



V E L A

UNDERLYING OFFSET CONTROLLER

User Guide

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Introduction

The goal of this document is to serve as a manual and walk the user through the features of the Underlying Offset Controller. This document should serve as a guide for training any new user.

The purpose of the Underlying Offset Controller is to increase Metro's functionality regarding offsets. The widget allows users to setup the expiry or root future for each option month and easily set the corresponding future month's offset based on future settlements, implied prices or listed spreads. Additionally, users can easily override the offset value before publishing. In version 1.6 the user can now auto-update the offset. This is detailed further within the documentation.

This guide attempts to capture 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.

Configuration and Setup

In order to run the Underlying Offset Controller, 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 UnderlyingOffsetControllerJob 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

Now that the job is up and running the user will want to launch a new instance of the Underlying Offset Controller 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 Underlying Offset Controller.

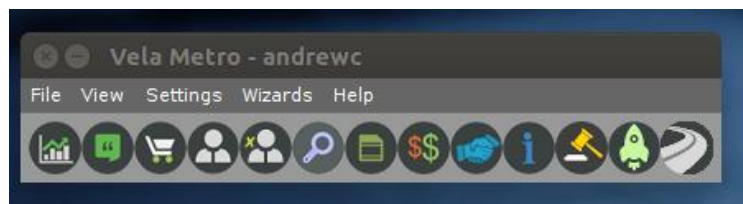
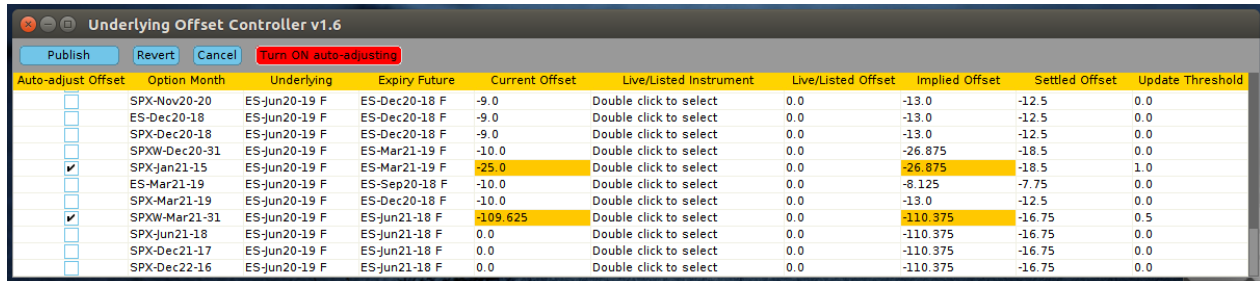


Fig. 2: Vela Metro toolbar with Underlying Offset Controller icon added

GUI Definitions



Auto-adjust Offset	Option Month	Underlying	Expiry Future	Current Offset	Live/Listed Instrument	Live/Listed Offset	Implied Offset	Settled Offset	Update Threshold
<input type="checkbox"/>	SPX-Nov20-20	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	ES-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPX-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPXW-Dec20-31	ES-Jun20-19 F	ES-Mar21-19 F	-10.0	Double click to select	0.0	-26.875	-18.5	0.0
<input checked="" type="checkbox"/>	SPX-Jan21-15	ES-Jun20-19 F	ES-Mar21-19 F	-25.0	Double click to select	0.0	-26.875	-18.5	1.0
<input type="checkbox"/>	ES-Mar21-19	ES-Jun20-19 F	ES-Sep20-18 F	-10.0	Double click to select	0.0	-8.125	-7.75	0.0
<input type="checkbox"/>	SPX-Mar21-19	ES-Jun20-19 F	ES-Dec20-18 F	-10.0	Double click to select	0.0	-13.0	-12.5	0.0
<input checked="" type="checkbox"/>	SPXW-Mar21-31	ES-Jun20-19 F	ES-Jun21-18 F	-109.625	Double click to select	0.0	-110.375	-16.75	0.5
<input type="checkbox"/>	SPX-Jun21-18	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec21-17	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec22-16	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0

Fig. 3: Underlying Offset Controller UI

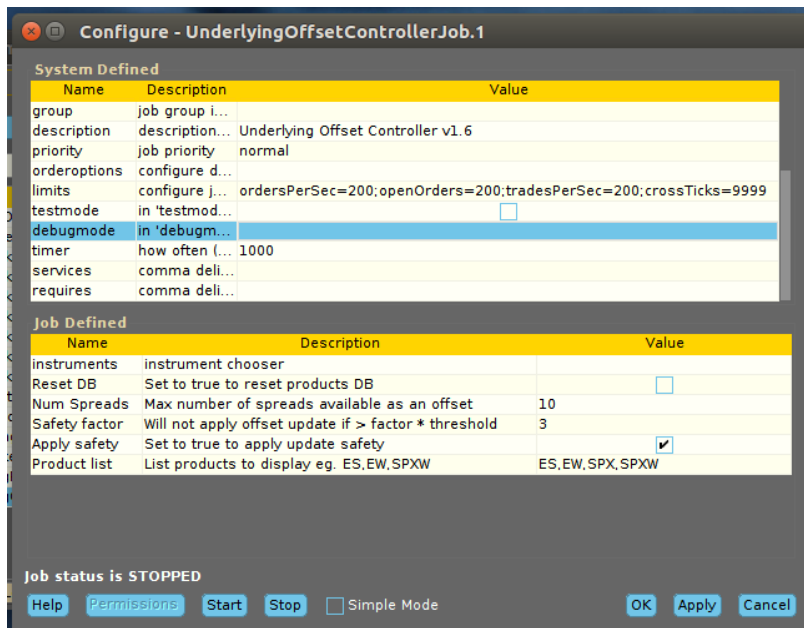
Label	Description
Auto-adjust Offset	Checkbox to select which instruments can auto-adjust offset. NB Update threshold must be positive non-zero.
Publish	Button that publishes any updates to current offsets for this product
Revert	Button that reverts any unsaved changes
Cancel	Button that reverts any unsaved changes and closes the widget
Option Month	The option group that corresponds to options expiring in that month
Underlying	The underlying future currently set in Metro for this option month
Expiry Future	Drop down that allow the user to select the default future that this option month's offsets should be calculated off. When any of these values are changed the cell will be colored yellow signifying an unsaved change. Hitting fetch saves the future as the expiry future for that option month and recalculate offsets off this future.
Current Offset	Text field that allows the current offset for this option month to be entered
Live/Listed Instrument	Shows the display symbol of the current listed spread (chain of spreads and futures that are equivalent to the expiry future) that is being used as the current offset for the option month. It can also have one of the following values Setup Underlying: The row would be colored red signifying that N/A: Appears when the underlying and expiry future are set to the same future and so no listed spreads are applicable Double click to select: Appears when there are multiple listed spreads for this option month.



Live/Listed Offset	The offset value corresponding to the selected listed instrument. If no listed spread is selected a default value of 0.0 is displayed. Must be greater than or equal to zero.
Implied Offset	Displays the difference in mid-market prices between the expiry future & underlying future
Settled Offset	Displays the difference in settlement prices between the expiry future & underlying future
Offset Threshold	User defined setting that defines window of deviation between underlying and offset reference instrument (expiry future or live/listed instrument) which will not automatically adjust offset. Set to zero to prevent auto-adjust.

Standard Application Usage Overview

Initial configuration



- **Reset DB** – Product settings as saved to database. The user can clear these settings on job start up by selecting this option to true
- **Num spreads** – Sets the maximum number of spreads to display.
- **Safety factor** – (Used in auto-adjusting offset mode) Set to positive integer. Offset will not auto-adjust if underlying-expiry future reference price spread moves beyond threshold value * safety factor in one jump.
- **Apply safety** – Enables the safety feature as described above.

- **Product list** - Initially the user must tell the system what products they would like to display. In this case, Product List is ES,EW,SPX,SPXW (ie. the SPX chain). The user is advised to **set this once on initial setup** and not change as offset settings will be saved according to product list.

Setting up a valid underlying for an option month

To use the application to set offsets, one must first setup a valid underlying for the option month. If offsets are fetched for a product and one or many option month rows are colored red this indicates that a valid underlying has not been set up for that option month.

To setup a valid underlying, activate the desired product in Metro App and click Settings. This brings up the Product Portfolio Settings window. Next select the desired product from the dropdown and select the Option Settings tab.

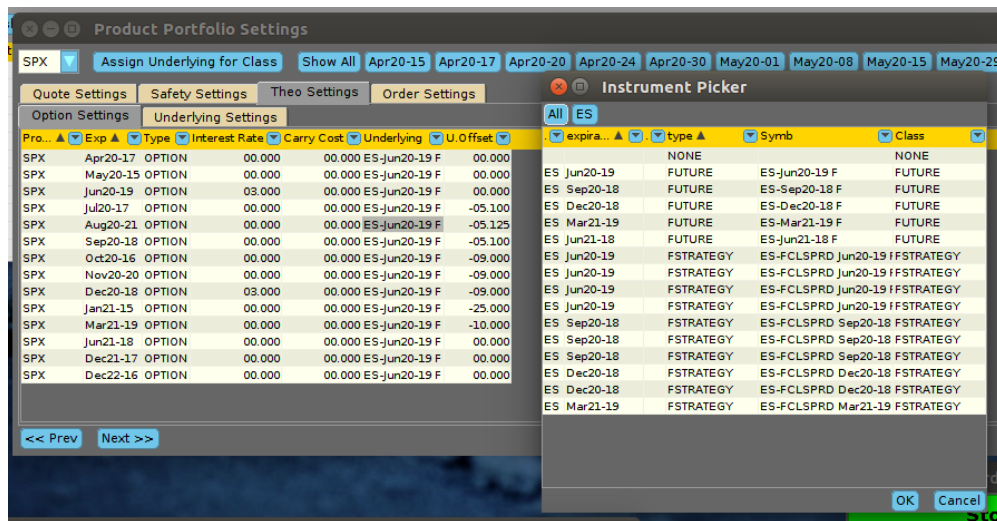


Fig. 5: Setting a valid underlying for an option month in Product Portfolio Settings Next double click on the option month that has no underlying setup. This brings up the Instrument Picker window. Choose the desired underlying and hit Ok. Next hit Apply in the Product Portfolio Settings window to persist the changes to the database.

Return to the Underlying Offset Controller and hit fetch again. Now the option month should display the underlying that was setup and should not be marked red anymore.

Choosing Desired Expiry Future

Based on the product the default expiry or root future for each option month would differ. Clicking the expiry future value for an option month brings up a drop down with valid underlying future options. Choose the desired future. This would color it yellow if it is different from the current choice.

Auto-adjust Offset	Option Month	Underlying	Expiry Future	Current Offset	Live/Listed Instrument	Live/Listed Offset	Implied Offset	Settled Offset	Update Threshold
<input type="checkbox"/>	SPX-Nov20-20	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	ES-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPX-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPXW-Dec20-31	ES-Jun20-19 F	ES-Mar21-19 F	-10.0	Double click to select	0.0	-26.875	-18.5	0.0
<input checked="" type="checkbox"/>	SPX-Jan21-15	ES-Jun20-19 F	ES-Mar21-19 F	-25.0	Double click to select	0.0	-26.875	-18.5	1.0
<input type="checkbox"/>	ES-Mar21-19	ES-Jun20-19 F	ES-Sep20-18 F	-10.0	Double click to select	0.0	-8.125	-7.75	0.0
<input type="checkbox"/>	SPX-Mar21-19	ES-Jun20-19 F	ES-Dec20-18 F	-10.0	Double click to select	0.0	-13.0	-12.5	0.0
<input checked="" type="checkbox"/>	SPXW-Mar21-31	ES-Jun20-19 F	ES-Jun21-18 F	-109.625	Double click to select	0.0	-110.375	-16.75	0.5
<input type="checkbox"/>	SPX-Jun21-18	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec21-17	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec22-16	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0

Fig. 6: Changing the expiry future marks it yellow highlighting an unsaved change

To apply the change press publish. This would trigger a recalculation of the listed, implied and settled offset for this option month.

Setting Current Offset to Custom Value

Simply click the current offset cell, enter a valid numerical value and hit Publish to persist these changes.

Setting Current Offset to Implied or Settled Offset

To set the offset for an option month to the calculated implied or settled value, simply double click the value and it will populate itself in the current offset cell which will then be coloured yellow if the value is different from the current offset.

- To modify this value, click the current offset cell and edit the value.
- To publish this offset value, click the Publish button.
- To revert these changes and return to the previously setup offsets, hit Revert.
-

Setting Current Offset to a Listed Spread Offset

Click the Live/Listed Instrument cell for the option month in question. This brings up the Listed Spread Calc Engine window.

Auto-adjust Offset	Option Month	Underlying	Expiry Future	Current Offset	Live/Listed Instrument	Live/Listed Offset	Implied Offset
<input type="checkbox"/>	SPX-Apr20-17	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-Apr20-17	ES-Jun20-19 F	ES-Jun20-19 F	12.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-Apr20-20	ES-Jun20-19 F	ES-Sep20-18 F	0.0	Double click to select	0.0	-7.875
<input type="checkbox"/>	SPXW-Apr20-22	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-Apr20-24	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	EW-Apr20-30	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-Apr20-30	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-May20-01	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-May20-08	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPX-May20-15	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0
<input type="checkbox"/>	SPXW-May20-15	ES-Jun20-19 F	ES-Jun20-19 F	0.0	N/A	0.0	0.0

Symbol	Price
ES-FCLSPRD Jun20-19 F :-1 Sep20-18 F :1	-7.975

Fig. 7: Listed Spread Calc Engine window displayed for GE-SEP18 Options

Select the desired listed spread combination and double click. This closes the Listed Spread Calc Engine and populated the display symbol of the selected listed spread in the Live/Listed Instrument cell. The offset value is also populated in the Live/Listed Offset and Current Offset cells. Lastly, hit Publish to update the underlying offset for this option month. Note that inter-product spreads (GE1 | GE2 spreads, for example) and listed spreads including them will not be listed in Listed Spread Calc Engine. Only single-product spreads are supported!

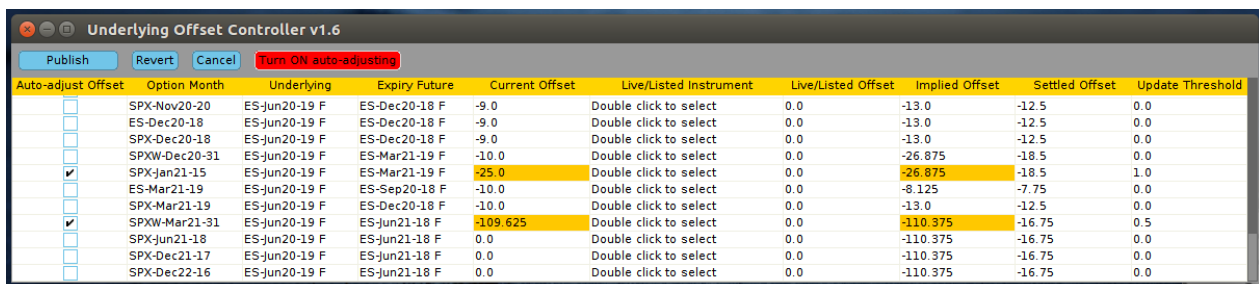
Offset auto-adjusting

The offset can be set to automatically adjust to changes in market movement of mapped underlying (Expiry future or live/listed instrument) with respect to actual underlying (as defined in Metro and 'Underlying' column).

The offset will not adjust to all market movements but will only change if the different in underlying and mapped underlying extends beyond a certain defined threshold value. This is done to improve performance. In order to enable this functionality please follow the steps in the following order:

- The user must enter a positive value in the 'Offset Threshold' column eg. 5.0 or 10.0
- Select the checkbox in 'Auto-adjust' column
- **Press publish.** to send settings to backend job. You can see that you have not pressed the publish button as 'Current Offset' will still be yellow (see below)
- Then the user can press 'Auto-adjust offset button' to activate this.

Instruments that do not have a non-zero threshold value will not auto-adjust. In order to change any instrument settings the user must pause the auto-adjusting and then press publish. Once complete the user can select auto-adjust again.



Auto-adjust Offset	Option Month	Underlying	Expiry Future	Current Offset	Live/Listed Instrument	Live/Listed Offset	Implied Offset	Settled Offset	Update Threshold
<input type="checkbox"/>	SPX-Nov20-20	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	ES-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPX-Dec20-18	ES-Jun20-19 F	ES-Dec20-18 F	-9.0	Double click to select	0.0	-13.0	-12.5	0.0
<input type="checkbox"/>	SPXW-Dec20-31	ES-Jun20-19 F	ES-Mar21-19 F	-10.0	Double click to select	0.0	-26.875	-18.5	0.0
<input checked="" type="checkbox"/>	SPX-Jan21-15	ES-Jun20-19 F	ES-Mar21-19 F	-25.0	Double click to select	0.0	-26.875	-18.5	1.0
<input type="checkbox"/>	ES-Mar21-19	ES-Jun20-19 F	ES-Sep20-18 F	-10.0	Double click to select	0.0	-8.125	-7.75	0.0
<input type="checkbox"/>	SPX-Mar21-19	ES-Jun20-19 F	ES-Dec20-18 F	-10.0	Double click to select	0.0	-13.0	-12.5	0.0
<input checked="" type="checkbox"/>	SPXW-Mar21-31	ES-Jun20-19 F	ES-Jun21-18 F	-109.625	Double click to select	0.0	-110.375	-16.75	0.5
<input type="checkbox"/>	SPX-Jun21-18	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec21-17	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0
<input type="checkbox"/>	SPX-Dec22-16	ES-Jun20-19 F	ES-Jun21-18 F	0.0	Double click to select	0.0	-110.375	-16.75	0.0

Fig. 7: Instrument setup for auto-updating offsets.