



V E L A

BBO TRADING APP
User Guide

2016

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Introduction

The goal of this document is to serve as an introduction to the BBO Trading Markets functionality and a manual and walk through of the features provided in the BBO Trading App. This document should serve as a guide for training any new user.

The BBO Trading Markets is add on functionality within Metro that allows users to combine two or more products to view combined market data and as well as best market order routing. Basic functionality of this feature is described in this document. The BBO Trading Markets, which is a prerequisite for the BBO Trading Application, requires activation by Vela Support.

The BBO Trading Application consists of a front-end application from which users can configure routing parameters and a back-end Freeway job which facilitates trading on multiple exchanges. This BBO Trading App will allow the trader to trade, with one order, across multiple configured exchanges. The user can setup exchange priorities for each product (E.g. CRUDE) and can also disable an exchange on a per product basis. Users can also select a specific trading account per product per product.

This guide captures the typical user's workflow along with everything that user needs to get up and running. This includes configuration settings, how jobs interact with one another, a walkthrough of the different GUIs and what to expect in them.

BBO Trading Markets

How It Works

The BBO Trading Markets is designed to allow traders to view and order look-alike products over many exchanges via a single symbol. The application is configured on the Metro server and allows users to define a primary symbol, secondary symbols and any price or quantity normalization factors that are necessary to normalize the products. Market data from the future and options instruments of the primary and secondary symbols are collated and published via the assigned virtual symbol. Orders that are routed to a virtual symbol are translated to the respective exchange listed instrument based on the order exchange destination. A virtual symbol can support an instrument from all Metro supported exchanges and up to five products from the same exchange under a single virtual symbol.

Viewing Market Data

Market data from several instruments is collated and displayed under a single instrument. Data is not aggregated per price level as the distinction of which exchange(s) is lost. In widgets that use top of book price display, such as Metro App Store or Trade Sheets, the best bid and ask are displayed. If there is more than one source instrument that is priced at the top of the book, the exchange with the highest volume is displayed. The Depth Viewer Side Panel will show all available levels and the exchange associated with the level, even if there are two exchanges priced at the same level. The Book Depth Widget will show the best (highest quantity) at each price level and will not show which exchange is associated with that price and quantity.

Simple Order Routing

Traders can send orders in a virtual symbol. A click order will automatically be populated with the top of book exchange in the Order Ticket. When the order reaches the server, it will be translated into the appropriate exchange listed instrument and sent to the appropriate exchange. Additionally, if a price or quantity factor has been used to normalize data, the data the order will denormalize the order price and quantity in the exchange listed instrument before execution. A more advanced BBO routing job with added convenience for account designation and exchange priority can be found on the [Vela Metro App Store](#).

Using Two or More Products from the Same Exchange

When using two or more products from the same exchange to view or order data, the BBO Trading Markets will assign a synthetic Auxiliary Exchange (AUX1, AUX2, etc.) to one or more products. When viewing Natural Gas Options ON and LNE from CME, ON market data would reflect exchange CME and LNE data would reflect AUX1 (based on configuration in the above example). Up to five products from one exchange can use the Auxiliary Exchange feature.

Viewing an Aggregate Position

All trades from orders placed on virtual symbols will be executed in an exchange listed instrument. All risk applications will reflect the positions created in the listed instruments. The virtual symbols will also show positions based on any normalizing factors which can be displayed in any widget that has position displays available (Trade Sheets, Metro App, etc.). Several symbols that constitute the members of the virtual symbol can be viewed by creating a Risk Grouping.



For example, PHE is normalized to ON and LNE by using a .25 quantity factor. When a 400 lot of PHE is traded, the impact is 100 normalized contracts.

Using Virtual Symbols in Missions

Virtual symbols can be used like any other symbol or instrument within Metro, including the usage in all mission types. For virtual symbols that are constructed from symbols on multiple exchanges it is recommended to use the ability to route to Freeway jobs to properly set accounts.

Routing Orders to a Freeway Job

Throughout Metro, orders can be executed using user logic by routing the order directly to a Freeway job. The BboOrderRouter job is the backend Freeway logic responsible for routing orders to multiple exchanges based on user parameters. Users are free to create their own complex logic for routing orders. Once the job is uploaded to the server, the user can then select that job in the Freeway Routing drop down menu offered in the Order Ticker or in the widget settings. When an order is routed to a job, the job logic supersedes any parameter set in the original order ticket. If a job breaks an order down into several orders, each order will be an individual entity within Metro. Users may choose to assign labels to orders for linking purposes.

BBO Trading App

Configuration and Setup

In order to run the BBO Trading App the user must have the job up and running. This means that the job is started on either a Freeway instance or via the Job Control accessible by right clicking the rightmost “New Metro Now Widget” icon in the Metro toolbar and then clicking Job Control. This brings up the Freeway Jobs window which shows all the jobs that are currently available to run on this instance. The status for the BboOrderRouter job should be green and it should AutoStart after a server restart. If it turns off, then restarting this backend job will be required by selecting the job and clicking Start.

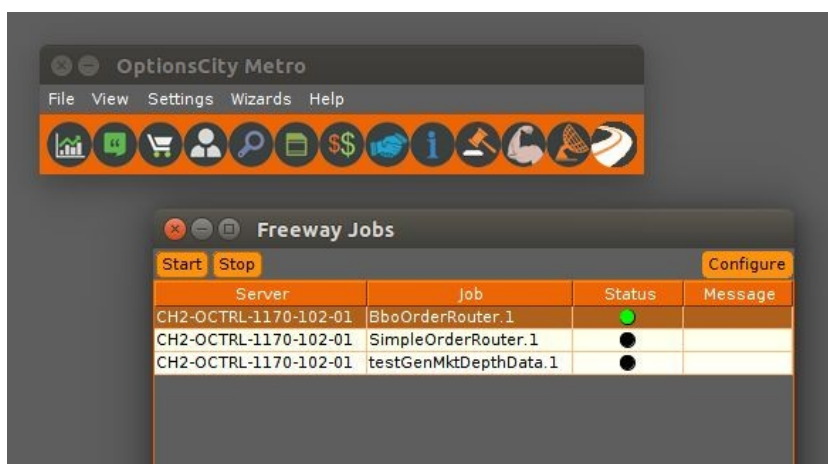


Fig. 1: Vela Metro toolbar with Freeway jobs window

The BboOrderRouter job has several configurations of interest. To launch the configurations menu, select the job instance from the jobs grid and click configure. To apply a configuration. Simply restart the job after a configuration has been changed in the configuration menu. Relevant configurations are below.

Order Options

Order options manage configurations on any order sent from the BboOrderRouterJob. These include the following

Config	Description
Trader	The trader (tag50) on the order that is sent out
Account	The trade account to which fills from orders from this job are sent (should be set to NO_TRADE_ACCOUNT).
Exchange	The exchange to which orders from this job are routed (should be set to NONE)
Route To	

Auto-Hedge	The hedge-mode on the orders (whether a fill on an order will result in a hedge signal being sent to metro, freeway, or nowhere)
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Setting all of these except for **Auto-Hedge** will not result in any difference among the orders that are sent by the job, as they are overridden by the job logic in the case of this app.

Limits

Limits manage various limits on the job, when surpassed, will result in the job being terminated by the Freeway server. These include the following:

Config	Description
Orders Per Second	The number of orders the job may place per second.
Modifies Per Second	The number of order modifications the job can make per second.
Open Orders	The number of orders placed by the job that can be booked while the job is running.
Trades Per Second	The number of fills per second orders placed by the job can result in.
Cross Ticks	The max possible market edge violation an order placed by the job may have. For example, if the best offer is 50.00, the job may not place buy orders with prices above 52.00 if Cross Ticks = 2 (assuming 1 tick = 1.00). Cross Ticks are disabled when set to 99999.

It is suggested that you not alter the Cross Ticks configuration, (defaults to 9999) but set the other configurations to reasonably high values.

Test mode

In test mode the job will not place orders but will instead warn the user of potential orders being placed. This should be disabled when running in production.

Debug mode

Debug mode enables more verbose logging.

Reset DB

When checked, this will delete persisted values from the freeway server db related to this job. This is primarily to be used by support.

Refresh Exchange Configs

When checked, this will reset all exchange priorities altered by the widget, back to their default values.

Post Method

The post method reflects different ways passive limit orders may be posted in a fragmented market. There are three options:

Name	Description
BY_PRIORITY	Post the untraded balance of any limit order to the exchange with the highest exchange priority.
BY_VOLUME	Post the untraded balance of any limit order to the exchange where the most volume was traded. For example, if there exists 10 shares on exchange A at a price of 10.0 and 11 on exchange B, at a price of 10.0, a limit order to buy at 22 at 10.0 will result in 10 being filled at A, 11 filled at B, and 1 remaining share to be posted on B, since more was traded there.

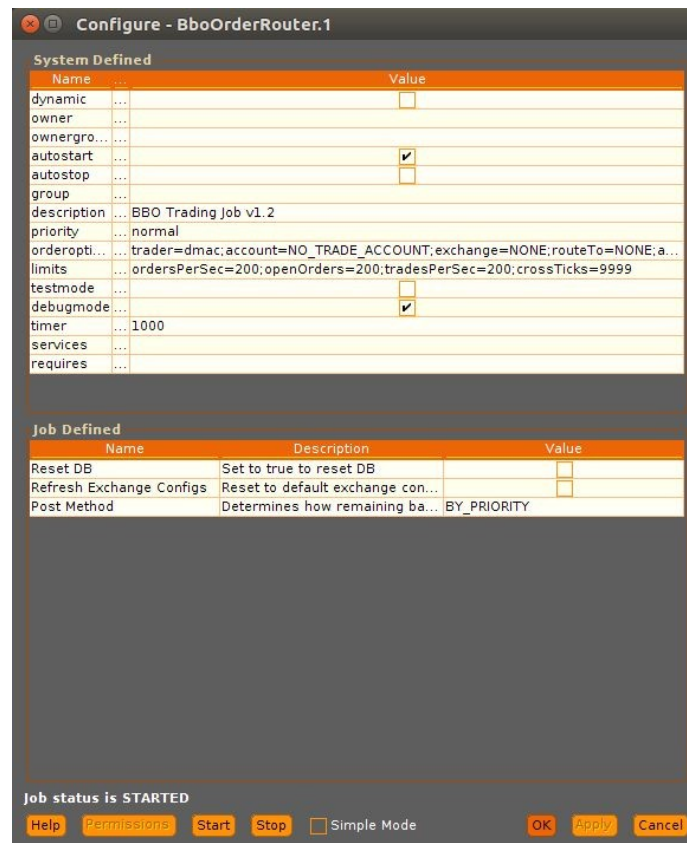


Fig. 2: Vela Metro toolbar with Freeway jobs window

Now that the job is up and running the user will want to launch a new instance of the BBO Trading App from their toolbar (If the icon isn't in the toolbar click on "New Metro Now Widget", check the "Toolbar?" checkbox for this widget and click Add Widget. There will now be a new icon to the right of the inventory manager. Click it to launch the BBO Trading App.

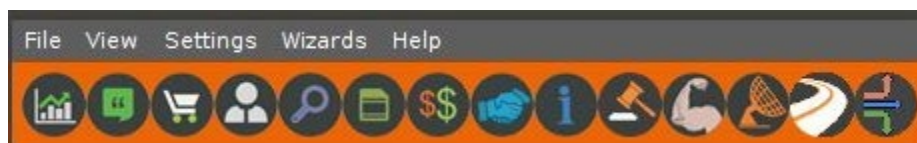


Fig. 3: Vela Metro toolbar with BBO Trading App icon added

GUI Definitions

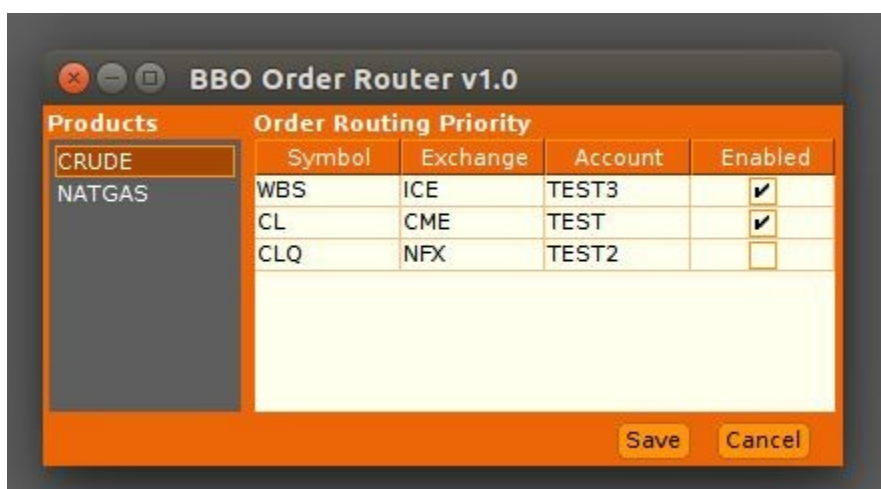


Fig. 4: BBO Trading App UI

Label	Description
Products	List of products that are configured and tradeable on this instance
Order Routing Priority	Table that contains exchanges where this product is tradeable. Order of exchanges can be updated by dragging and dropping the exchange row to the desired position
Symbol	Symbol for the product on that exchange
Exchange	The name of the exchange on which an order can be placed
Account	Dropdown that allows the user to select the trading account he/she desires trades for this product on this exchange to be associated with
Enabled	Checkbox that is selected by default. Can be unchecked to disable trading at a certain exchange for that product
Save	Button that needs to be clicked to preserve any changes to a product's exchange settings
Cancel	Button that ignores any unsaved changes

Standard Application Usage Overview

Setting up Routing Preferences for a Product

To correctly setup products within the BBO Trading App, the user must first select the product he/she wishes to trade in the product list. This brings up the table of exchanges that the product can be traded on. To set up the order routing priority the user can drag and drop the exchange entries in the table to the desired order. Exchanges near the top have a higher routing priority. For each exchange a trading account can be selected from the Account dropdown. For each exchange a trading account can be selected from the Account dropdown.

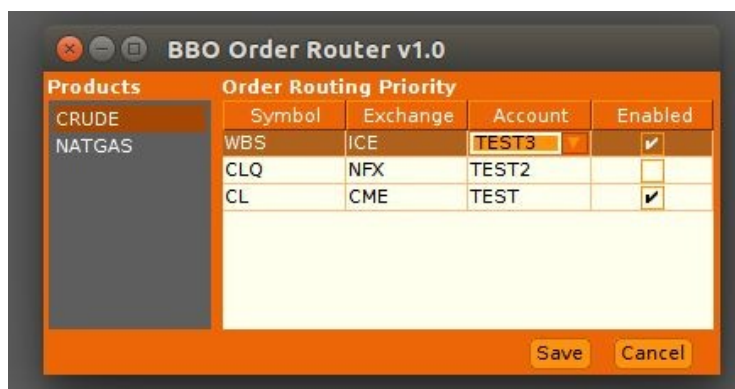


Fig. 5: BBO Trading App with Account and Enabled fields set

A user can also prevent orders from being routed to an exchange by unchecking the enabled checkbox. After any change, the Save button needs to be clicked to persist those changes that take effect immediately.

Viewing Book Depth in Metro App

In Metro App, click the Depth Viewer at the bottom of the screen. and select the desired instrument. This will show bring up the order ladder in the depth Viewer tab that will display the best quantity available at that price along with the exchange it's available at.

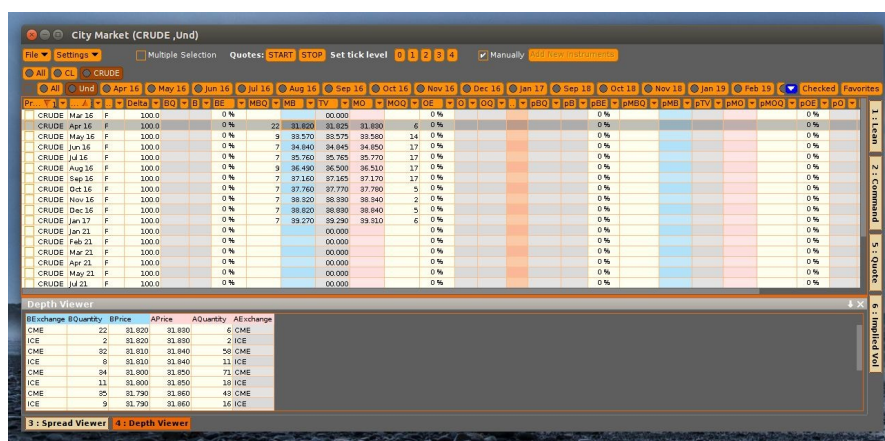


Fig. 6: Metro App for CRUDE with Depth Viewer enabled

Placing BBO Orders

Double click the desired instrument row to bring up an order ticket. Select the desired order type (Note: For this release only, MARKET and LIMIT orders are supported by the BBO Trading App)

Next, select freeway from the Routing dropdown and BboOrderRouterJob.1 from the Freeway Job drop down to route the order to the BBO backend job. Set the price and qty as desired and hit Buy/Sell. (Note: The Account shown in the order ticket is the default trade account which will be replaced by the trade account selected for that exchange in the widget). It is also important to note that the trader on this order ticket will be used to place the order from the BboOrderRouterJob.

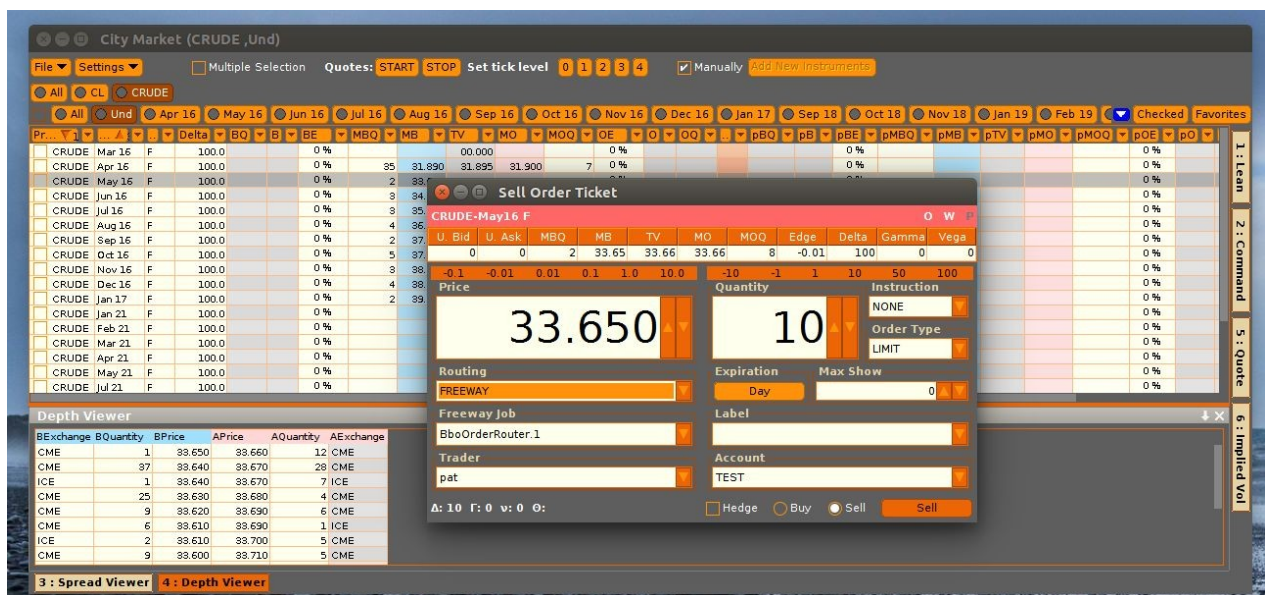
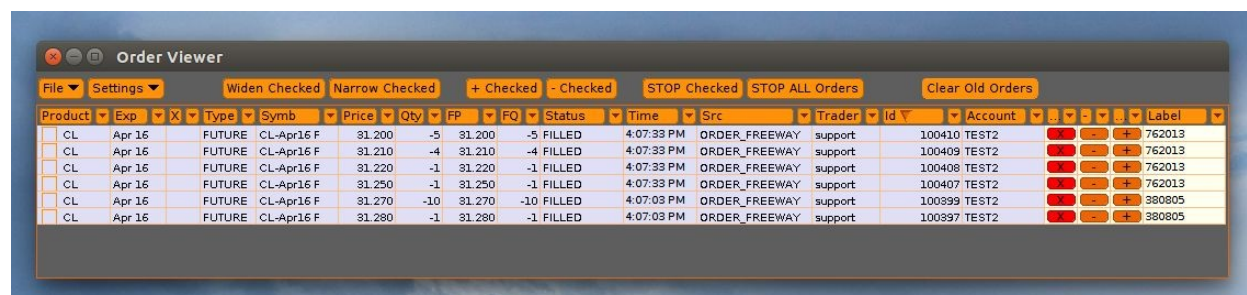


Fig. 7: Metro App for CRUDE with Sell Order Ticket for May-16F

Viewing Placed Orders

Upon launching the order viewer, the user can see the trades that were just placed on the different exchanges at various prices. Add the Label field to the table as it has a unique order id that can be used to help link the various orders together.



Product	Exp	X	Type	Symb	Price	Qty	FP	FQ	Status	Time	Src	Trader	Id	Account	Label
CL	Apr 16		FUTURE	CL-Apr16 F	31.200	-5	31.200	-5	FILLED	4:07:33 PM	ORDER_FREEWAY	support	100410	TEST2	762013
CL	Apr 16		FUTURE	CL-Apr16 F	31.210	-4	31.210	-4	FILLED	4:07:33 PM	ORDER_FREEWAY	support	100409	TEST2	762013
CL	Apr 16		FUTURE	CL-Apr16 F	31.220	-1	31.220	-1	FILLED	4:07:33 PM	ORDER_FREEWAY	support	100408	TEST2	762013
CL	Apr 16		FUTURE	CL-Apr16 F	31.250	-1	31.250	-1	FILLED	4:07:33 PM	ORDER_FREEWAY	support	100407	TEST2	762013
CL	Apr 16		FUTURE	CL-Apr16 F	31.270	-10	31.270	-10	FILLED	4:07:03 PM	ORDER_FREEWAY	support	100399	TEST2	380805
CL	Apr 16		FUTURE	CL-Apr16 F	31.280	-1	31.280	-1	FILLED	4:07:03 PM	ORDER_FREEWAY	support	100397	TEST2	380805

Fig. 8: Order Viewer showing filled orders linked by their parent order id (Label)

Routing Orders to Freeway Job by Default

To route all orders to the freeway job by default, from Metro App, click Settings > Widget and select the Orders Ticket tab. Select the BboOrderRouterJob.1 from the Freeway Job dropdown and hit Save.

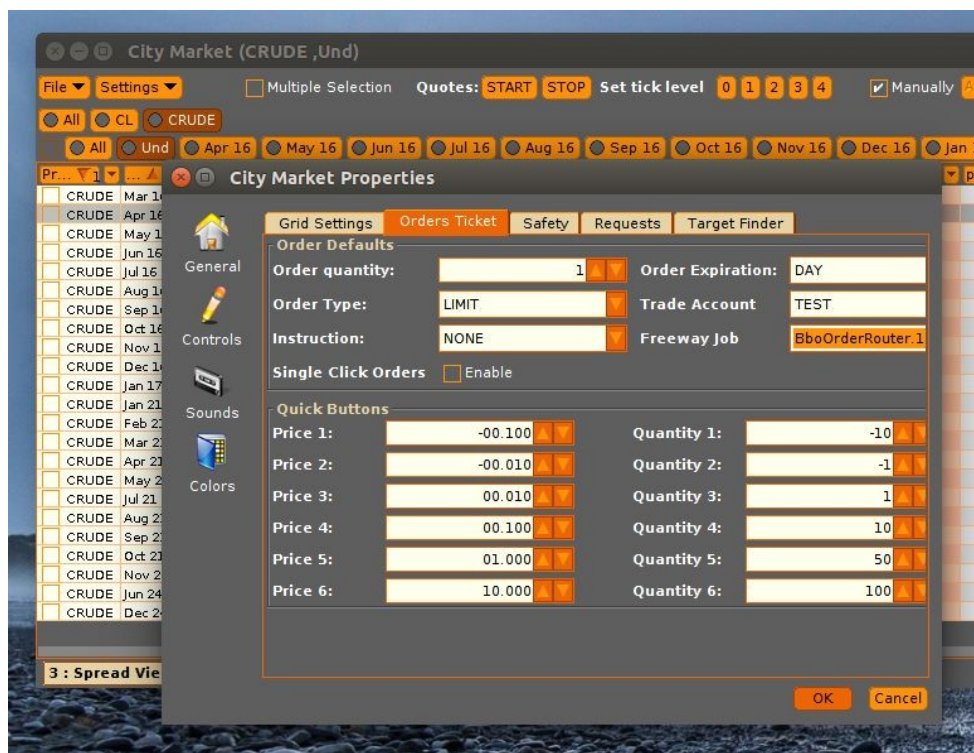


Fig. 9: Setting all orders to route to a Freeway Job