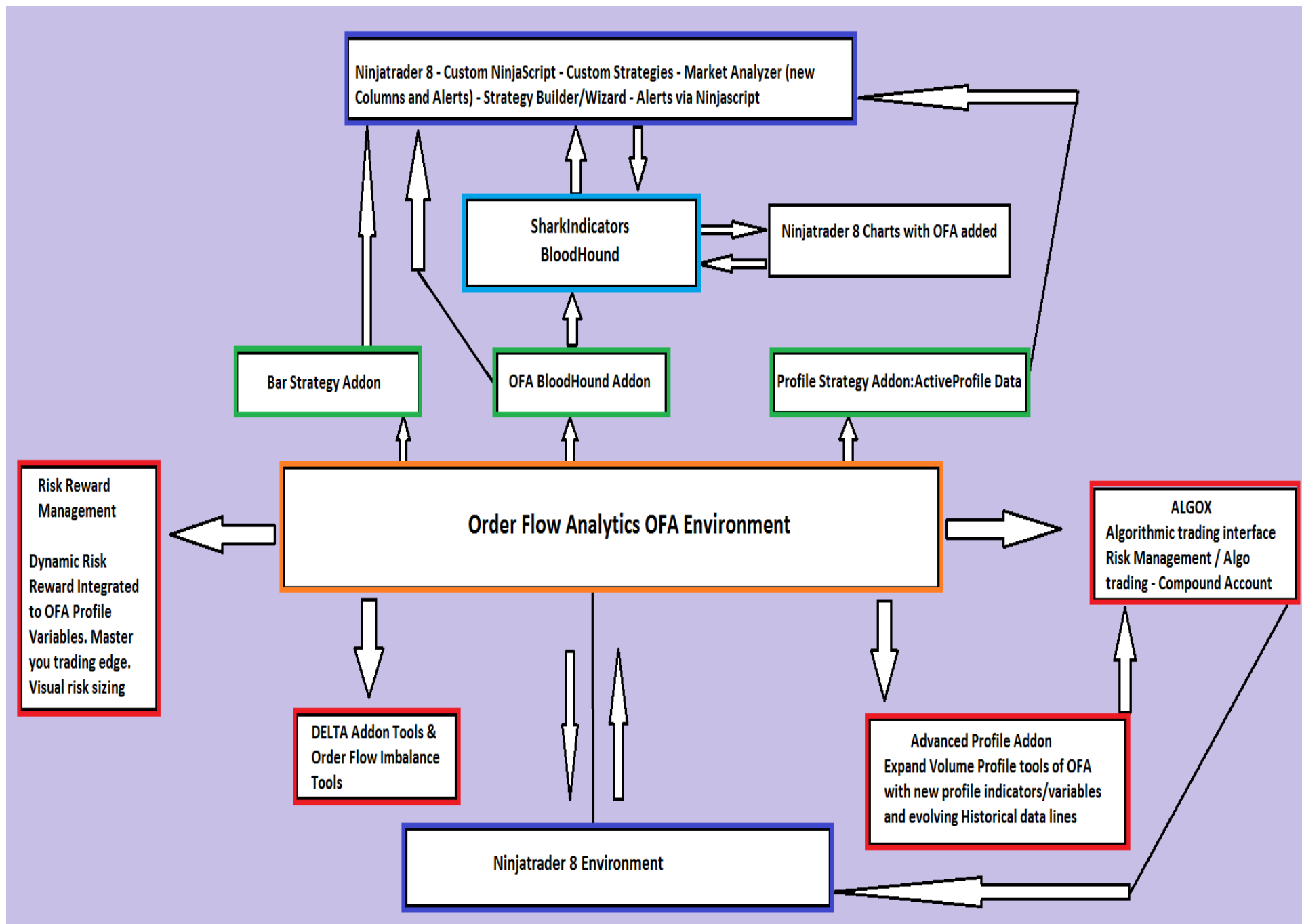


Table of Contents for BloodHound Process and Use of the OFA BloodHound Addon

- 1. Component Overview of OFA and the Addon Suite and the new Addon(s) and interaction with OFA / Ninjatrade 8 components & BloodHound**
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- 3. Examples of BloodHound Logic template with the Solvers and an OFA chart**
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SharkIndicators BloodHound Users Process

We have strived to keep up to date with carefully selected vendor products and the proven integrity of the **SharkIndicators** suite. With OFA NT8 compatibility now available with the Bloodhound toolset OFA Bar Data has been opened up as never before. This will help to empower you to build signal systems and iterate your logic rules and templates with OFA Bar Data utilizing the powerful and intuitive BloodHound graphical interface.

A version of this has been specifically configured for integration and function with the **SharkIndicators BloodHound** product. The BloodHound integration process for using the **OFA BloodHound Addon** is covered in this document. Additionally, all the information and features including the sample code covered in the other main Addon document apply to those who select the Bloodhound Addon as well.

See www.sharkindicators.com : for more detailed information & specifically and initially the Bloodhound signal Designer tool.

The process for working with BloodHound indicator for Ninjatrade 8 and OFA is as follows :

The **OFA** Indicator must be loaded onto the Chart first.

Then Add the SharkIndicator **SiBloodHound(OBC)** for Ninjatrade 8 to the OFA chart. Bloodhound setting changes are made and the Logic template to load can be set before hitting APPLY.

Within the bloodhound interface and creating your Logic template with solvers etc you refer to **OFASTCOREBH in the indicator list**. This one is specifically configured for Bloodhound users and integration with their Logic template and the bloodhound environment. Then you can also add other indicators derived from using the **OFA BloodHound Addon** created in Ninjatrade 8. As with all indicators that are compatible in Bloodhound you access the available **Plot** values to build the solver in the Logic template. All the available Plot fields available to BloodHound are covered in an appendix in this document.

NINE sample/example indicators and strategies have been provided to illustrate the framework for accessing the OFA data across the 3 provided Addons. Several of the Indicators provided to work with the Addon data access can be modified to suit users' settings and rules of classification/cluster pattern analysis. This was covered in detail in the Main document and the video section. Included as part of this group is a functioning **Bonus out of the box** classification/cluster logic pattern indicator, which draws and marks chart to help reading of the Auction bars clusters/poc according to your preferred Color Logic Settings. As a contrast, you can see this overlaid with the BloodHound racing stripes that appear with the outputs from the Logic template connections.

SIX of these samples are allocated to work the the **OFA BloodHound Addon**, covered in the main document. Additionally the Logic Template covered in this document and in the video section called **OFASampleClusterClassPOCLogic.bht** has been provided in the ZIP file. This correlates to the functioning out of box Bonus indicator that runs as a ninjatrader indicator covered in another video. The bloodhound template for this is located in the Ninjatrader 8/templates/BloodHound directory.

Some caveats for working with indicators in Bloodhound are that any indicators have the Max Bars Lookback set to INFINITE setting. So any indicators derived and created from using the OFA BloodHound Addon in the Ninjascript environment need to have this setting. This is a requirement of Bloodhound. See Bloodhound documentation for an exhaustive list of working with 3rd party indicators in Bloodhound.

Summary of the following graphic illustrations for BloodHound Users

Adding Bloodhound Indicator the OFA Chart with Logic Template very similar to the logic in provided sample
OFASampleIndClusterCloseLogic

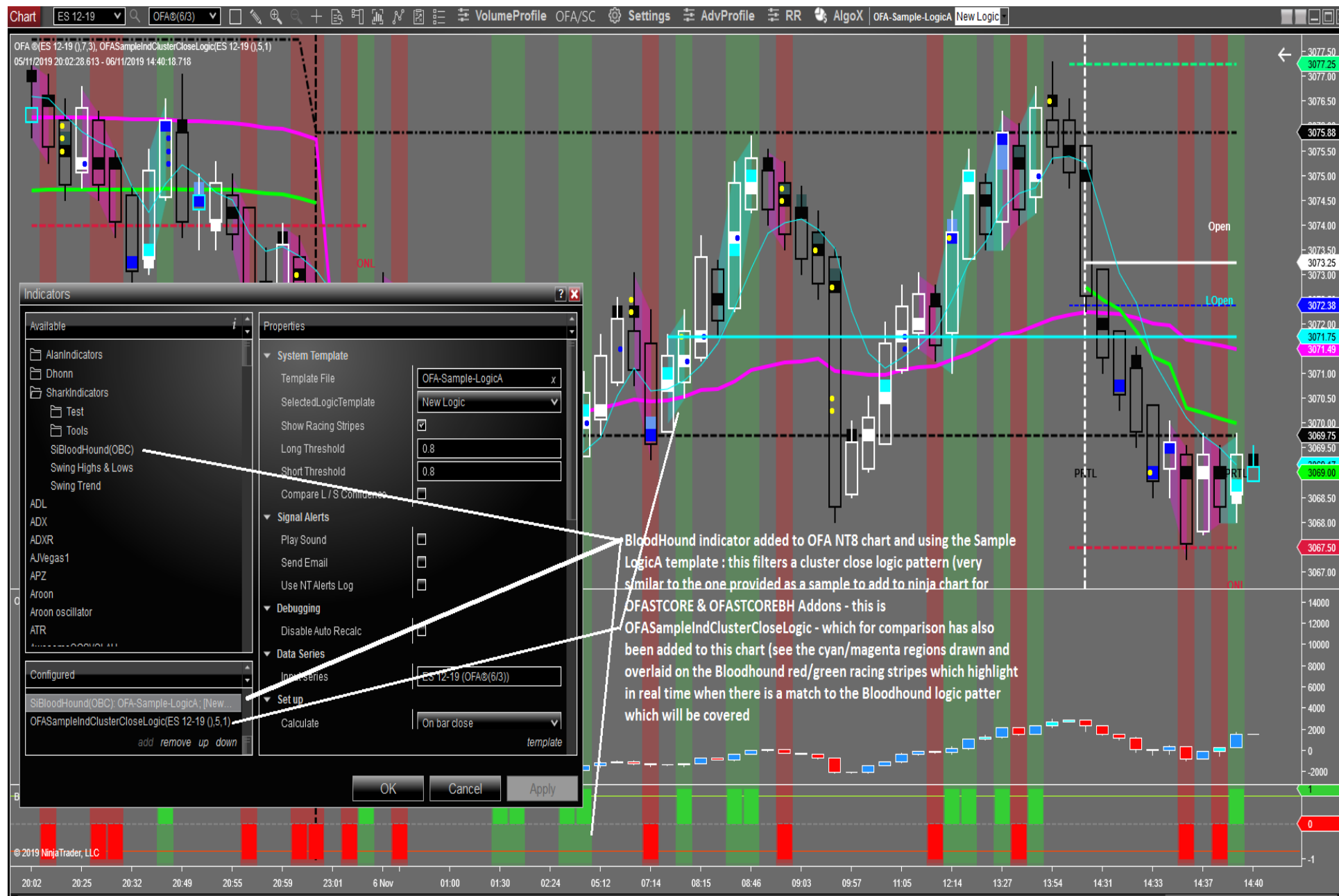
Example of Bloodhound Logic template with Solvers using the OFA Bar Classification information and OFA Bar Probe Direction

Closer inspection opening up the Solver node details for OFA Bar Classification and the reference to OFASTCOREBH and using the comparison Solver testing the fixed values for this **Buy = 1 : Sell = -1 : Neutral = 2** – showing option to change the Color Logic – recommendation to keep same as Chart Setting Color logic – but you can use a different Color logic when referencing the Addon indicator as you build your Logic template
See Appendix at end of document for Color Logic Options review.

Closer inspection opening up the Solver node details for OFA Bar Probe Direction and the reference to OFASTCOREBH and using the comparison Solver testing the fixed values for this **Probe Up = 1 : Probe Down = -1 : Neutral = 2**

An example of OFA Chart with Bloodhound Logic Template very similar to the logic in provided sample
OFASampleIndClusterCloseLogic with an additional Solver node included using the EMA based on the POC price series of OFA Bars with a setting of 5.

The next two charts illustrate a contrast of the Logic template with the EMA of POCs connected in the first chart and disconnected in the Logic template on the second. It shows the breakdown and some Decision Point profiles below the Open Price Level (White line) and the Overnight Low (Red Dashed Line). A Retest of the Decision Point is made and price continues to sell-off.



Selected Node

CloseToPOC1

0.00 1.00

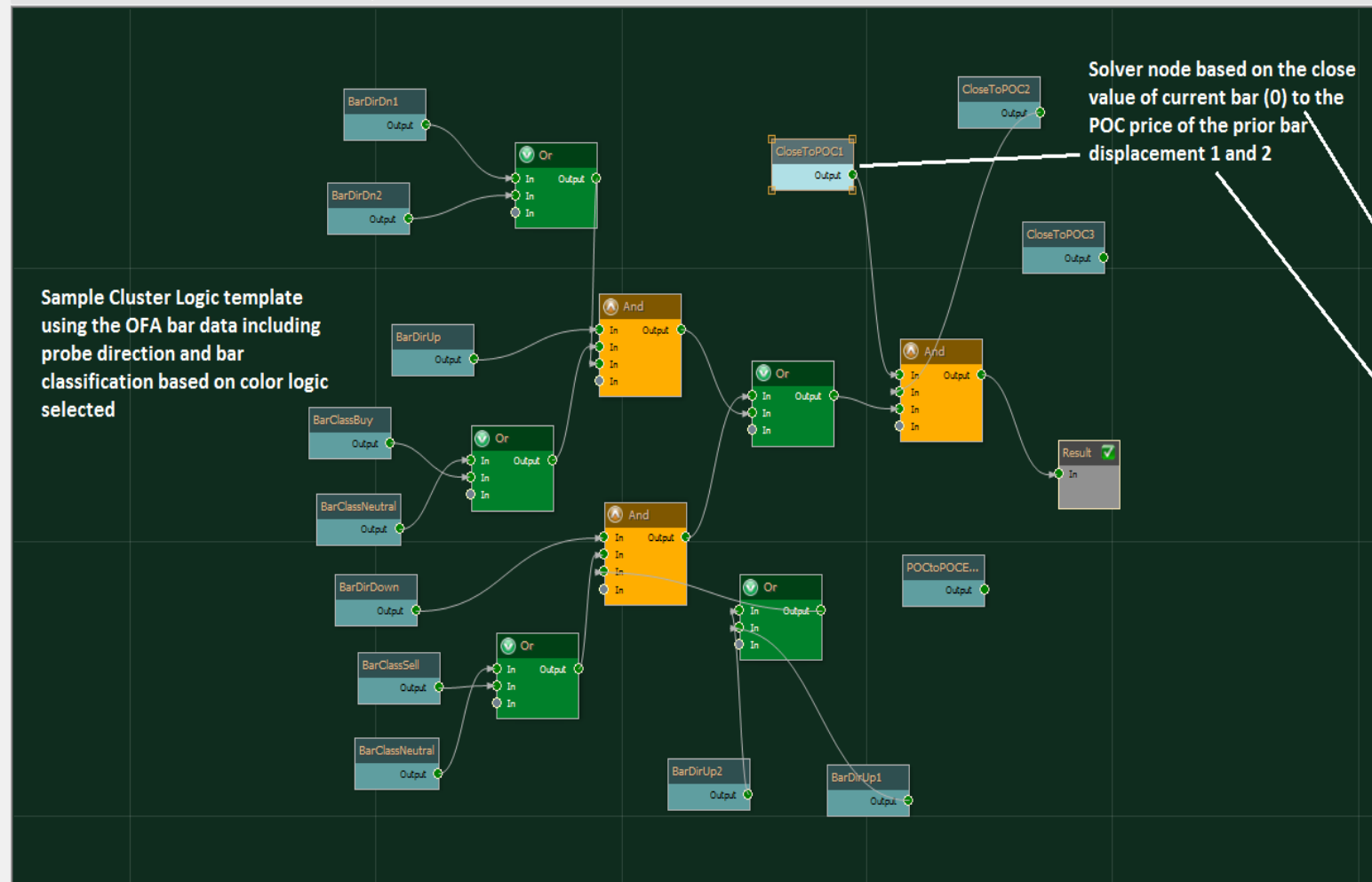
Display	
Name	CloseToPOC1
Description	Compare value A to val
Protect	None
Behavior	
Evaluate	Both
Invert Output	False
Input A	
Type	Indicator Value
Indicator	OFASTCOREBH @ (POC
Displacement	0
Difference: (A-B)	
Large Amount	0 Ticks
Small Amount	0 Ticks
Input B	
Type	Indicator Value
Indicator	OFASTCOREBH @ (POC
Displacement	1
Long Output	
(A > B) By 0 Ticks	1
(A > B) By 0 Ticks	1
A = B within 0 Ticks	0
(A < B) By 0 Ticks	0
(A < B) By 0 Ticks	0
Short Output	
(A > B) By 0 Ticks	0
(A > B) By 0 Ticks	0
A = B within 0 Ticks	0
(A < B) By 0 Ticks	1
(A < B) By 0 Ticks	1

Name

We suggest changing the name of this solver so it describes the condition it is looking for.

Sample Cluster Logic template using the OFA bar data including probe direction and bar classification based on color logic selected

Solver node based on the close value of current bar (0) to the POC price of the prior bar displacement 1 and 2



File Help

Name OFA-Sample-LogicA Change

Solvers Logic

Name New Logic

Solver Nodes Function Nodes Logic Nodes

using the OFASTCOREBH add-on for bloodhound users this shows the settings for the Bar Classification output for the OFA Bar and the logic output when the fixed value is set to 1 = Buy

BarDirDn1 Or BarDirDn2 And BarDirUp BarClassBuy Or BarClassNe... BarDirDown BarClassSell BarClassNe...

Select Indicator

OFASTCORE (®)
OFASTCOREBH (®)
Order Flow Cumulative Delta
Order Flow Volume Profile
Order Flow VWAP
Parabolic SAR

Add New Nest Input Remove

OFASTCOREBH (®)(POC,30,70)

Misc
_ColorLogic POC Logic
ClusterPercent_VCA 30
ValueAreaPercent_VCA 70

_ColorLogic

Specify Plots for Long and Short

Type	Plots	Long	Short
Plot	OFABarLow	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarMedian	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarClassification	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Plot	OFABarTotalVolume	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarHighLowTicks	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarOpenCloseB...	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel

Selected Node

BarClassBuy 1.00 0.00 1.00

Display
Name BarClassBuy
Description Compare value A to va
Protect None

Behavior
Evaluate Both
Invert Output False

Input A
Type Indicator Value
Indicator OFASTCOREBH (®)(POC
Displacement 0

Difference: (A-B)
Large Amount 0 Ticks
Small Amount 0 Ticks

Input B
Type Fixed Value
Fixed Value 1

Long Output
(A > B) By 0 Ticks 0
(A > B) By 0 Ticks 0
A = B within 0 Tick 1
(A < B) By 0 Ticks 0
(A < B) By 0 Ticks 0

Short Output
(A > B) By 0 Ticks 0
(A > B) By 0 Ticks 0
A = B within 0 Tick 0
(A < B) By 0 Ticks 0
(A < B) By 0 Ticks 0

Indicator
Select an indicator plot to use in the comparison.

Auto Update On

Apply

File Help

Name OFA-Sample-LogicA Change

Solvers Logic

Name New Logic

Solver Nodes Function Nodes Logic Nodes

using the OFASTCOREBH addon for bloodhound users this shows the settings for the Bar Direction for the OFA Bar and the logic output when the fixed value is set to 1 - Probe Up
-1 = Probe Down
2 = Neutral

BarDirDn1
BarDirDn2
BarDirUp
BarClassBuy
Or
And
CloseToPO...
CloseToPO...
CloseToPO...

Select Indicator

OFASampleIndClusterCloseLogic
OFASTCORE ®
OFASTCOREBH ®
Order Flow Cumulative Delta
Order Flow Volume Profile
Order Flow VWAP
Parabolic SAR

Add New Nest Input Remove

OFASTCOREBH ®(POC.30.70)

Misc
_ColorLogic POC Logic
ClusterPercent_VCA 30
ValueAreaPercent_VCA 70
_ColorLogic

Specify Plots for Long and Short

Type	Plots	Long	Short
Plot	OFACALPrice	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFASstandardDeviation	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarTicks	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarDirectionValue	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Plot	OFABarDeltaVolume	<input type="checkbox"/>	<input type="checkbox"/>
Plot	OFABarCOTVolume	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel

Selected Node

BarDirUp

0.00 1.00

Display

Name BarDirUp
Description Compare value A to va
Protect None

Behavior

Evaluate Both
Invert Output False

Input A

Type Indicator Value
Indicator OFASTCOREBH ®(POC
Displacement 0

Difference: (A-B)

Large Amount 0 Ticks
Small Amount 0 Ticks

Input B

Type Fixed Value
Fixed Value 1

Long Output

(A > B) By 0 Ticks 0
(A > B) By 0 Ticks 0
A = B within 0 Tick 1
(A < B) By 0 Ticks 0
(A < B) By 0 Ticks 0

Short Output

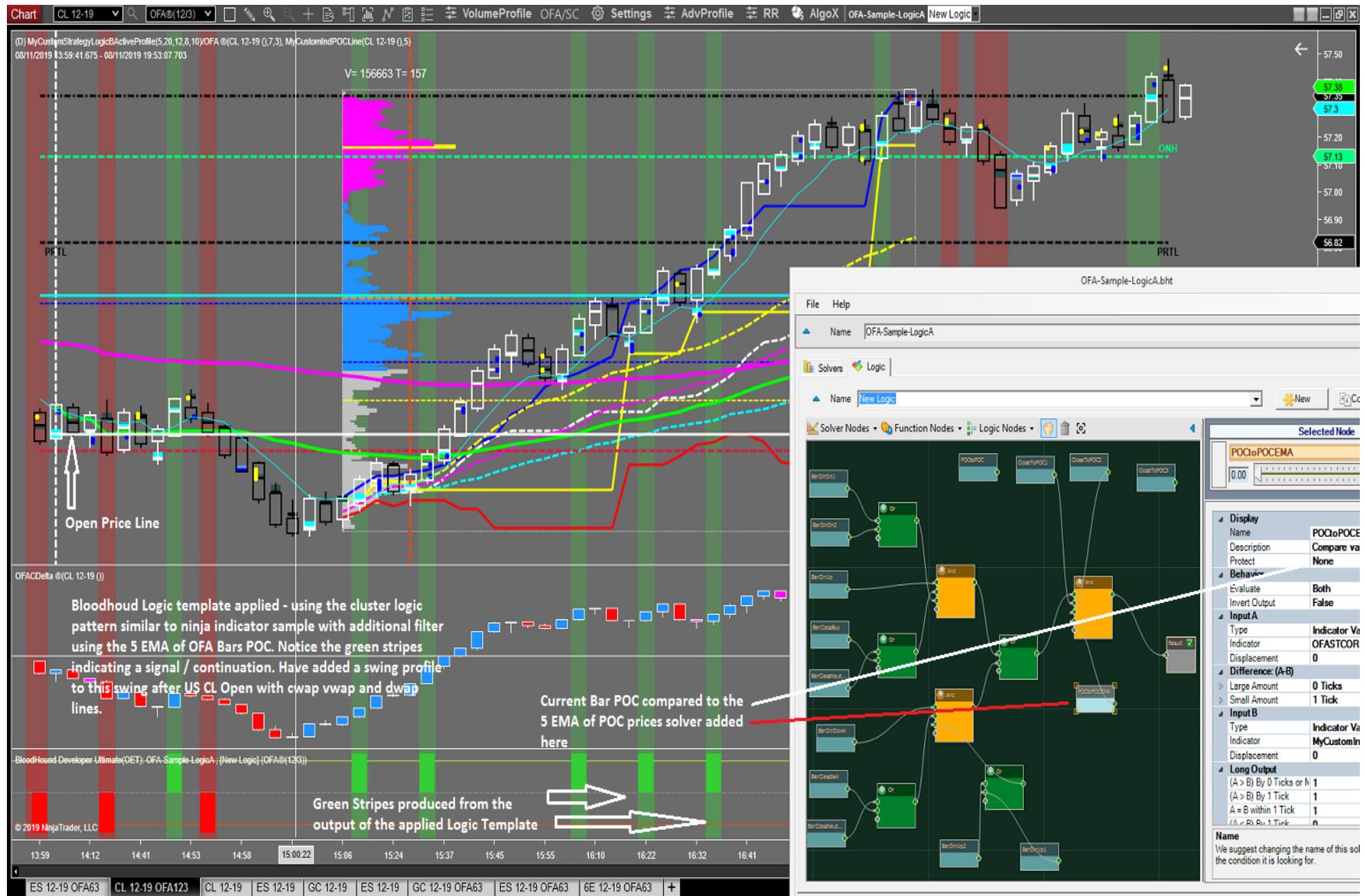
(A > B) By 0 Ticks 0
(A > B) By 0 Ticks 0
A = B within 0 Tick 0
(A < B) By 0 Ticks 0
(A < B) By 0 Ticks 0

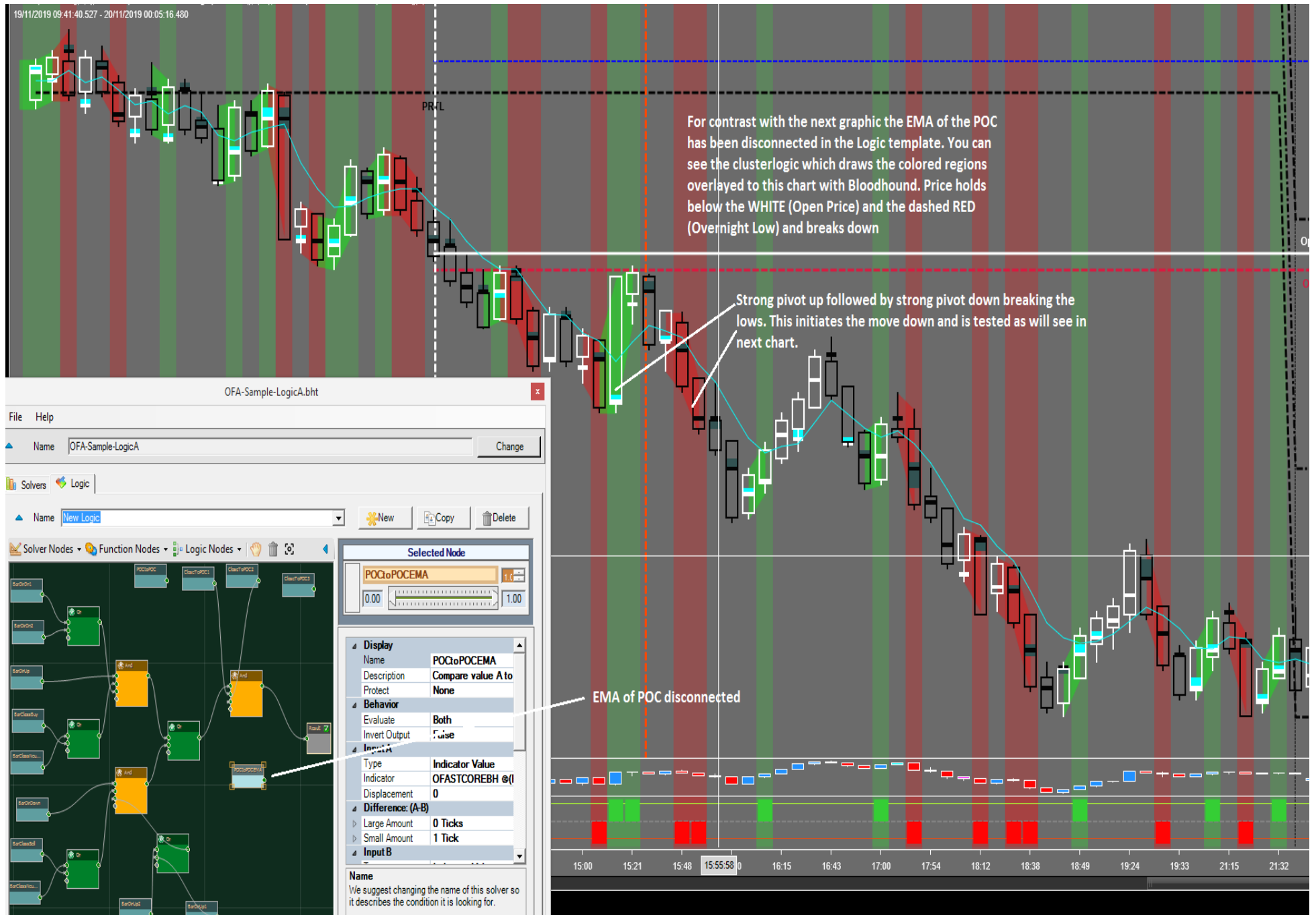
Indicator

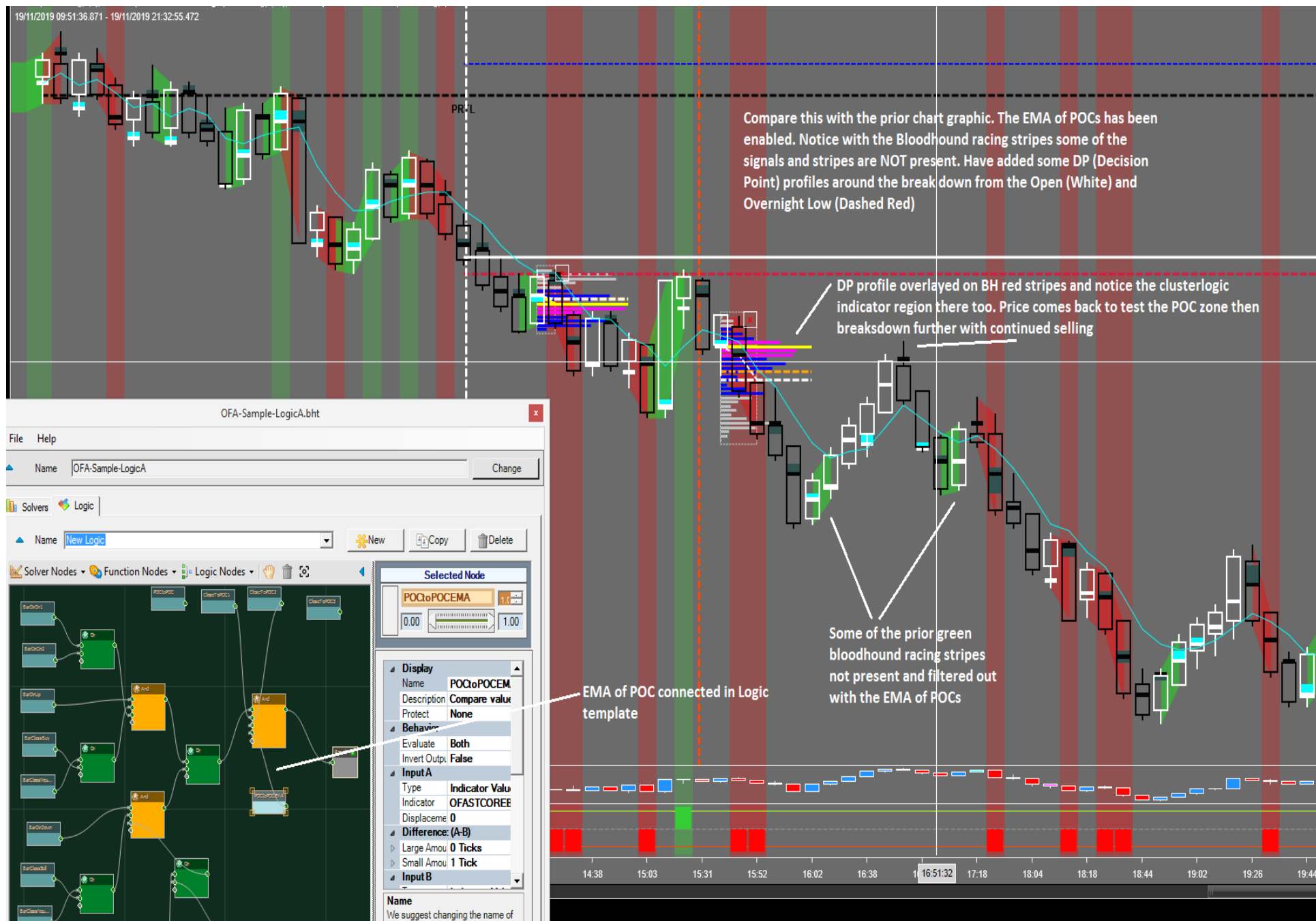
Select an indicator plot to use in the comparison.

Auto Update On

Apply







Color Logic Summary Review From The Color Logic Settings Document

Selection of a Color Logic determines how each element in a bar will appear on a chart and in what color as you select the various colors for each. Below, the POC Logic is selected. This is a point determinant which means when the bar closes above the POC, the color for Buy shows in the bar and cluster; below the POC, the color for Sell shows and when the bar closes right at the POC, the color will show Neutral.

Below, the VWAP Logic is selected. This is a point determinant which means when the bar closes above the **1st Upper Standard Deviation**, the color for Buy shows in the bar and cluster; below the **1st Lower Standard Deviation**, the color for Sell shows and when the bar closes between the **1st Upper & 1st Lower Standard Deviations** the color will show Neutral.

Cluster and Value Area Color Logic(s) are range determinant. If a bar closes above the high of a cluster or the Value Area for the bar, the color will show green as shown above but whatever color you choose to select for Buy. If the close of a bar is below the low of a Cluster or the Value Area for a bar, it will show the color for sell. In the above case that is red. And if the close of the bar is inside either the Cluster or the Value Area, then the colors will show Neutral. That is the meaning of range determinant.

Basic Logic setting simply adopts the Neutral colors for the bar from each of the color sets available; POC, Cluster, Value Area and VWAP.

Input parameters to define: for Bar Strategy Addon & OFA BloodHound Addon

Color Logic : recommended to match what is shown in Chart Settings – can be a different setting if you want

Cluster Area %

Value Area %

List of OFA Bar Data for access	Description/Values
OFAPocPrice	POC Price
OFAVwapPrice	Vwap Price
OFACAHPrice	Cluster Area High Price
OFACALPrice	Cluster Area Low Price
OFAVAHPPrice	Value Area High Price
OFAVALPrice	Value Area Low Price
OFASstandardDeviation	Standard Deviation for Bar
OFABarTicks	Number of Ticks that created Bar (distinct from volume)
OFABarDirectionValue	Probe Up = 1 Probe Down = -1 Neutral = 2
OFABarDeltaVolume	+ve value Net Buy -ve value Net Sell for the Bar
OFABarCOTVolume	COT value for the bar – covered in prior tutorial
OFABarOpen	Bar Open
OFABarClose	Bar Close
OFABarHigh	Bar High
OFABarLow	Bar Low
OFABarMedian	Bar Median
OFABarClassification	Buy = 1 Sell = -1 Neutral = 2 for selected Chart Color Logic

OFABarTotalVolume	Total volume for the OFA Bar
OFABarHighLowTicks	Number of Ticks from the High to Low of the Bar. This can be used to assess volatility in the order flow and detecting large probe bars which likely will be tested.
OFABarOpenCloseBodyTicks	Number of Ticks in the Bar Body (between Open & Close)
<p>Please note the volumes at price for the current live bar is not accessible in Bloodhound and only in a manual edit of ninjascript when using OFA BloodHound Addon in strategies and indicators in the ninjascript environment.</p> <p>In addition to the above, the next section outlines the code segment for accessing the Current Live OFA Bar Volumes At Price. See sample code OFASampleBarsVolumesAtPriceAccess which illustrates this.</p>	<p>The next section needs to be edited in ninjascript editor and or unlock the code in the strategy/indicator builder. The difference is due to the nature and structure of this data provided in a sorted list. It needs to be accessed in the code and the ninjatrade strategy wizard/builder which is not suited or aligned to process more complex custom data types.</p>
<p>using NinjaTrader.OFA;</p> <p>private SortedList<double, OFA_BA_Volume> _ofa_ba_v = new SortedList<double, OFA_BA_Volume>();</p> <p>public struct OFA_BA_Volume</p> <pre> { public double volume; public double sell_volume; public double buy_volume; public bool isBidAlert; public bool isOfferAlert; } </pre> <p>Available data points for the current live bar only with data connection returns the volumes at price information for each price level in the bar.</p>	<p>Include this in the using section of the strategy or indicator code in the header section. The volumes at price are returned as a sorted list from the lowest price to the highest price of the OFA Bar.</p> <p>For each price row of each OFA Bar access the Sell Volume (Bid) Buy Volume (Offer) – total volume and the toxic order flow Price Alert for each price as a boolean (true or false). Note this is not the sequence of 2 or 3 but the individual Price Alert – see NT8 tutorials covering this.</p>

FAQ Section

How do I install this Addon?

This is an Import process of the ZIP file you downloaded. There is a separate ZIP download for each user type – BloodHound User or Non-BloodHound User. A separate ZIP file exists for users purchasing the Active Profile Access Addon.

This is different from the MAIN OFA application and due to the nature of the data access and integration structure with Ninjatrade components. Such as Strategy Builder / Market Analyzer and the ninjascript editor. Additionally, the BloodHound Logic template tools require a different access approach. See the download/installation section on the next page.

Which indicator do I use for bloodhound tools? OFASTCOREBH

Why do I need to manually code access to the active profile elements or the Volumes at price (Bid/Ask volume) for the current bar?

The strategy builder cannot access additional indicator elements other than specific plots. This is a limitation of the strategy builder which can only access plots and not more complex data types.

Can I get history bars volume at price?

No currently we only provide the current live bar. You can save the details in your data structures to save/copy the data when you get the firsttickofbar of the new bar.

Why are 2 versions of the CORE provided?

For Bloodhound users some additional coding specifics were required to integrate with the Bloodhound toolset.

What are the value settings for Bar Classification to use in my code or reference in bloodhound?

Buy Classification = 1 Sell Classification = -1 Neutral Classification = 2

What are the value settings for Bar Direction to use in my code or reference in Bloodhound?

Probe Up = 1 Probe Down = -1 Neutral = 2

Do I need to add the Addon(s) to the chart? – NO this is not required – you simply reference them either via the bloodhound Logic solver interface or directly in the Strategy builder / Market Analyzer interface or in the code by following the code segments in the Samples provided. The key aspect to all of these is the provided PLOT values you will see in the drop-down in each of the above.

How do I access the print volume bid/ask (bar volume profile detail) ? see the **OFASampleBarsVolumesAtPriceAccess** code for an example of this.

How do I access Active profile detail? – see example **OFASampleActiveProfileDataAccess** which will run when you are authorized for the Active profile Addon.

I have little to no programming experience what can I do with this?

If you follow the above steps for market analyzer & the ninja tutorials to access the plots for an indicator you can easily reference the OFA Bar data. You can then create new columns following a simple sequence of steps covered in this document. Then you can use the data to create simple if then else conditions building to more complex ones as you gain more understanding with experience. **Additionally**, you will be able to run and use the sample indicators as they are and if necessary make custom modifications to include your ideas and rules.

Which approach for strategies is used in the strategy samples?

The strategy builder uses what is called the managed approach to govern how strategies can operate: *"The Managed approach in NinjaScript is designed to offer the greatest ease of use for beginner to intermediate programmers. The order methods are wrapped in a convenience layer that allows you to focus on your system's trading rules, leaving the underlying mechanics of order management and the relationships between entry orders, exit orders, and positions to NinjaTrader. This approach is best suited for simple to moderate order complexity, and can be further broken down into a Basic/Common Managed approach..."* Please see the help guide here for further contextual information:

https://ninjatrade.com/support/help...d_approach.htm

Download and Installation Process – for here and to copy on the website page

Please note that ONLY for users of the new Bar Strategy Addon / OFA Bloodhound Addon or Profile Strategy Addon : the process to install is via the standard import process. The main download and installation for OFA including future updates WILL continue as has been and this is covered in detail in that download section on the website. Installation of OFA Core is via an installer process & not an import process.

You should only be clicking yes to overwriting scripts if they are not system scripts that begin with the '@' symbol.

Before importing please download and update to the latest OFA Core version using the installer process covered in the download page.

To import the new OFA Addon NinjaScripts covered in this document into NinjaTrader 8 do the following:

- 1.Download the script to your desktop, keep it in the compressed .zip file.
- 2.From the Control Center window select Tools -> Import -> NinjaScript...
- 3.Click the Desktop icon on the left to navigate to the desktop
- 4.Select the downloaded .zip file -> then click Open
- 5.NinjaTrader will then confirm if the import has been successful.

Critical *Note that on any files that say "File already exists on your PC" that starts with an "@" symbol are the ones that came preloaded inside of NinjaTrader so you would say "No" so that you do not override those files.

The three ZIP file options are :

OFABarStrategyAddonBuild – for Bar Strategy Addon ninjatrade only package

OFABloodhoundAddonBuild – for OFA BloodHound Addon user package including use in ninjatrade

OFAProfileStrategyAddonBuild – for the Profile Strategy Addon : Active Volume Profile Access.

within each of the zip files will be included the sample strategies/indicators and code for each Addon group.