhanced in subsequent release of the software.

This document describes the functionality and the way that it is configured.

2.1 General

Default settings are specified on a per warehouse basis under the **Warehouse & Locators** window.

2.2 Warehouse Configuration

- **Weight Per Carton** is the average weight of goods that will fit in the standard carton for that warehouse. This is used to convert the weight of non-bulk items to the approximate number of cartons that will be required for shipping.
- **Carton Tare Weight** is the weight of the standard carton by itself.
- **Consolidate Part Cartons** if selected causes part cartons of bulk goods to be treated as non-bulk. If not selected each partial bulk carton will be shipped as a separate carton. This setting can be overwritten on the product screen.

2.3 Product Configuration

Per product configuration is entered in the **Product** window. The following screen shot displays the relevant fields:

- Shipping Weight
- Volume

- Pick from Bulk
- Packs per Carton
- Consolidate Part Cartons

The screenshot shows the 'Product' configuration window in Adaxa. The window title is 'Product STANDARD ROUNDED pbowden@'. The interface includes a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar with various icons. On the left, there is a sidebar with tabs for Product, UOM, Conversion, Substitute, Related, Replenish, Purchasing, Business, and Partner. The main area contains several input fields and checkboxes:

- Product**: UPC/EAN (empty), SKU (001.06.040)
- UOM**: Conversion (empty), UOM (EA)
- Substitute**: Product Category (empty), Classification (C)
- Related**: Tax Category (GST Free), Product Type (Item)
- Replenish**: Weight (0.00), Shipping Weight (0.00), Volume (0.00)
- Purchasing**: Packs per Carton (0), Consolidate Part Cartons (No)
- Business**: Source Warehouse (A), Stocked (checked), Pick from Bulk (checked), Locator (empty)
- Partner**: Active (checked), Summary Level (unchecked)

- **Weight** is the weight per unit used to calculate the actual weight of a shipment.
- **Shipping Weight** is an artificial weight per unit used only in the calculation of the number of standard cartons required to ship the product. By increasing the "Shipping Weight", for example, the calculated number of standard cartons required to ship a given quantity of product can be increased without affecting the final calculation of the shipment weight.
- **Pick from bulk** indicates that the product is available to be picked and shipped in bulk cartons.
- **Packs per carton** indicates the number of product units in each bulk carton.
- **Consolidate Part Cartons** setting a value here will overwrite the default set at the warehouse level.

3 Calculation of Freight Value

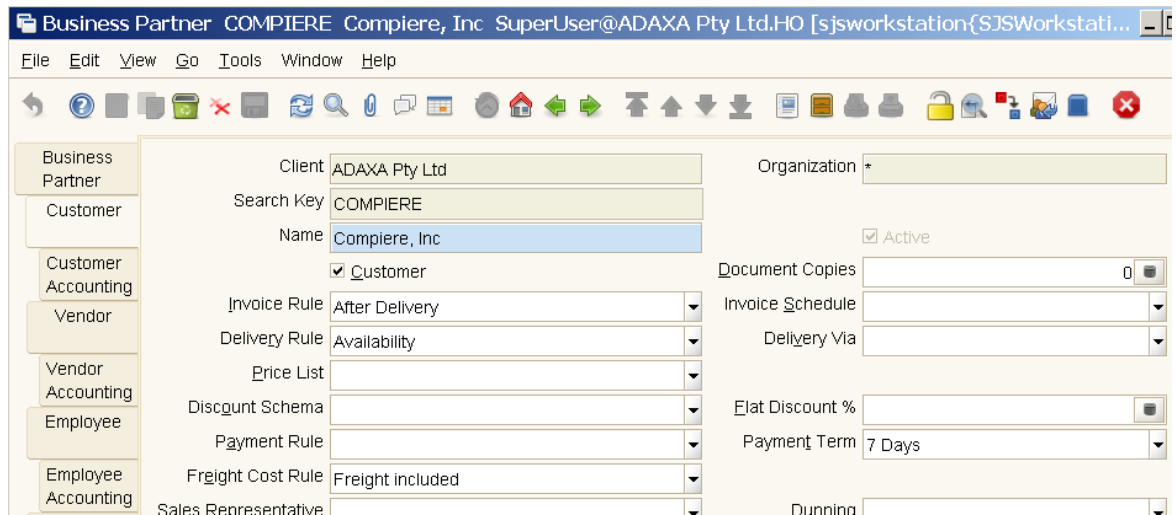
3.1 Specifying the Calculated Freight

Freight on orders is handled on the basis of the **Freight Cost Rule** set on each order. Two rules are now supported:

- **Included** - freight cost rule indicates that no freight calculation is required. The freight is manually added to the order using the price defined on the price list.
- **Calculated** - freight cost rule recalculates the price of an order line with a freight product on the basis of the rules detailed below. NOTE: that if freight lines are already automatically added to orders (perhaps by a client-specific model validator), the freight calculation only updates the existing line price and order total. Therefore the freight calculation is independent of the actual freight product selected.

3.2 Business Partner – Freight Cost Rule

The order **Freight Cost Rule** defaults from the Business Partner (BP) record. Note that the **Freight Cost Rule** is not displayed by default and an administrator will need change the Window definition to cause it to be visible.



The screenshot shows the 'Business Partner' record for 'COMPIERE' (Compiere, Inc). The 'Freight Cost Rule' is set to 'Freight included'. Other visible fields include Client (ADAXA Pty Ltd), Organization (*), Search Key (COMPIERE), Name (Compiere, Inc), Invoice Rule (After Delivery), Delivery Rule (Availability), Price List, Discunt Schema, Payment Rule, and Payment Term (7 Days).

The **Freight Cost Rule** rule for the BP is defaulted into Sales Orders created for that BP if the Sales Order is of a type that would normally allow such selections (e.g. a Standard Order displays it but a Point of Sales Order does not).

Sales Order <50008> SuperUser@ADAXA Pty Ltd.HO [sjsworkstation{SJSWorkstation-xe-adempier...}]

File Edit View Go Tools Window Help

Order Client: ADAXA Pty Ltd Organization: HO

Order Line Document No: <50008> Order Reference:

Order Tax Description:

Target Document Type: Standard Order Self-Service

Date Ordered: 06/09/2010 Date Promised: 06/09/2010

Business Partner: Compiere, Inc Invoice Partner: COMPIERE-Compiere, Inc

Partner Location: Monroe Invoice Location: Monroe

User/Contact: Jorg Janke Invoice Contact: Jorg Janke

Delivery

Delivery Rule: Availability Priority: Medium

Warehouse: HO Drop Shipment

Delivery Via: Delivery

Freight Cost Rule: Freight included

Invoicing

Invoice Rule: After Delivery

NOTE: Some extra functionality was removed from the original implementation.

The customer who sponsored this development wished to associate each order with an **Activity**. On the Activity record there is a value stored to indicate whether the **Freight Cost Rule** on the BP record should be overwritten by the value on the **Activity** record or not. Amongst other uses, the **Activity** is used to identify an order from the web store and the Activity-sourced **Freight Cost Rule** is populated on all orders with that Activity.

This screen shot shows the setting of the over-riding **Freight Cost Rule** in **Activity**

Activity [V] [V] pbowden@ITD [adempiere]

File Edit View Go Tools Window Help

Activity Start Date: 01/07/2007 End Date: 31/12/2049

Entitlements Invoice Partner:

Order Print Format: Sales Order Header Shipment Print Format: Shipment Header

Shipment Note:

Invoice Print Format: Invoice Header (System) Exclude Invoices from batch print

Invoice Note:

Freight Product: NO101-Freight Freight Cost Rule:

4 Definition of Freight Regions

4.1 Shipper's Freight Regions

Freight calculations are based on freight regions specified for each shipper in the **Shipper** window.

Shipper	Client	Organization	Active	Shipper	Name
			<input checked="" type="checkbox"/>	Parcel	BR
Freight			<input checked="" type="checkbox"/>	Parcel	GC
Freight			<input checked="" type="checkbox"/>	Parcel	GF
Freight Region			<input checked="" type="checkbox"/>	Parcel	GL
Location			<input checked="" type="checkbox"/>	Parcel	IP
Freight Charge			<input checked="" type="checkbox"/>	Parcel	N1
			<input checked="" type="checkbox"/>	Parcel	N2
			<input checked="" type="checkbox"/>	LParcel	NC
			<input checked="" type="checkbox"/>	Parcel	Q2
			<input checked="" type="checkbox"/>	LParcel	Q3
			<input checked="" type="checkbox"/>	Parcel	S1
			<input checked="" type="checkbox"/>	Parcel	S2
			<input checked="" type="checkbox"/>	Parcel	SC
			<input checked="" type="checkbox"/>	Parcel	T1

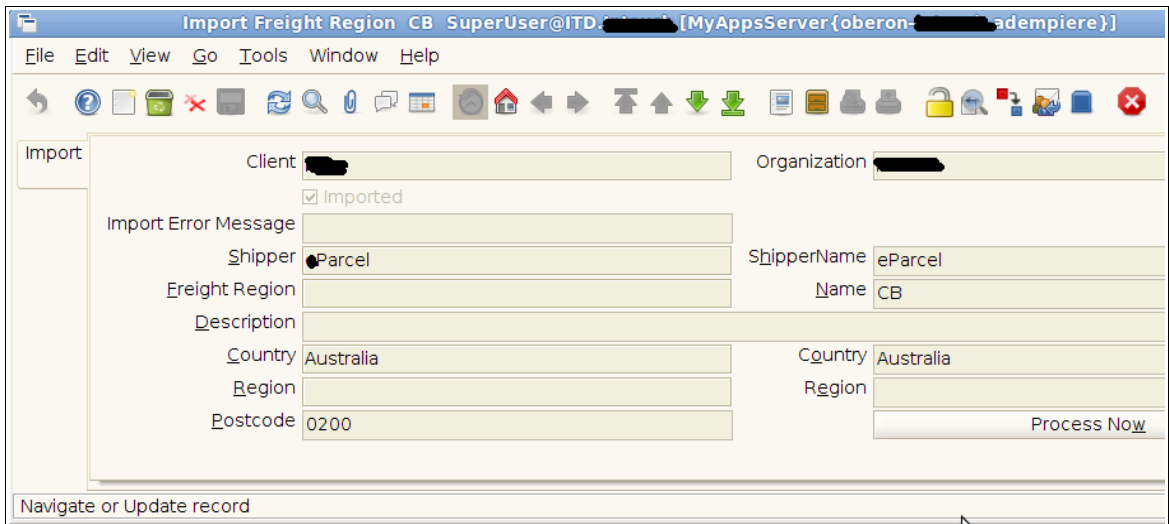
4.2 Locations in Freight Region

A freight region simply groups together a collection of geographical areas on the basis of EITHER State (aka Region) OR Postcode.

Shipper	Client	Organization	Active	Freight Region	Country	Region	Postcode
			<input checked="" type="checkbox"/>	BR	Australia		3350
Freight			<input checked="" type="checkbox"/>	BR	Australia		3353
Freight			<input checked="" type="checkbox"/>	BR	Australia		3354
Freight Region			<input checked="" type="checkbox"/>	BR	Australia		3355
Location			<input checked="" type="checkbox"/>	BR	Australia		3356

4.3 Importing Freight Regions

An import process has been provided to simplify the process of setting up freight regions. At a minimum the Shipper ID or Shipper Name, Freight Region ID or Freight Region Name, Country ID or Country Name, and EITHER a Region OR a Postcode must be provided either in the the data or as constants to the import loader.



4.4 Possible Imported Data Errors

Note that currently it is the user's responsibility to ensure that freight regions for a given shipper do not overlap (e.g. two regions containing the same postcode). If this occurs the freight calculation may use ANY of the matching regions as the basis for its calculation. It is therefore recommended that shipper freight regions are imported from a single spreadsheet as a complete set (with any existing freight regions for that shipper deleted beforehand).

5.1 Freight Charge Definition

The charges associated with sending freight via a shipper, from which the total freight cost is estimated are defined in the **Shipper** window.

5.2 Freight Charge Calculation

A freight charge is calculated for a Sales Order on the following basis.

- **Shipper** and **Freight Category** match those selected on the order. Freight Category can be used to distinguish differing levels of service provided by one shipper (note that if different services have different freight regions they must be configured as separate shippers).
- **Freight Region** will match the postcode/region of the location of the Warehouse specified at the order header. *Note that currently no consideration is applied to whether or not the order lines come from the same warehouse as the header warehouse when estimating the freight cost.* Depending on the shipper's rules it may be necessary to set up a special freight region containing only the postcode of your warehouse to ensure the system behaves correctly.
- **To** will match the postcode/region of the delivery address.
- **Currency** must match the order currency.
- **Valid From** must be prior to the order date.

If no matching freight charge is found an error will be thrown and the order will not be able to be processed until an appropriate freight charge is added, or the order freight cost rule is changed from **Calculated**.

Once a matching freight charge is identified the freight cost is estimated as follows:

- **Base charge** is applied to each consignment and includes the first carton.
- **Additional Package Charge** is multiplied by the number of cartons excluding the first first carton and applied to the total.
- If **Cubic Factor** is populated the total shipment weight is multiplied by the "Cubic Factor" and used as the shipment weight in subsequent calculations.
- If **Weight Unit Rate** is populated the total shipment weight is multiplied by the "Weight Unit Rate" and applied to the total.
- Otherwise if **Weight Multiple Rate** and **Weight Multiple** are populated the total shipment weight is divided by the Weight Multiple, rounded up to a whole number and multiplied by the Weight Multiple Rate. This is then added to the total.
- If **Surcharge** is populated, the total is increased by the Surcharge percentage.
- The greater of the calculated Freight Cost and the **Minimum Charge** (if populated) is then returned as the freight cost estimate.
- The amounts are treated on the Price List's tax basis specified by the **Price includes tax** flag.

5.3 What Triggers Freight Calculation?

The Freight Charge calculated is performed by the **Prepare** and **Complete** document actions of the Sales Order document. The calculation at the Prepare stage can be used to add freight at the Check-out stage of a web-store sale.

5.4 Calculated Freight on the Order

The screenshot shows a web-based form for a Sales Order. The title bar indicates the user is SuperUser@ and the application is MyAppsServer. The form is organized into several sections:

- Order:** Business Partner (ADAXA P/L (OPEN SOURCE ENTERPR)), Partner Location (Services_ADAXA_C), Invoice Partner (13562129-ADAXA P/L (OPEN SOURCE ENTERPR)), Invoice Location (Services_ADAXA_PT).
- Document:** Document No (135566), Order Reference (empty), Description (empty), Target Document Type (Standard Order), Date Ordered (19/06/2010), Date Promised (19/04/2010).
- Delivery:** Priority (Medium), Delivery Via (Shipper), Promotion Code (empty), Warehouse (A...), Shipper (eParcel), Delivery Option (empty), Discreet Wrapping (checked).
- Invoicing:** Invoice Rule (After Delivery), Delivery Rule (Availability), Price List (Online), Sales Representative (SuperUser), Payment Term (Immediate), On Credit (checked).
- Status:** Total Lines (8,209.51), Grand Total (8,209.51), Document Status (In Progress), Document Type (Standard Order), Charges_Allowed (In Progress), Cancellation Reason (Copy From).
- DVA:** Credit Status (5 No Credit Check (manual)), Open Balance (37,379.76), Organization (redacted).

The following fields on the order are used in determining the total freight:

- **Business Partner** is used to set the **Freight Cost Rule** (and optionally Activity with the code change previously described)
- **Weight** (may not be displayed by default) is populated with the total weight of the shipment (products + carton weight).
- **No of packages** (may not be displayed by default) is populated with the estimated number of cartons required for the shipment.
- **Shipper, Freight Category** (may not be displayed by default), **Warehouse** and **Partner Location** are used to find a freight charge. (Note that if multiple freight charges match then any could be used.)
- **Freight Amount** (may not be displayed by default) is populated with the estimated freight total which is also used to update the price of the freight product line on the order.

5.5 Enabling the Freight Calculation

Freight calculation code must be enabled by activating the **Freight Calculation** Model Validator in System.

The screenshot shows the 'Model Validator' configuration window for the 'Freight' entity. The fields are as follows:

- Client: System
- Organization: *
- Entity Type: User maintained
- Name: Freight
- Description: (empty)
- Comment/Help: (empty)
- Model Validation Class: au.com. validator.FreightCalculationValidator
- Sequence: 3
- Active:

The Freight Calculation model validator must be sequenced to run after other Validators but typically before the Promotions validator.

Model Validator	Client	Organization	Entity Type	Name	Sequence	Descripti
	System	*	e-Evolution Libero Manufacturing ...	Model Validator to Libero Manufac...		
	System	*	User maintained	Order	1	
	System	*	User maintained	██████████	2	
	System	*	User maintained	Freight	3	
	System	*	User maintained	Promotions	4	

6.1 Summary

The addition of this module to ADempiere ERP & CRM allows the automatic calculation of freight charges on relevant sales order types. Whilst the supported calculation rules are quite flexible they may not satisfy every method used by shipping companies to calculate freight charges and extensions to this functionality may be required to meet other shipper's freight charge calculation rules in future releases.

Should the reader have specific requirements that are not addressed in the current release, please contact Adaxa at info@adaxa.com.

7 Adaxa's Offices and Contacts

Information of a general nature about Adaxa and its services can be found at www.adaxa.com or obtained by sending an email to info@adaxa.com with a description of the information that you would like to receive. If you are an existing client and wish to initiate a request for software support please send an email to helpdesk@adaxa.com with as much detail as possible about the nature of your support request.

For all other information please contact the Adaxa office nearest to you.

7.1 Australia

Address: 10 Kylie Place, Melbourne, Victoria, 3192, Australia

Contacts: Office

- 1300 990 120 (Within Australia)
- +613 9510 4788 (Outside of Australia)

7.2 New Zealand

Address: 73 Boston Road, Mt Eden, Auckland, 1023, New Zealand

Contacts: Office

- 0800 232 922 (Within New Zealand)
- +649 9744 600 (Outside of New Zealand)

7.3 United States of America

Address: 4400 NE 77th Ave, Suite 275, Vancouver, WA 98662, USA

Contacts: Office

- +1 760 576 5115