MotiveWave™

Volume and Order Flow Analysis

MotiveWave Version: 6.0

Table of Contents

1 Introduction

Welcome to the MotiveWave™ Volume and Order Flow Analysis Guide! If you are reading this document then you have already installed MotiveWave™ on your computer and you are ready to start using the application.

If you have not yet installed MotiveWave™ or registered for a trial on our website, please read the Installation Guide before continuing on with this document.

The purpose of this document is to highlight and explain some of the recent features added to MotiveWave™ for analyzing volume and order flow.

1.1 Terms and Definitions

The following are common terms and their definitions that explain some of the concepts in Volume and Order Flow analysis:

Absorption

Absorption occurs when a buying/selling trend is "absorbed" by a large order (or large number of orders) and the trend reverses. Absorption is defined by a Bid or Ask Imbalance that is followed by a reversal in price of X ticks.

Ask Volume

Ask Volume is the volume that occurred (traded) at the ask price. This volume typically represents buying activity and is sometimes known as Buy Volume or Up Volume.

Bid Volume

Bid Volume is the volume that occurred (traded) at the bid price. This volume typically represents selling activity and is sometimes known as Sell Volume or Down Volume.

Delta DOM

Delta DOM is the difference between the sum of bid sizes and the sum of the ask sizes that are in the DOM ladder. Positive values indicate support and negative values indicate resistance.

Delta Spread

Delta Spread is the difference between the best bid size and the best ask size. This is similar to the Delta DOM but only considers the best bid/ask.

Delta Volume

Delta volume is the difference between the Ask Volume and the Bid Volume (ie Delta Vol = Ask Vol – Bid Vol). Positive delta values indicate buying pressure and negative delta values indicate selling pressure.

Extended Trading Hours (ETH)

Defines the time of the day outside of the regular trading session where after hours trading occurs. Volume is typically lower during these hours.

Imbalance (diagonal)

A buy imbalance occurs when ask volume at a given price is higher (by a given percentage) than the bid volume at one price level below (sometimes known as diagonal imbalance). Sell imbalance occurs when the bid volume is higher by a given percentage than the ask volume at one price level higher.

Initial Balance Range (IBR)

Conventionally, this is the range (high/low prices) that the instrument reached during the first hour (60 minutes) of trading.

Instrument

An instrument is the security that is being traded. All instruments trade on an exchange and are uniquely identified by a symbol/exchange. There are several types of instruments (such as stocks, futures contracts, contract for difference (CFD) or FOREX).

Naked POC (NPOC)

This is a Point of Control (POC) that does not overlap (touch) in future sessions (sometimes referred to as Virgin POC).

Open Range

Open range is similar to Initial Balance Range but with a shorter period. Typically this is the range (high/low) that occurred during the first 5-30 minutes of the regular trading day, but will vary depending on the market.

Point of Control (POC)

Represents the price (or price range) where the highest amount of trading activity occurred. This may be based on volume (for a Volume Profile) or time (for a TPO chart).

Price Range/Interval

Volume/Market (TPO) profiles can optionally be depicted using price ranges instead of individual prices. This is typically useful for highly volatile instruments (large price ranges) or instruments with very small tick sizes (such as FOREX).

Regular Trading Hours (RTH)

Defines the time of day where regular trading occurs for an instrument.

Resistance Line

This line visually indicates where a possible over supply of ask volume may exist to provide price resistance to keep the market below the line.

Support Line

This line visually indicates where a possible over supply of bid volume may exist to provide price support to keep the market above the line.

Tick Size (Min Tick)

The Tick Size represents the smallest movement in price for an instrument. For stocks this is typically one cent (0.01). Values for other instrument types (such as Futures Contracts or FOREX) vary widely. These values are typically set correctly in MotiveWave™ but you may need to adjust manually depending on the broker or data service that you are using.

TPO (Market Profile)

TPO stands for "Time and Price Opportunity" (sometimes referred to as Market Profile). Similar to a Volume Profile, it graphically illustrates the amount of time spent at each price (or price range) over a given period of time (typically daily, in 30-minute sub intervals).

Trade Volume

Trade volume represents the number of trades that occurred over a given period of time. This is similar to volume, but only considers each trade and not the number of units that were exchanged. Trade volume will always be less than or equal to (<=) volume.

Trading Hours

Trading hours define the times of the day when an instrument is available for trading. Some instruments (such as Stocks or Futures) have regular trading sessions and extended (after hours) trading sessions.

Value Area

The Value Area is the price range (centered around the Point of Control) that encompasses X% of the trading activity (typically 70%). The value area may be computed using volume or time.

Volume

Volume represents the number of units (stocks, contracts etc) that were traded (exchanged hands) over a given period of time.

Volume Profile

A volume profile graphically depicts the volume traded at each price (or price range) for a given period of time. This identifies how trading activity is distributed by volume (exchanged units).

1.2 Tick Data

The Volume and Order Flow analysis tools described in this document rely on tick data to present accurate results.

Tick data is a record of the trades that occurred for an instrument. Tick data is not available from all Brokers and Data Services and in some cases only partial information is available. It is very important to understand these limitations as they will affect the accuracy of the information that is presented from the Volume/Order Flow Analysis tools.

There are two types of tick data:

1. **Live Ticks** – These ticks are generated from a Level 1 feed (live price updates) and are stored in memory. By default, MotiveWave™ will keep up to the latest 2000 ticks, but this is configurable

in the Preferences Dialog (*Configure -> Preferences* from the Console menu bar, see "General" tab). These live ticks are merged with the historical ticks where appropriate.

2. **Historical Ticks** – These are ticks that have occurred in the past and are downloaded from the Broker/Data Service or from the MotiveWave™ back fill server. The amount of data available will depend on instrument and the source.

Each tick may contain the following information:

1. **Trade Time** – this is the time at which a trade occurred (in millisecond precision).
2. **Price** – This is the price that the trade occurred at.
3. **Volume** – Number of units that traded hands in this trade
4. **Ask Price** – The best ask price at the time of the trade (used to determine Ask Volume)
5. **Ask Size** – number of units available at the best ask price at the time of the trade
6. **Bid Price** – The best bid price at the time of the trade (used to determine Bid Volume)
7. **Bid Size** – number of units available at the best bid price at the time of the trade

Bid/Ask sizes are not currently used by the volume analysis tools in MotiveWave™ but are available in the Time/Sales panel and the Java SDK (see Tick interface).

The following table explains tick data availability. Brokers/Data services not listed (and that don't connect via a gateway such as CQG, Rithmic or GAIN Futures) do not provide historical tick data.

Broker/Data Service	Time/Price/Vol	Bid/Ask Price	Bid/Ask Size	Historical Limit	Back Fill
CQG[1]	Y	Y	Y	10 Days	Y[3]
GAIN Futures[1]	Y	Y	N	?	Y[3]
Rithmic[1]	Y	Y	Y	?	Y[3]
IQFeed	Y	Y	Y	8 Days (60 Days After Hours)	Y
eSignal	Y	Y	N	?	N
Barchart				?	Y
TradeKing	Y	N	N	?	Y[3]
FXCM[2]	Time/Price Only	N	N	?	Y[3]

[1] CQG/Rithmic/GAIN Futures are gateways to many different brokers. Check your broker connection to see if they connect through one of these gateways.
[2] FXCM Tick Data does not include volume information and can be extremely slow to load.
[3] Loaded from MotiveWave™ Back Fill server. Back Fill may not be available for all symbols.

1.2.1 Historical Bid/Ask Prices

Historical bid/ask prices are used to determine if the trade occurred at the "Bid Price" or the "Ask Price". This is used to separate Bid Volume from Ask volume.

As illustrated in the table from the previous section, historical bid/ask prices are not available from some brokers/data services. In cases where this information is not available, the price from the previous tick will be used to determine if the trade should be used to tally Bid/Ask volume. When the price increases, it is considered an "Ask Tick" and when it decreases it is considered a "Bid Tick". If the price remains the same, the Bid/Ask Tick is inherited from the previous tick.

1.2.2 Generated Ticks

For many of our supported Brokers and Data Services historical tick data is not available. In these cases MotiveWave™ will generate ticks using minute bars (and in some cases second based bars). Each bar will generate 4 ticks, each with one quarter of the bar's reported volume:

1. **Open** – Open price of the bar with ¼ of the bar's volume
2. **High/Low** – If the close is greater than the open the high is used first, then the low otherwise low then high. Each of these ticks has ¼ of the bar's volume
3. **Close** – Closing price of the bar with the remaining volume in the bar

Bid/Ask volume is determined using the rules from the previous section where bid/ask prices are not available (ie: previous price determines bid/ask volume).

1.3 Depth of Market (DOM) Data

Depth of Market (DOM) data shows the cumulative sizes (at each price step) of active limit orders that exist above and below the current price. The number of available rows above and below the current price depend on the exchange and the source of the data. For most futures (especially from the CME), this is limited to 10 rows above and below.

All depth of market data is live data only (no historical values are available from the exchange). MotiveWave™ will accumulate historical Depth of Market data at 1 second intervals in memory the first time a DOM panel (or study that uses DOM data). This historical record of DOM data can be useful to see where the hidden market demand exists and help to predict the short-term movement of the market.

1.4 Summary of Volume Studies/Tools

MotiveWave™ has many different volume-based studies and two components. The complete list of these studies can be found under the *Study -> Volume Based* sub menu (see top menu bar). In this document we will be focusing on the following studies/components:

1. **Time Price Opportunity (TPO)** – Provides a graphical illustration of how much time is spent at each price.
2. **Volume Imprint** – Provides several different views of how the trading activity of a price bar (candle) breaks down with Bid/Ask volume.
3. **Depth of Market** – Order entry panel that displays the number of contracts sitting in the order book along with recent trades at the bid and ask.
4. **Time and Sales** – Displays time, price and size of trades as they happen.
5. **Delta Volume** – Plots the difference between the Bid/Ask volume
6. **Cumulative Delta** – Plots the difference between the Bid/Ask volume as it accumulates through the trading day.
7. **Bid/Ask Volume** – Plots the Bid Volume and the Ask volume together so that you can identify changes from buying pressure to selling pressure.
8. **Speed of Tape** – Displays the current and historical speed pace of the market for a given statistic.
9. **DOM Power** – Displays current/historical order demand at the bid and ask.
10. **DOM History** – Historical display of cumulative limit order sizes above and below the market price.
11. **Big Trades** – Displays large trades to see how large traders are positioned.

12. **Speed Gauges** – Displays active statistical values graphically on the price graph.
13. **Volume Profile Component** – Allows you to dynamically draw a Volume Profile by dragging the component from the "General" panel (or using the Mouse Tool). The range for the volume profile may be adjusted using the resize points).
14. **TPO Component** – Component version of the TPO study. The component allows you to dynamically select the time frame for the TPO/Volume Profile by using the resize points. This component is available in the "General" panel or as a mouse tool.

2   Time Price Opportunity (TPO) Study

The Time Price Opportunity (TPO) study displays market activity using time and price (sometimes known as Market Profile). This study can be found under the *Study -> All Studies* menu (see top menu bar).

The following screen shot of the S&P mini futures contract illustrates some of the features of the TPO study. This is a daily TPO with a 30-minute time interval on a 15-minute price chart. The price interval is set to 4 ticks.

Example TPO Study Overlay on S&P Mini Futures Contract
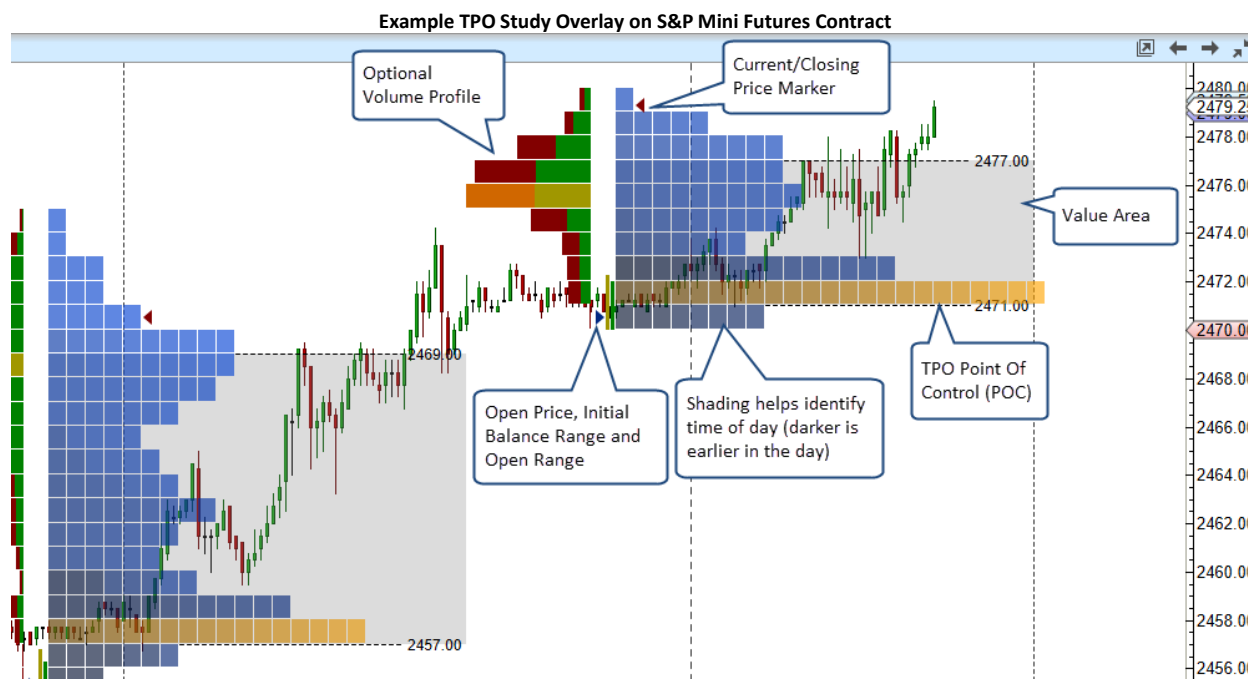
Each cell in the above chart represents a 30 minute time interval in the trading day.   The beginning and end of this range is set using the trading hours that are defined for instrument. In the above example we are using extended data and the trading day starts at 6:00 pm EST on the previous day and ends at 5:00 pm. For convenience the cells are shaded darker near the beginning of the trading day and lighter near the end of the day (optional).

Configuration settings for the study can be found in the Study Dialog (double click on the study or right click and choose "Edit")

2.1 General Settings

Basic configuration settings can be found under the "General" tab.

1.   **Timeframe** – The typical timeframe for a TPO study is 1 day, but there are several options available including intra-day values and weekly/monthly bar sizes. The time frame defines the range of tick data (start/end times) used for each TPO graph. For example, a 1 day time frame would start at the beginning of the trading day and finish at the end of the trading day (defined in the trading hours).

2.   **Tick Interval** – This defines the price range that applies to each row in the TPO graph. A tick interval of 1 will plot a row for every price. In the case of the S&P mini futures contract, a tick interval of 4 will display a row for every point of price movement since the minimum tick is one quarter point (ie: 0.25). The tick interval can be very useful when trading an instrument that has

a wide range of movement (highly volatile) or has a very small minimum tick value relative to its typical range (such as FOREX or high value stocks).

3. **Sub Interval** – This determines the length (in time) of each cell that makes up the TPO chart. On a daily chart this is typically set to 30 minutes. In this case each cell covers 30 minutes of trading activity at the given price interval. A cell is drawn at a price interval if 1 or more trades occurred for that price interval in that slice of time.

4. **Number of TPOs** – This may be used to limit the number of TPOs that are drawn on the chart. Loading historical tick data can be expensive in terms of computer resources and network activity. Check the "Show All" box to show all TPOs in the time range of the chart.

5. **RTH Data Only** – If checked, this will only load tick data that occurred during the regular trading session for the instrument. For details see the trading hours for the instrument. If no regular trading session is defined for the instrument, this this setting will be ignored.

6. **Use Historical Bars** – Allow the use of minute bars to create TPOs, this is ideal for longer time frame profiles so tick data doesn't need to be downloaded for the entire range.

General Tab

2.2 Display Settings

General display settings for the TPO graph can be found under the "Display" tab:

1. **Cell Gradient** – This option will shade the cells that are at the beginning of the time frame darker and the cells near the end of the time frame lighter. This helps to provide a visual indicator of how the time is distributed in the TPO graph.
2. **Bar Color** – This is the default color assigned to each cell/bar.
3. **ETH Bar Color** – This is the cell/bar color for the Extended Trading Hours.
4. **Split Reg vs Ext Session** – Create two profiles per day, one ETH and one RTH.
5. **Point Of Control** – This identifies the row in the TPO graph where the price spent the most time. In the case where there is more than one row that meets this criteria, the one with the highest amount of volume is chosen. Optionally, **Volume** can be used as the criteria for the Point Of Control (see Time drop down below). In this case the row with the highest amount of volume will be highlighted using the selected color. This feature can be disabled by unchecking the Enabled box on the right hand side.
6. **Cell Width** – This is the width (in pixels) for each cell that is drawn in the TPO graph.
7. **Align Letters** – Enabling this will display/split each TPO letter into it's own column.
8. **Letters** – If this option is enabled letters will be drawn that identify the sequence of the cells. For example all cells that occurred during the first sub interval will be assigned the letter A (B for the second, C for the third etc).
9. **Letters ETH** – Enable this to change the font for ETH letters.
10. **Open/Close Markers** – Displays where the open price and closing price of the timeframe occurred. In the case of the latest TPO it will display the latest price for the Close Marker.
11. **Row Totals** – Displays the number of cells in each row on the left hand side of the TPO graph.
12. **Line Font** – If this option is enabled, the price level of each line that is drawn will be shown at the right hand side.
13. **Mid Point** – Draws a line for the mid point between the high and low price of the TPO graph.
14. **POC Line** – Draws a line from the end of the Point Of Control row to the end of the time frame.
15. **High/Low Line** – Draws a line for the high and low prices of the TPO graph.

Display Settings Tab

Time Price Opportunity (TPO)

Displays the amount of trading activity (based on time) for each price level and time period. Session times are based on the time zone assigned to the instrument.

General **Display** IBR Value Area Volume Profile Sessions Options

Cell Gradient:	☑
Bar Color:	[color] ▼
ETH Bar Color:	[color] ▼ ☐ Enabled
	☐ Split Reg vs Ext Session (Daily Bars Only)
Point Of Control:	Time ▼ [color] ▼ ☑ Enabled
Cell Width:	10 ⇕ ☐ Constrain Width
	☐ Align Letters
Letters:	Arial;12.0 [ ] 🖉 ☑ Enabled
Letters ETH:	Arial;12.0 [■] 🖉 ☐ Enabled
Open Marker:	[color] ▼ ☑ Enabled
Close Marker:	[color] ▼ ☑ Enabled
Row Totals:	Arial;12.0 [■] 🖉 ☐ Enabled
Line Font:	Arial;12.0 🖉 ☑ Enabled
Mid Point:	[color] ▼ — 1.0 ▼ — ▼ 🖉 ☑ Display
POC Line:	[color] ▼ — 1.0 ▼ — ▼ 🖉 ☑ Display
	☐ Naked POC Line
High Line:	[color] ▼ — 1.0 ▼ — ▼ 🖉 ☑ Display
Low Line:	[color] ▼ — 1.0 ▼ — ▼ 🖉 ☑ Display

Update   Apply   Remove   Defaults ▼   Help   Cancel

The following diagram illustrates the TPO graph with some of the options above enabled.
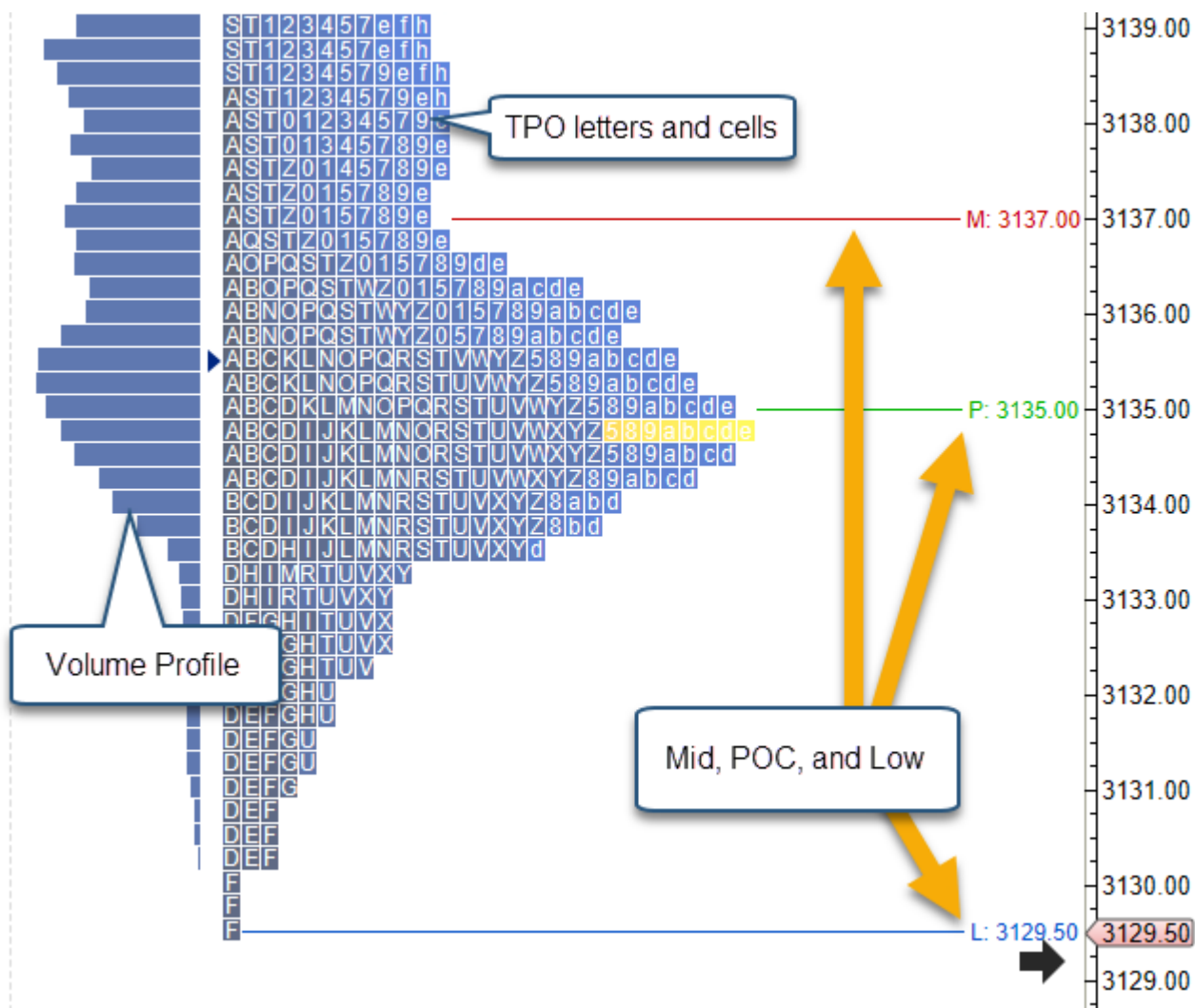
2.3 Initial Balance Range (IBR) Settings

The IBR tab contains settings for Open Range and Initial Balance Range.

1. **Open Range (min)** – This is the time period and color for the open range marker displayed to the left of the TPO graph. The open range is the high/low price range the market traded within during the first X mins (default 5). If the Enabled box is unchecked, this will not be displayed.
2. **IBR Range** – This defines the time period (in sub intervals) and fill color for the Initial Balance Range high/low. This is displayed to the left of the TPO graph. If the Enabled box is unchecked, this will not be displayed.
3. **IBR Ext X %** - This is the percent of the IBR that is projected above and below the IBR Range marker. This field is only enabled if either the Top Line or Bottom Line fields are displayed.
4. **Top Line X** – Allows you to configure the line settings for the top IBR extension. Uncheck the Display box to hide.
5. **Bottom Line X** - Allows you to configure the line settings for the bottom IBR extension. Uncheck the Display box to hide.

IBR Tab

The screen shot below illustrates the Initial Balance Range, Open Range and IBR extension lines.
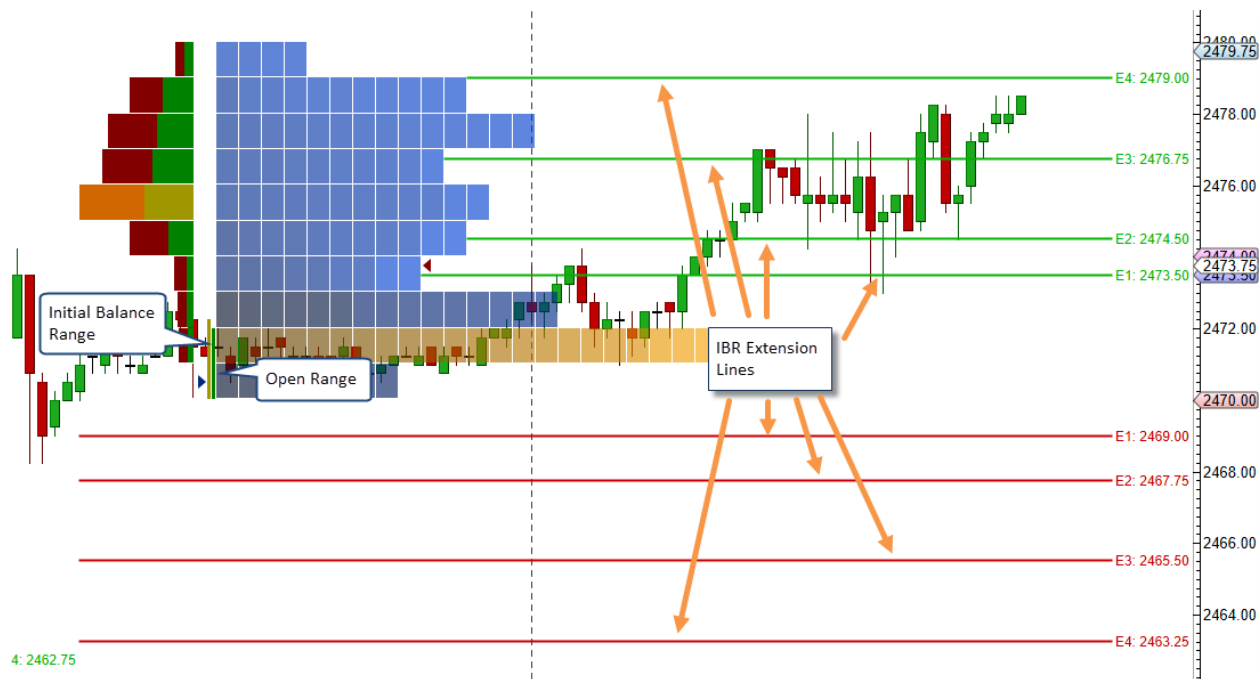
2.4 TPO Value Area Settings

The value area identifies the rows surrounding the Point of Control (POC) that encompass X % (typically 70%) of the trading time or volume. Settings for the value area can be found under the Value Area tab:

1. **Show Value Area** – Check this box to show the value area for the TPO graph.
2. **Range %** - Percentage of the trading time/volume to include in the value area.
3. **Range Type** – Choose either Time or Volume for calculating the Value Area.
4. **Bar Color** – Shade color for the bars that are part of the value area. A semi-transparent color can be used to blend with the existing bar colors.
5. **Range Lines** – Settings for the lines that identify the top and bottom of the Value Area.
6. **Range Fill** – Fills the white space within the value area with a specified color.
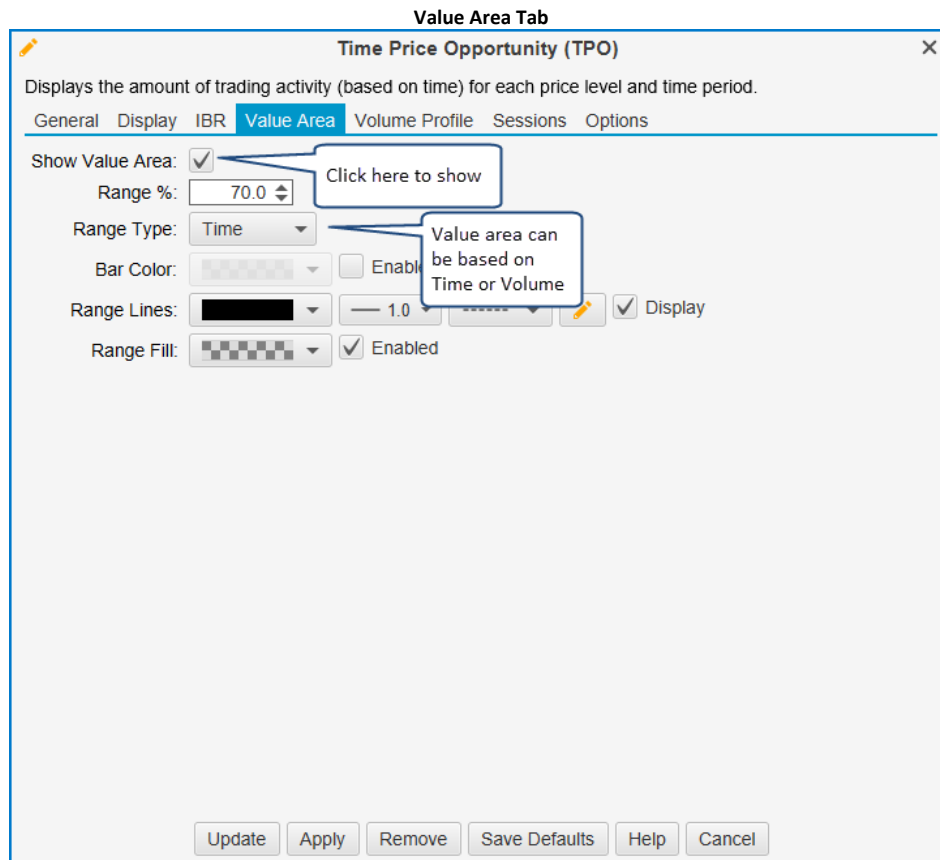
Value Area Tab

The following screen shot shows the TPO Value Area and some of the options described above:
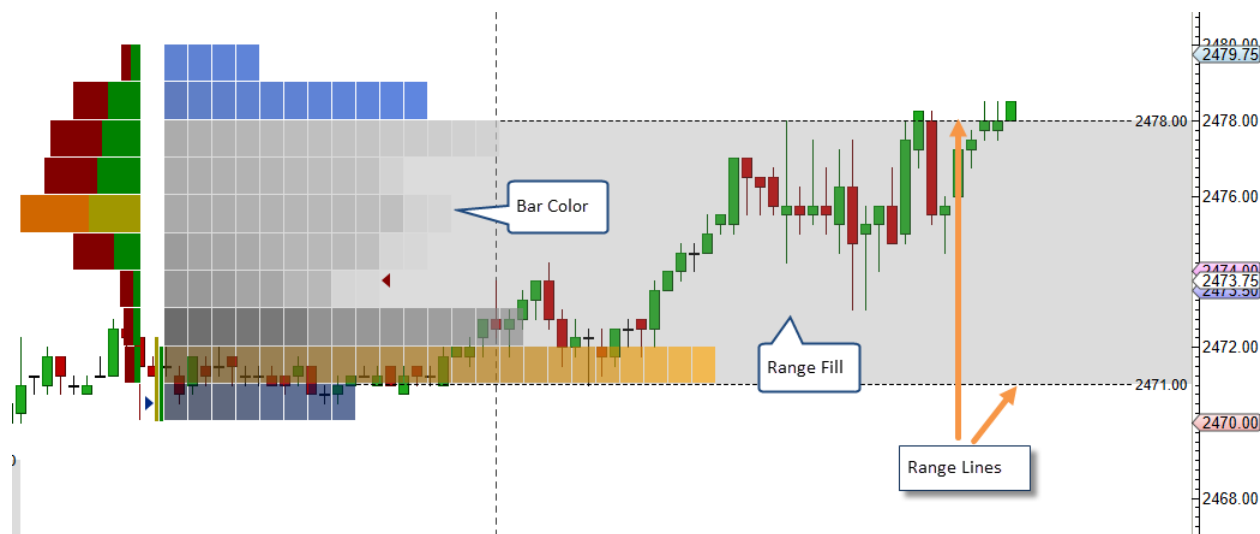
2.5 Volume Profile

Optionally, a Volume Profile graph can be displayed with the TPO graph. This makes it easy to compare price/time with price/volume. Click on the Volume Profile tab (see below):

1. **Show Volume Profile** – Check this box to display the Volume Profile graph.
2. **Display Section**
   a. **Display Side** – The volume profile can be displayed on the left-hand side of the TPO graph or on the right-hand side (right justified).
   b. **Profile Width** – Width of the volume profile graph (in pixels).
   c. **Bar Color** – Default color for the volume profile rows.
   d. **POC Bar Color** – Color for the Point of Control row.
   e. **POC Line** – Optionally display a horizontal line from the Point of Control row.
   f. **Show Bid/Ask Volume** – If this is enabled the bid vs ask volume will be displayed in the profile rows.
   g. **Show Volume Totals** – Displays the total volume for each row in the profile.
3. **Value Area Section**
   a. **Show Value Area** – Optionally displays the value area for the volume profile.
   b. **Range %** - This is the percentage of the volume activity that is included in the value area (default 70%). This area will be centered around the POC row.
   c. **Bar Color** – Color for the bars that are part of the value area. A transparent color may be useful to make sure the POC and other information is not hidden.
   d. **Range Lines** – Settings for the top/bottom of the range.
   e. **Range Fill** – Optional background fill color for the range area.
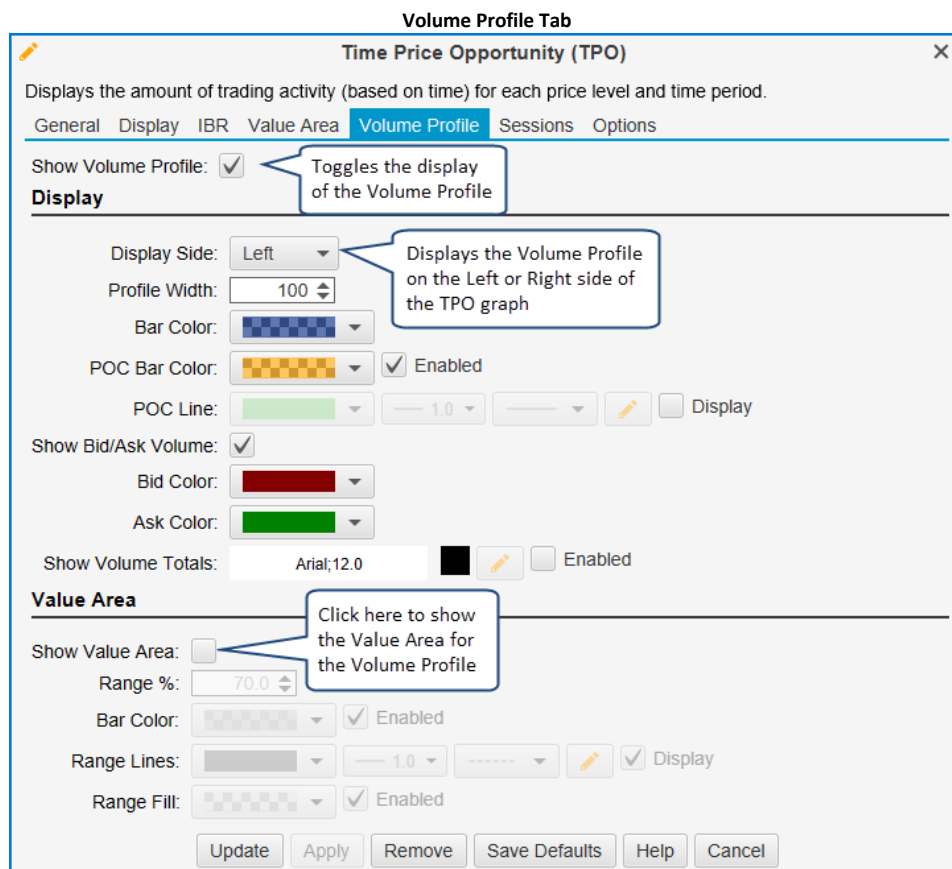
Volume Profile Tab

The following screen shot shows the Volume Profile displayed on the right hand side of the TPO graph.
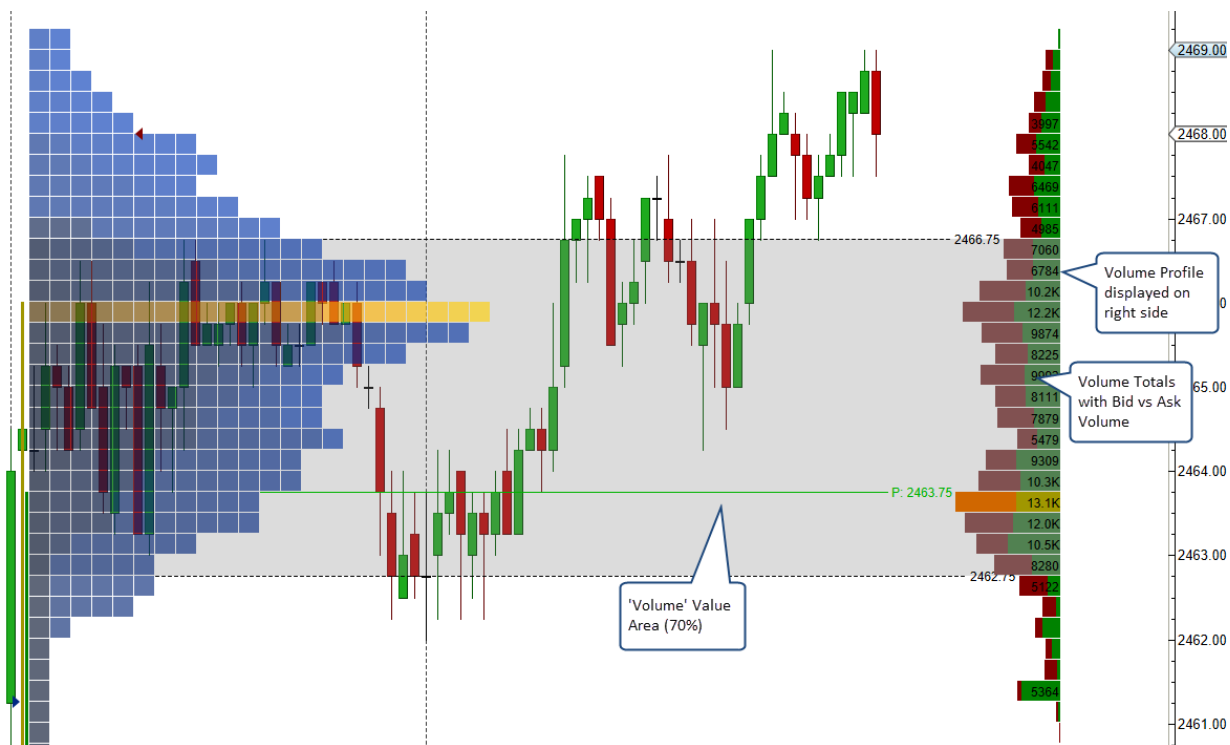
2.6 Session Colors

Colors can be assigned to user defined sessions for a trading day. The Sessions tab allows you to enable up to 3 different session colors. Any cells that do not fit within these sessions will be colored using the default bar color. The time zone used for these session times is inherited from the trading hours that are assigned to the instrument. For example, the S&P mini futures contract will use the time zone "America/Chicago".

In the example below, the first session starts at 5:00 pm on the previous day and ends at 12:00 am (midnight). The second session goes from 12:00 am (midnight) until 9:00 am and the final session is from 9:00 am until 5:00 pm (on the current day). All these times are in "Chicago" time.

Sessions Tab

The following screen shot shows an example of session colors using the settings from the dialog above. Cell Gradient has been disabled so all cells appear in their solid color.
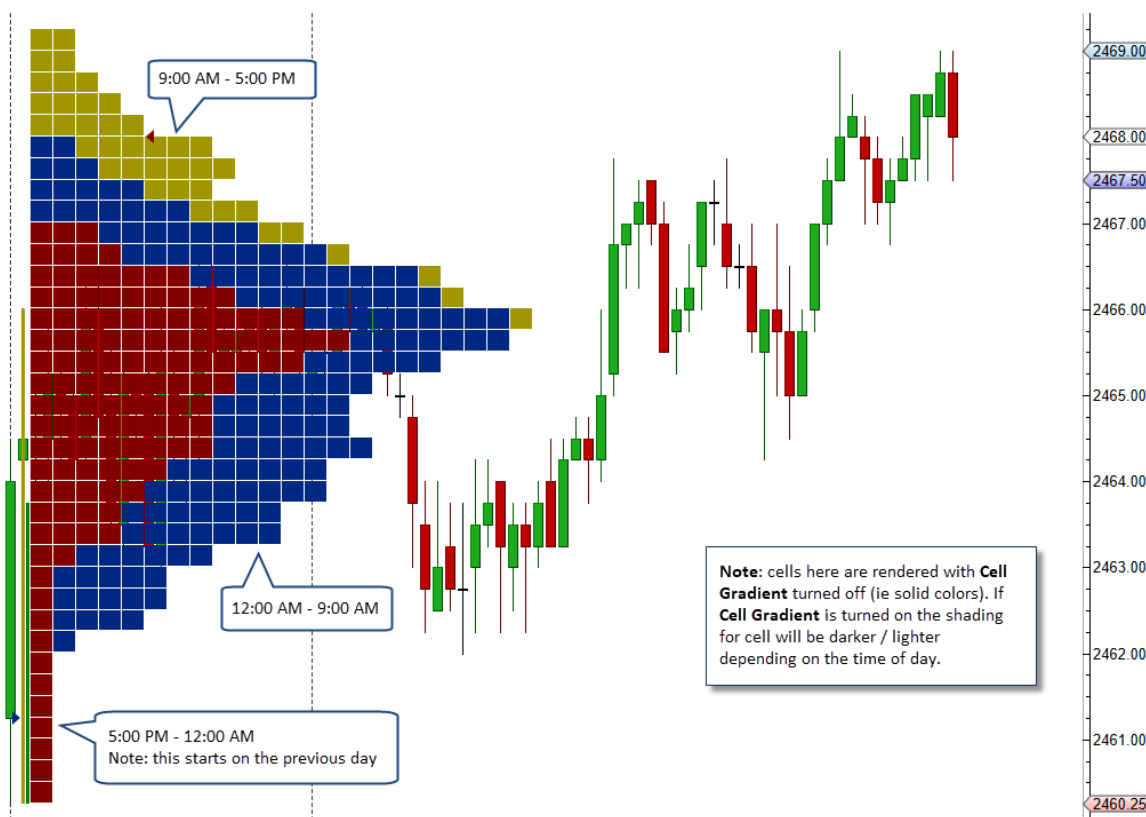
2.7 Split TPO

TPO Profile may be split from the context menu (right click on the TPO Profile Cell). The profile will be split at the cell where the context menu was opened.

Split TPO
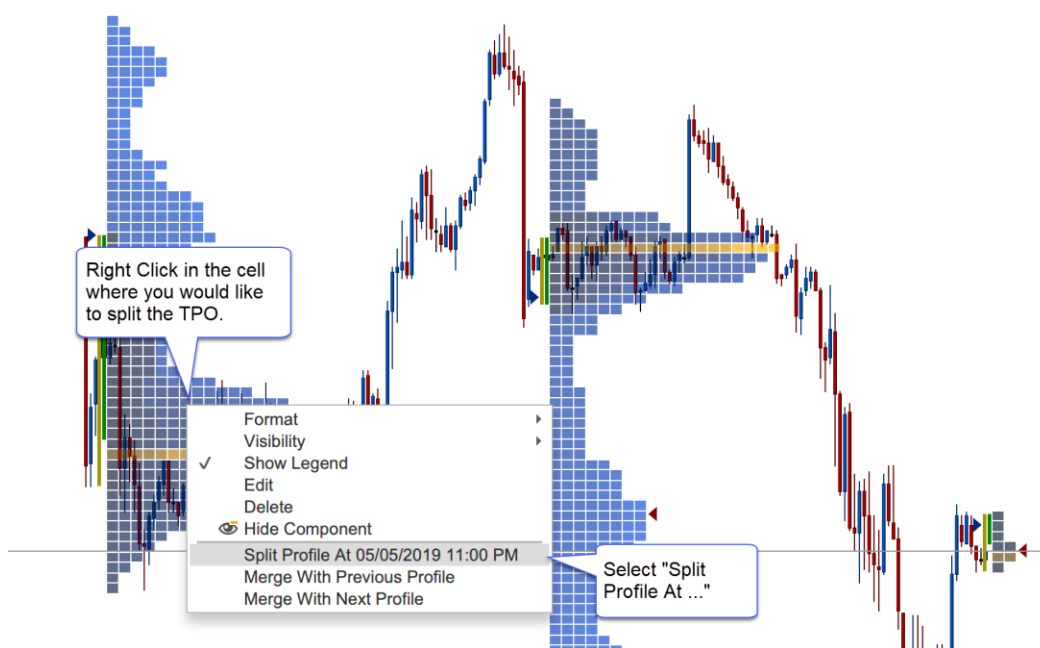
Split profiles have connector lines to indicate where the profiles were split. A TPO profile may be split multiple times. Splits may also be removed individually or all at once (Clear Splits option):

2.7.1   Merge

Merging profiles is similar to splitting profiles. Right click on a profile and choose **Merge with Previous Profile** or **Merge with Next Profile**:

Profiles can be merged multiple times. You may also undo a merge (or all merges) from the context menu:

3   Volume Imprint

The volume imprint study provides several ways to look at volume and how it relates to price (see *Study -> All Studies* from the top menu bar). This study uses historical tick data to segment volume into price intervals. Each price interval divides the volume into bid volume and ask volume. There are currently 5 different types of display candles:

1. **Profile** – Displays a histogram of the volume that occurred at each price interval. The volume can be color coded to show bid/ask volume.
2. **Bid/Ask** – Numerically displays the bid and ask volume at each price interval.
3. **Ladder** – Displays separate histograms for bid and ask volume on opposite sides of a price bar.
4. **Delta** – Numerically displays the difference between the ask volume and bid volume (delta) at each price interval.
5. **Volume** – Numerically displays the volume for each price level.

Optionally, a summary profile can be displayed that summarizes the volume that occurred over the given time span (visible bars, day, week or month). This summary can be displayed as a volume profile or ladder.

The example below displays the volume imprint with the type as "Bid/Ask" and a ladder summary on the right-hand side.
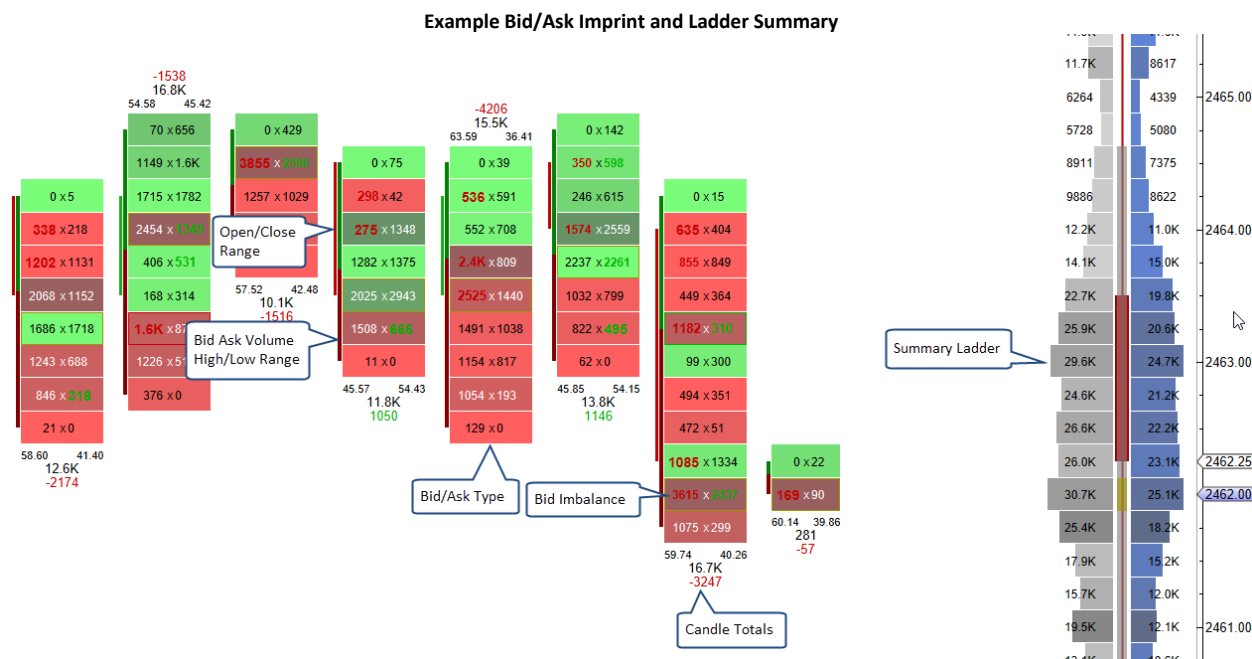
Example Bid/Ask Imprint and Ladder Summary

Example Delta Imprint

Delta Imprint. Each number is the difference between the Ask Volume and Bid Volume

Volume Imprint Example

Volume Imprint. Each number is the volume that traded at the given price level.

Configuration settings for the study can be found in the Study Dialog (double click on the study or right click and choose "Edit").

Background Shading

If you look at the examples above you will notice that the shading for the background and the summary ladder histogram is different for each cell. The intensity of the shading is determined by the absolute

delta value. If this value is higher the shading is darker. This feature makes it easier to identify rows where there is a greater difference between the bid/ask volume.

'No Bars' Bar Type

Since this study displays a profile for each bar, it is recommended that the "No Bars" bar type is used in order to reduce the excess clutter on the screen. The "No Bars" bar type can be found under the Bar Type drop down on the tool bar (see screen shot below):

No Bars Option from the Bar Type Drop Down
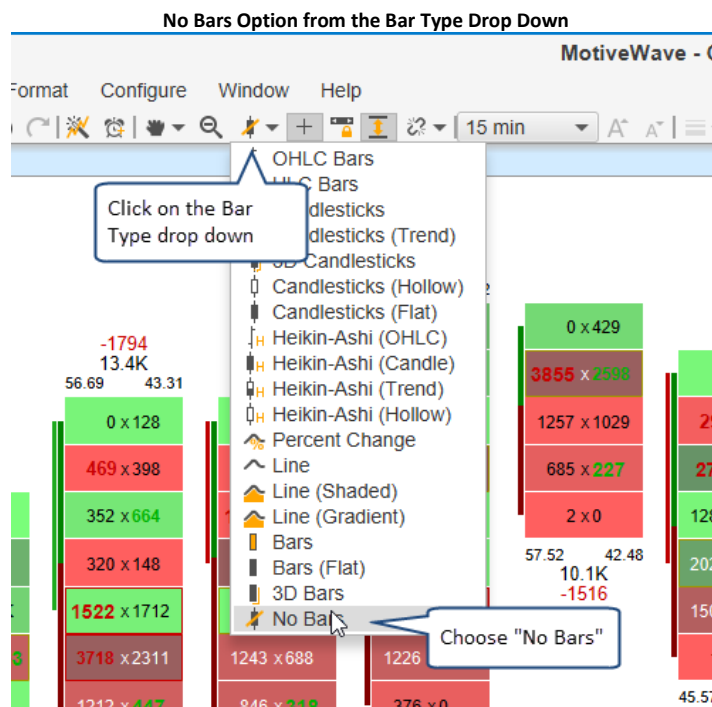
3.1 General Settings

The first tab in the study dialog defines general settings for the study. The type drop down offers 5 different imprint types. Two profiles can be displayed for each bar.

1. **Column 1/2** – 5 imprint types allow you to visualize the volume distribution within the candle:
   a. **Profile** – Displays a volume histogram.
   b. **Bid/Ask** – Numerically displays the bid volume vs the ask volume.
   c. **Ladder** – Displays bid and ask volume on opposite sides of a price bar.
   d. **Delta** – Displays the difference between the ask and bid volume at each price level.
   e. **Volume** – Displays the total volume for each price level.
2. **Tick Interval** – This defines the price range that applies to each row in the price bar. A tick interval of 1 will plot a row for every price. In the case of the S&P mini futures contract, a tick interval of 4 will display a row for every point of price movement since the minimum tick is one quarter point (ie: 0.25). The tick interval can be very useful when trading an instrument that has a wide range of movement (highly volatile) or has a very small minimum tick value relative to its typical range (such as FOREX or high value stocks).
3. **Imprint Count**– This may be used to limit the number of imprints that are drawn on the chart. Loading historical tick data can be expensive in terms of computer resources and network activity. Check the "Show All" box to show all imprints in the time range of the chart.

4. **Align** – Aligns the profiles to the middle of the bar or the start of the bar.
5. **RTH Data Only** – If checked, this will only load tick data that occurred during the regular trading session for the instrument. For details see the trading hours for the instrument. If no regular trading session is defined for the instrument, this this setting will be ignored.
6. **Recalculate On Close** – Downloads historical data that replaces the live data after each bar close. This will cause loading after each bar closes.
7. **Use Historical Bars** – Will use minute bar data instead of tick data for the profiles. This is not recommended in most scenarios.

General Tab
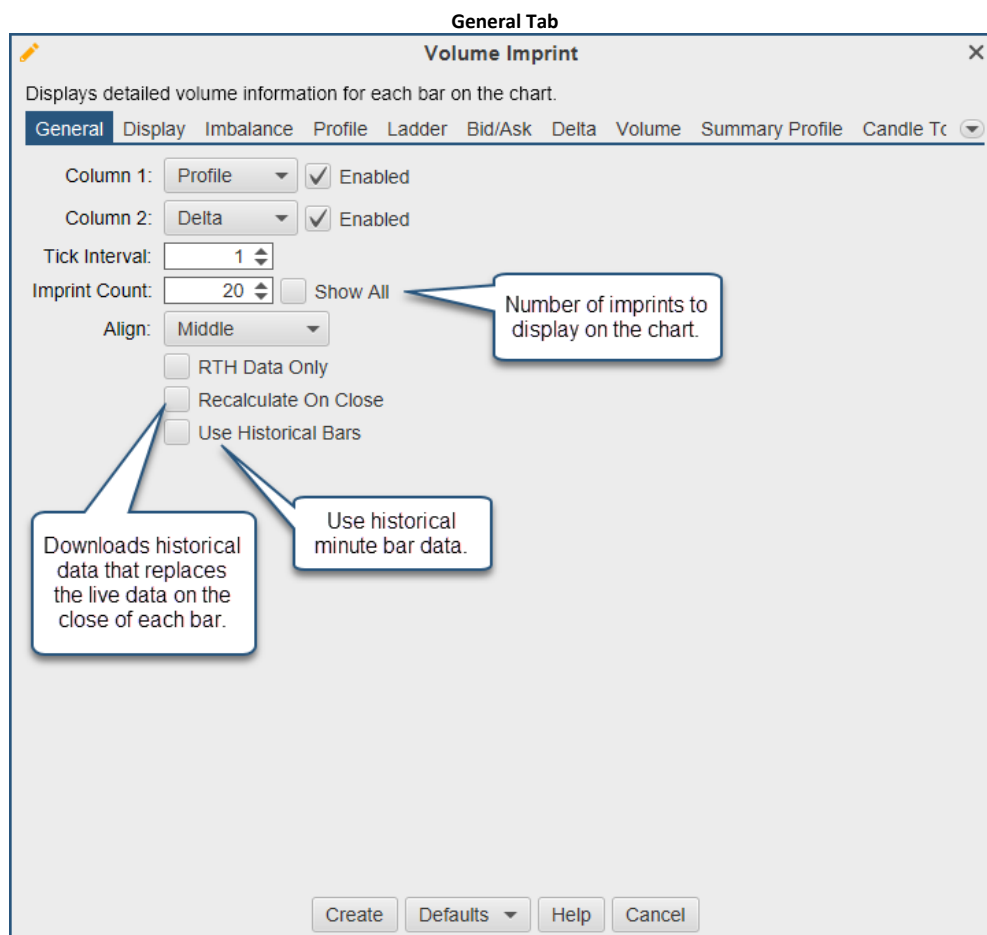
3.2 Display Settings

The Display tab in the study dialog contains general display settings:

1. **Show Open/Close** – Displays a bar that shows the range between the open and close prices for the bar. The price bar colors are used to shade the bar depending on whether the close is higher/lower than the open.
2. **Show Bid/Ask Vol** – Displays a bar that outlines the high/low price for the bar and the distribution of bid/ask volume.
3. **Bid Color** – This color is used when the price interval is dominated by bid volume. The cell will be shaded darker/lighter based on the bid/ask volume ratio (darker for higher bid volume).
4. **Ask Color** - This color is used when the price interval is dominated by ask volume. The cell will be shaded darker/lighter based on the bid/ask volume ratio (darker for higher ask volume).
5. **Use Levels** – If enabled, this will use colors to display high and low values. Select colors below.

6. **Bid Low/Bid High** – Select colors and percentages for high and low values on the bid.
7. **Ask Low/Ask High** – Select colors and percentages for high and low values on the ask.
8. **Naked POC Line** – Draws a line from the POC to the next bar whose range covers that POC price.
9. **Line Font** – This font is used to draw the price on the right-hand side of horizontal lines.
10. **Max Width** – Set a maximum width (in pixels) for each column.

Display Tab

Volume Imprint	✕
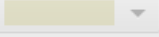
Displays detailed volume information for each bar on the chart.

General **Display** Imbalance Profile Ladder Bid/Ask Delta Volume Summary Profile Candle To ⊙

☑ Show Open/Close
☐ Show Bid/Ask Vol

Bid Color: [red] ▾   Ask Color: [blue] ▾

☑ Use Levels

Bid Low: [red] ▾   25 ⬍ %   Bid High: [dark red] ▾   75 ⬍ %
Ask Low: [blue] ▾   25 ⬍ %   Ask High: [dark blue] ▾   75 ⬍ %
Naked POC Line: [tan] ▾   — 1.0 ▾   — ▾   ✎   ☐ Display
Line Font: Arial;12.0   ✎   ☐ Enabled
Max Width: 150 ⬍   ☐ Enabled

Create   Defaults ▾   Help   Cancel

The following example illustrates the display options described above.

Display Options
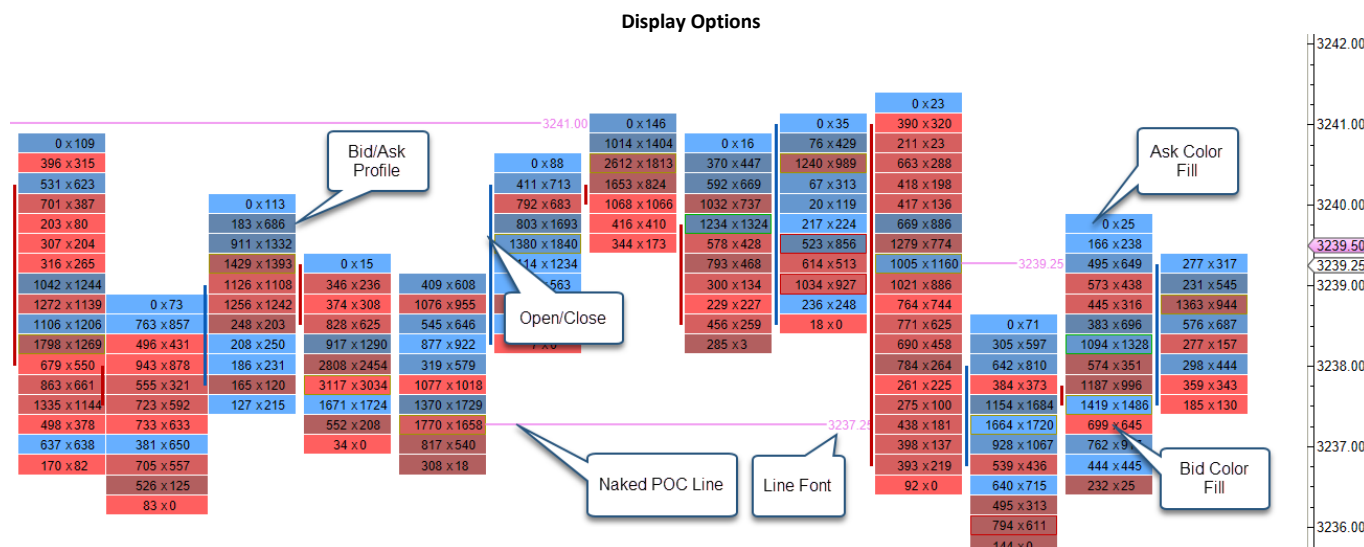
3.3 Imbalance Settings

The *Imbalance* tab (see below) contains settings for displaying Buy/Sell imbalances and absorption. Currently up to 3 levels of imbalances are supported. Imbalances are visualized on the chart by using a different font and color. Optionally, support and resistance lines may be extended where the imbalances occur.

1. **Imbalance %** - Percentage for the first level imbalance.
2. **Delta Filter** – This option may be used to filter out absorptions where the difference between the bid and ask imbalance values are below the given filter value. These are cases where the volume levels are lower and may not be considered relevant.
3. **Ask/Bid Font** – Bid and Ask font/color for the first level imbalance. Click to enable the imbalance.
4. **Support/Resistance Line** – Optionally draws support and resistance lines for the first imbalance level.
5. **Imbalance 2 %** - Percentage for the second level imbalance.
6. **Ask/Bid Font 2** – Bid and Ask font/color for the second level imbalance. Click to enable the imbalance.
7. **Support/Resistance Line 2** – Optionally draws support and resistance lines for the second imbalance level.
8. **Imbalance 3 %** - Percentage for the third level imbalance.
9. **Ask/Bid Font 3** – Bid and Ask font/color for the third level imbalance. Click to enable the imbalance.
10. **Support/Resistance Line 3** – Optionally draws support and resistance lines for the third imbalance level.
11. **Absorption Level** – Number of ticks for the price to reverse (closing price) from an imbalance point.
12. **Bid Outline** – Outline (box) to draw around the cell where the sell (bid) absorption occurred.
13. **Ask Outline** - Outline (box) to draw around the cell where the buy (ask) absorption occurred.

Imbalance Tab

MotiveWave Version 6.0   ©2019 MotiveWave™ Software   Page 29 of 89

The screenshot below shows examples of imbalances and absorptions.

Imbalances and Absorptions
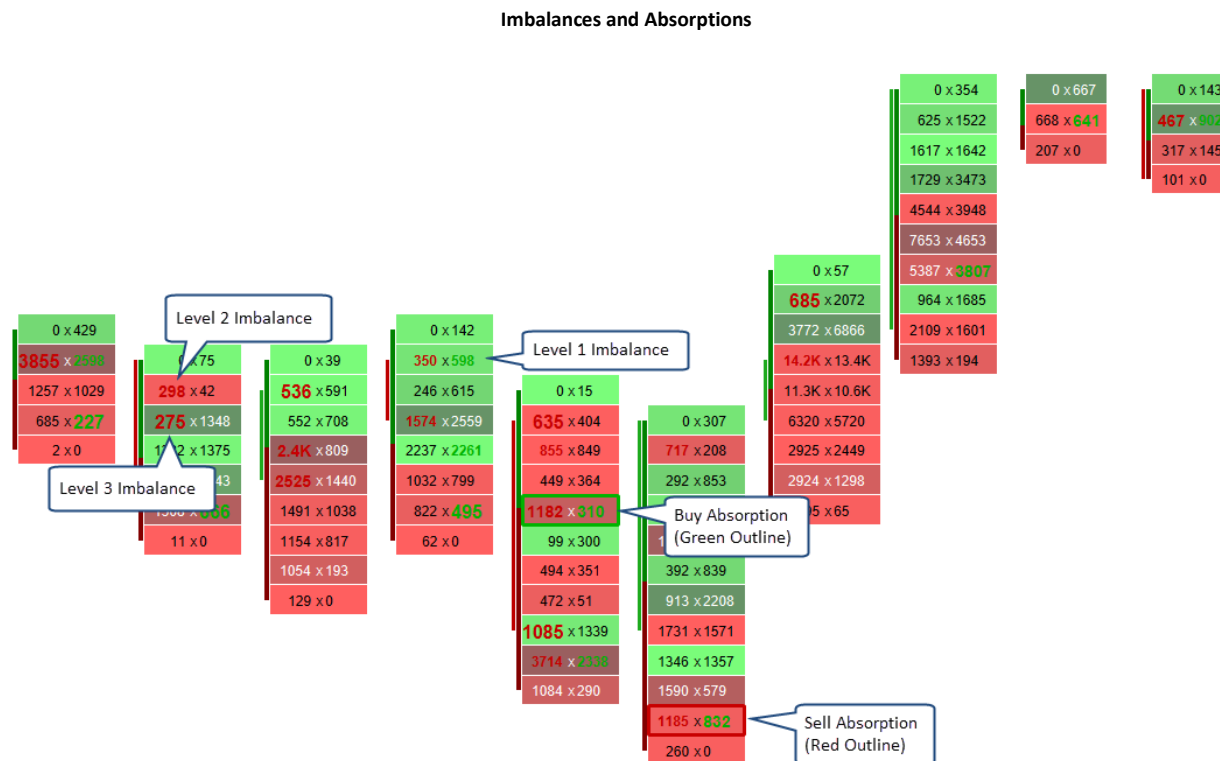
3.4 Profile Settings

Display options for the Profile imprint type can be found under the *Profile* tab. The type of imprint is chosen from the General tab (see General tab). The *profile* imprint type displays a volume histogram for each bar on the chart. Each row in the histogram shows the volume that occurred at the given price interval (with optional coloring for the bid/ask volume).

The settings in this tab also apply to the summary profile if the summary profile type is 'profile'.

3.4.1 Display Section

The Display section contains general display settings for the profile.

1. **Align** – Alignment for the histogram bars. Available options: Left and Right.
2. **Bar Color** – Color for the volume bars. Note: this is not used if the Bid/Ask volume is enabled.
3. **POC Bar Color** – Color for the Point of Control (POC) bar. Tip: use a semi-transparent color so you can still see the bid/ask volume for the bar.
4. **Bar Color Scheme** – Enable to color bars based on Bid/Ask or Delta.
5. **Color 1** – Color for the Bid volume (ie sell volume).
6. **Color 2** – Color for the Ask volume (ie: buy volume).
7. **Label Font** – Select font for the profile.
8. **Label Color** – Select the font color.
9. **Label Type** – Select from Volume, Profile, Bid/Ask or Delta.
10. **Show Imbalance** – Show buy/sell imbalances as setup on the Imbalance tab.

3.4.2 Value Area Section

The value area can optionally be displayed for each profile. The value area represents where X % (default 70%) of the volume occurred in the bar (centered around the POC).

1. **Show Value Area** – Check this option to show the value area for each profile.
2. **Range %** - Percentage of volume to include in the range.
3. **Bar Color** – Color to paint the bars that are in the value area.
4. **Range Lines** – Draws lines on the top and bottom of the value area.
5. **Range Fill** – Background fill for the value area range.

Profile Tab

The following example shows a profile imprint where the display side is on the left. The value area has been enabled with the summary profile.

Profile Example
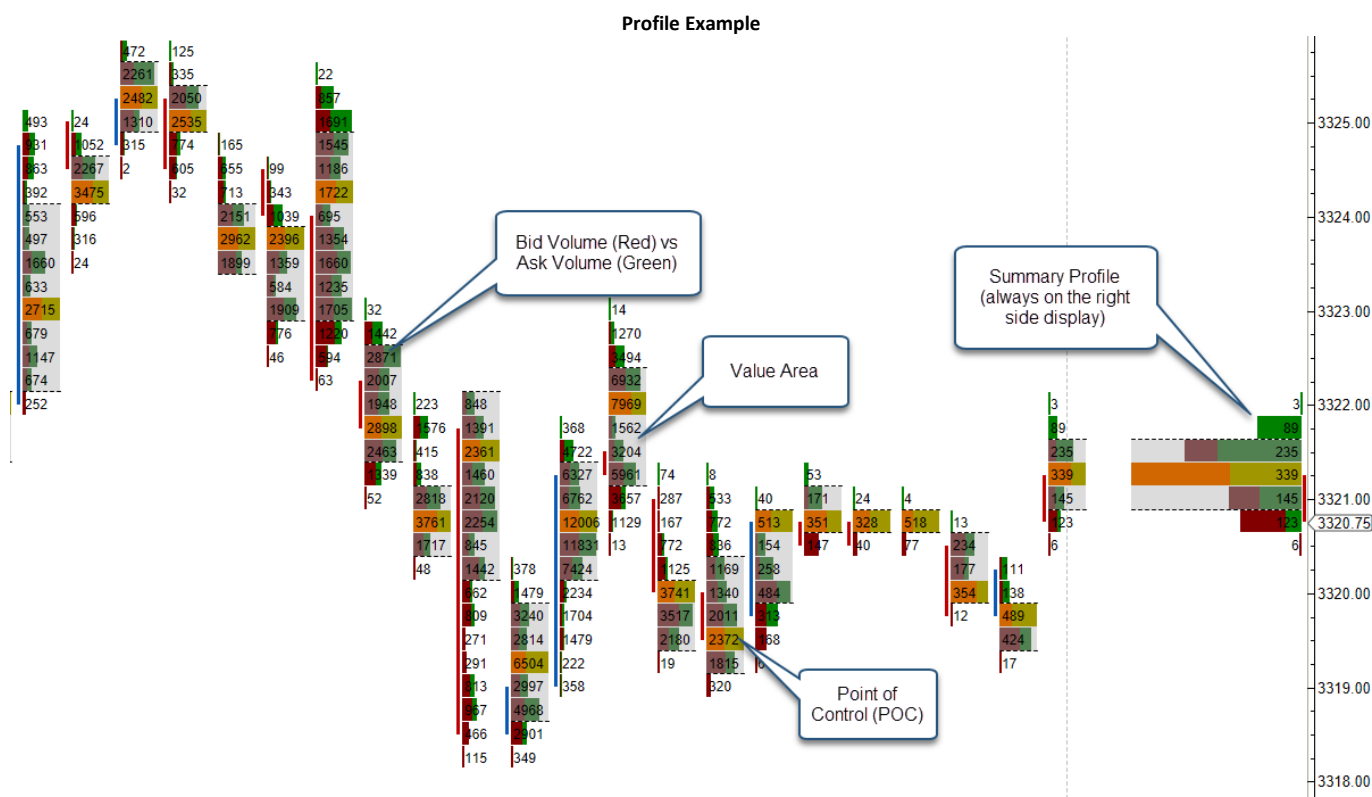
3.5 Ladder Settings

The *Ladder* tab contains settings that apply to the imprint type of 'Ladder' (see General Settings). The ladder view displays bid and ask volume (using a histogram) on opposite sides of a price bar. Note: The Open/Close and Bid/Ask Volume ranges do not apply to this imprint type (see Display Settings).

1. **Label Font** – Select font for the profile.
2. **Label Color** – Select the font color.
3. **Show Imbalance** – Show buy/sell imbalances as setup on the Imbalance tab.
4. **Bid Hist Color** – Color to use the bid volume histogram.
5. **Ask Hist Color** – Color to use for the ask volume histogram.
6. **POC Fill Color** – Highlight to identify the POC row in the histogram.
7. **Value Area Color** – Highlight to identify the value area.
8. **Range %** - Percentage of volume to include in the value area.

Ladder Tab

The following example shows the ladder imprints and a summary ladder (on the right hand side).

Ladder Imprint Example
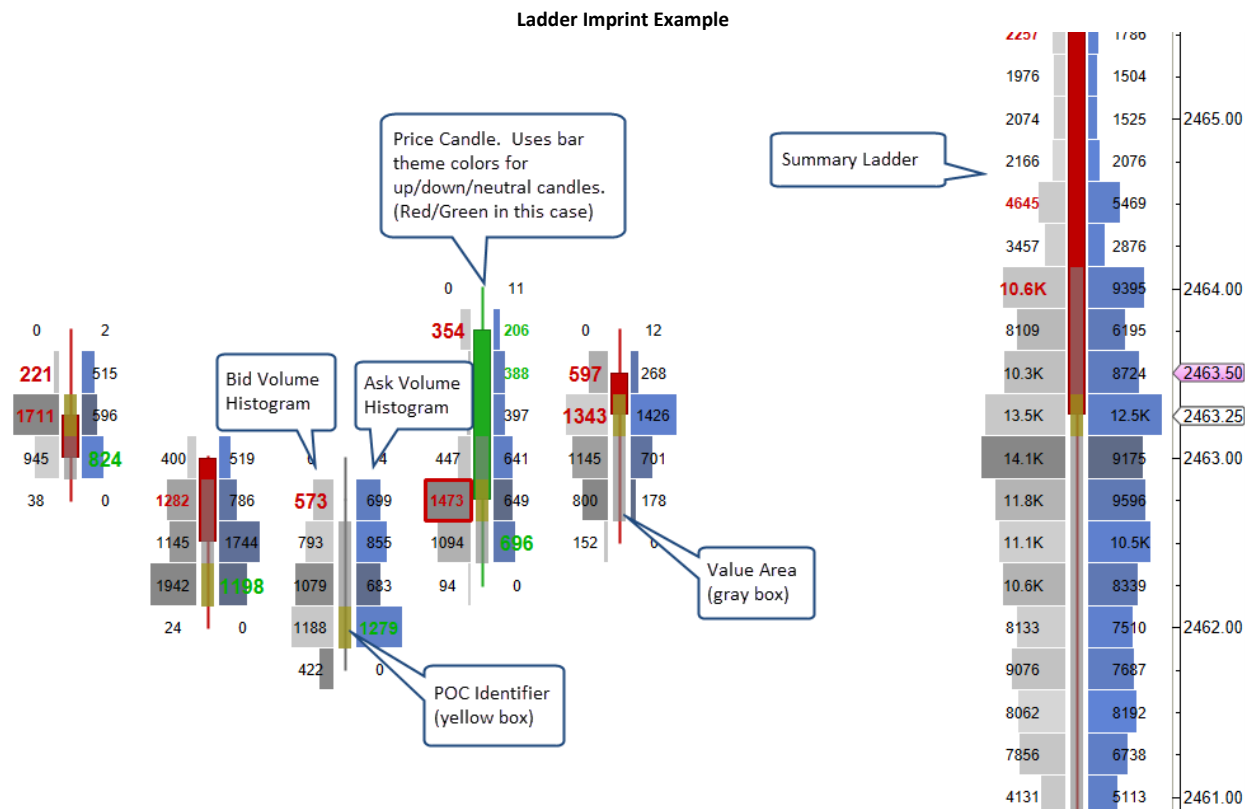
3.6 Bid/Ask Settings

Display options for the Bid/Ask imprint type can be found under the *Bid/Ask* tab. The type of imprint is chosen from the General tab (see General tab). The *bid/ask* imprint type displays volume totals for trades at the bid and ask for each bar on the chart. Each row shows the volume that occurred at the bid/ask for the given price interval.

1. **Show Fill** – Colors the background of the cells. The colors are selected on the Display tab.
2. **Histogram** – Creates a volume profile histogram fill. Align Left, Middle or Right.
3. **Show Imbalance** – Show buy/sell imbalances as setup on the Imbalance tab.
4. **POC Outline** – Highlight to identify the value area.
5. **Label Font** – Select font for the profile.
6. **Label Color** – Select the font color.
7. **Label Type** – Select from Volume, Profile, Bid/Ask or Delta.
8. **Label Align** - Alignment for the label. Available options: Left, Middle and Right.
9. **Size Filter** – Will not display values less than or equal to this number.
10. **Separator** – Chose the separator symbol between the bid and ask values.
11. **Show Zeros** – If unchecked, zero values will not be displayed.

Bid/Ask Tab

Volume Imprint

Displays detailed volume information for each bar on the chart.

General Display Imbalance Profile Ladder **Bid/Ask** Delta Volume Summary Profile Candle To ▾

☑ Show Fill

Histogram: [Left ▾] ☐ Enabled

☑ Show Imbalance

POC Outline: [▾] [—— 1.0 ▾] [—— ▾] ✏ ☑ Display

Label Font: [Arial;12.0] ✏ ☑ Enabled

Label Color: [▾] ☐ Enabled

Label Type: [Bid/Ask ▾]

Label Align: [Right ▾]

Size Filter: [100 ⇕] ☐ Enabled

Separator: [x] ☑ Show Zeros

[Update] [Apply] [Remove] [Defaults ▾] [Help] [Cancel]

The following example shows the Bid/Ask imprint with the histogram enabled.

Bid/Ask Imprint Example
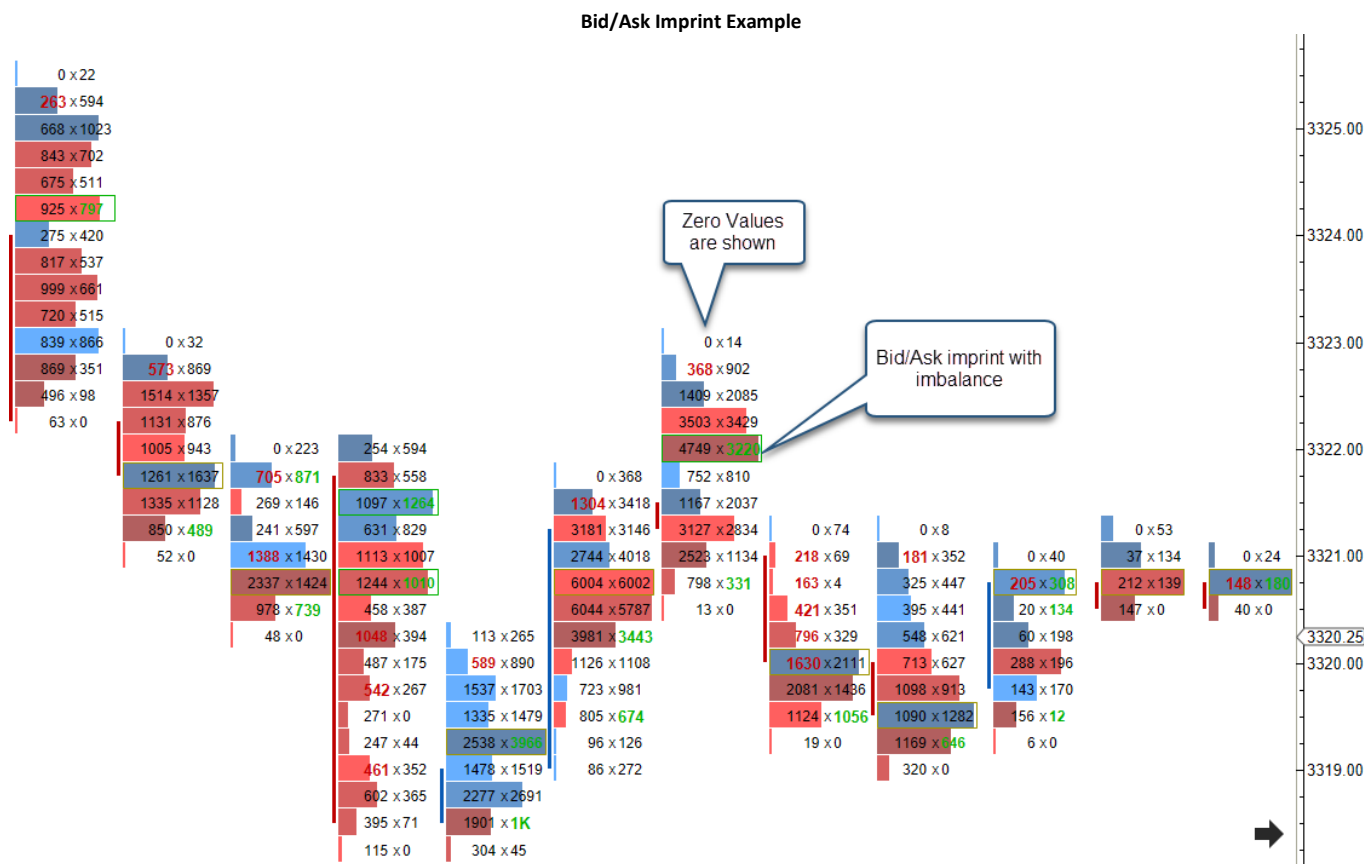
3.7 Delta Settings

Display options for the Delta imprint type can be found under the *Delta* tab. The type of imprint is chosen from the General tab (see General tab). The *delta* imprint type displays the delta volume between the bid volume and ask volume at each price level.

1. **Show Fill** – Colors the background of the cells. The colors are selected on the Display tab.
2. **Histogram** – Creates a volume profile histogram fill. Align Left, Middle or Right.
3. **Show Imbalance** – Show buy/sell imbalances as setup on the Imbalance tab.
4. **POC Outline** – Highlight to identify the value area.
5. **Label Font** – Select font for the profile.
6. **Label Color** – Select the font color.
7. **Label Type** – Select from Volume, Profile, Bid/Ask or Delta.
8. **Label Align** - Alignment for the label. Available options: Left, Middle and Right.
9. **Size Filter** – Will not display values less than or equal to this number.

Delta Tab

Volume Imprint ✕

Displays detailed volume information for each bar on the chart.

General Display Imbalance Profile Ladder Bid/Ask **Delta** Volume Summary Profile Candle Tc ⌄

☑ Show Fill

Histogram: | Left ⌄ | ☑ Enabled

☐ Show Imbalance

POC Outline: | [color] ⌄ | — 1.0 ⌄ | —— ⌄ | ✏ | ☑ Display

Label Font: | Arial;12.0 | ✏ | ☑ Enabled

Label Color: | [color] ⌄ | ☐ Enabled

Label Type: | Delta ⌄

Label Align: | Right ⌄

Size Filter: | 100 ⇕ | ☐ Enabled

Update   Apply   Remove   Defaults ⌄   Help   Cancel

The following example shows the Delta imprint with the histogram enabled.

Delta Imprint Example
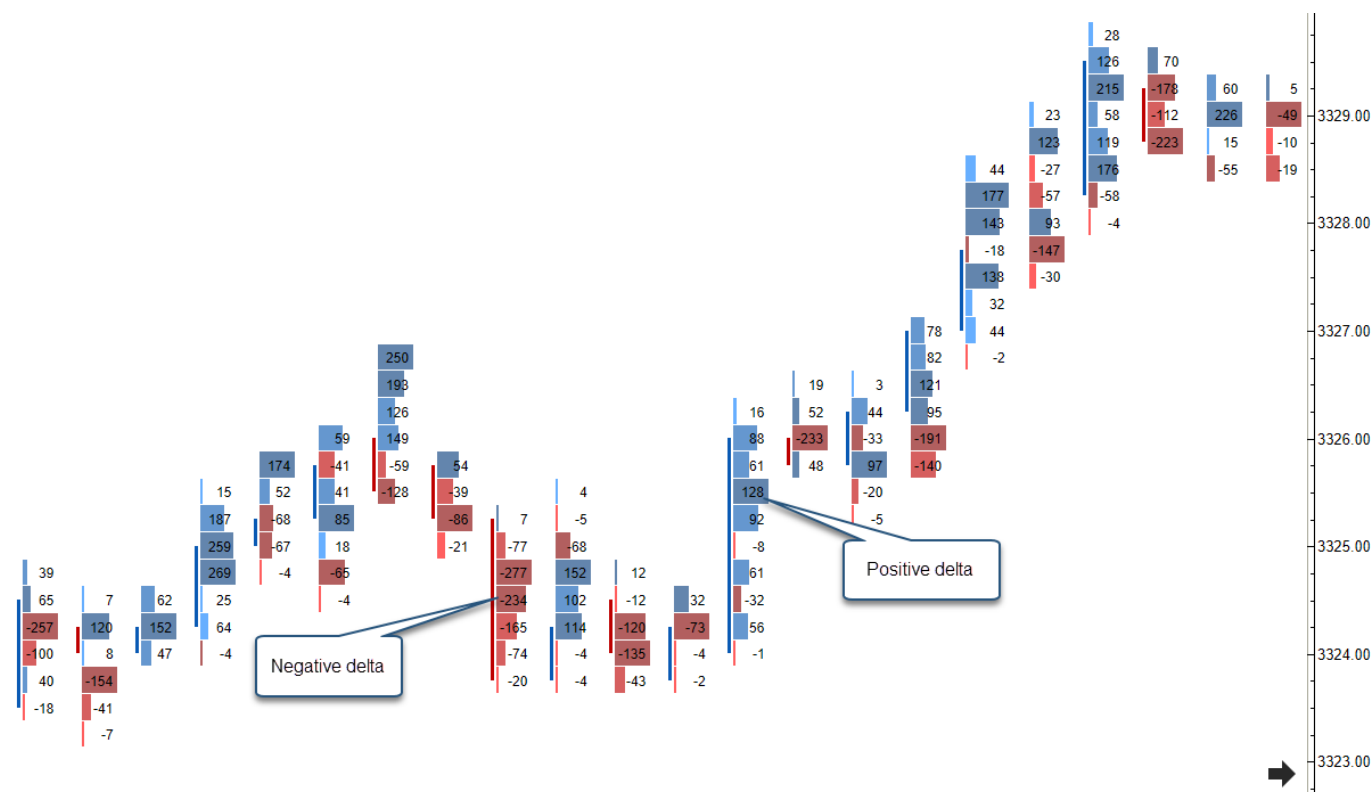
3.8 Volume Settings

Display options for the Volume imprint type can be found under the *Volume* tab. The type of imprint is chosen from the General tab (see General tab). The *volume* imprint type displays the total volume traded at each price level for that bar.

1. **Show Fill** – Colors the background of the cells. The colors are selected on the Display tab.
2. **Histogram** – Creates a volume profile histogram fill. Align Left, Middle or Right.
3. **Show Imbalance** – Show buy/sell imbalances as setup on the Imbalance tab.
4. **POC Outline** – Highlight to identify the value area.
5. **Label Font** – Select font for the profile.
6. **Label Color** – Select the font color.
7. **Label Type** – Select from Volume, Profile, Bid/Ask or Delta.
8. **Label Align** - Alignment for the label. Available options: Left, Middle and Right.
9. **Size Filter** – Will not display values less than or equal to this number.

Volume Tab

Volume Imprint

Displays detailed volume information for each bar on the chart.

General Display Imbalance Profile Ladder Bid/Ask Delta **Volume** Summary Profile Candle To

☑ Show Fill

Histogram: Left ▼   ☐ Enabled

☐ Show Imbalance

POC Outline: [color] ▼   ── 1.0 ▼   ────── ▼   ✎   ☑ Display

Label Font: Arial;12.0   ✎   ☑ Enabled

Label Color: [color] ▼   ☐ Enabled

Label Type: Volume ▼

Label Align: Right ▼

Size Filter: 100 ⇕   ☐ Enabled

Update Apply Remove Defaults ▼ Help Cancel

The following example shows the Volume imprint.

Volume Imprint Example

Total volume traded at each price
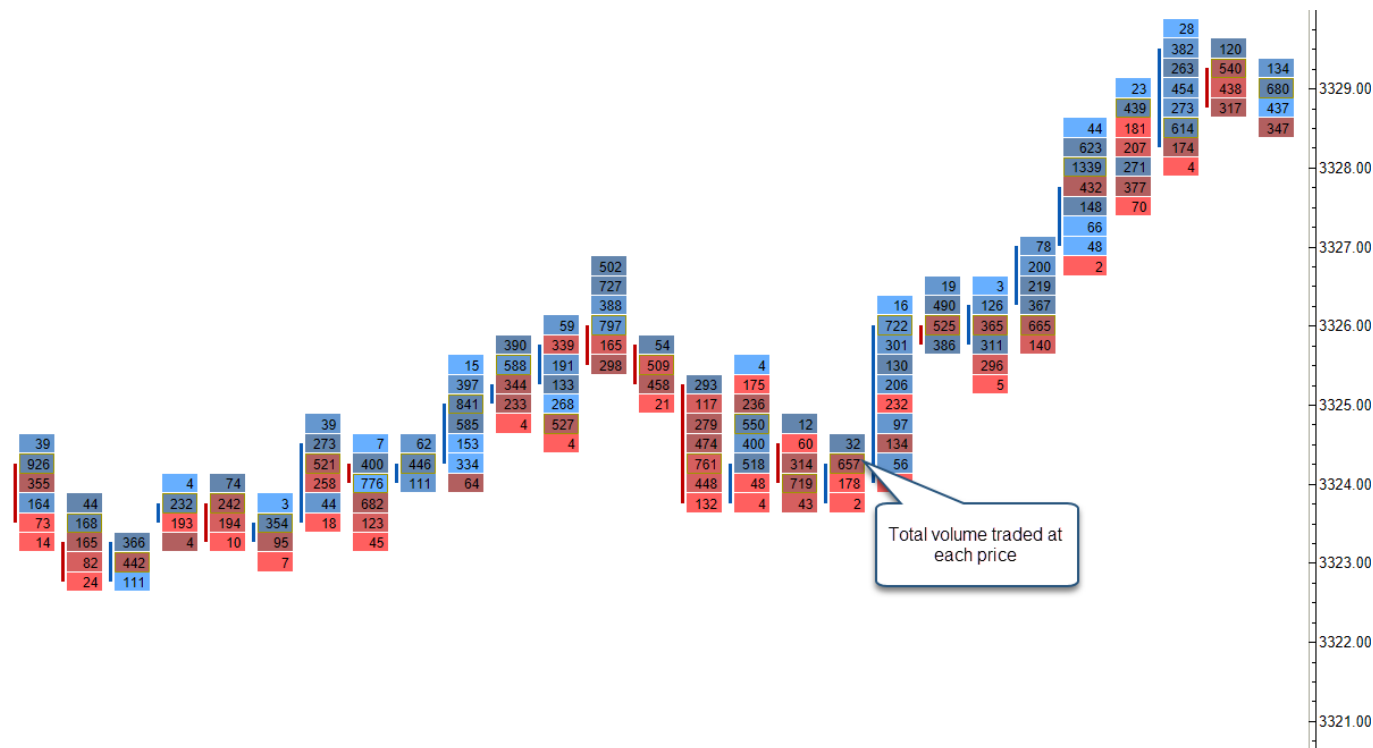
3.9 Summary Profile Settings

An optional summary profile can be displayed on the right-hand side of the chart. This summary tallies the bid/ask volume for the given time span and updates in real time. Two types of summary imprints are supported: Profile and Ladder.

1. **Show Summary** – Check this box to show the summary on the right-hand side of the chart.
2. **Type** – Profile or Ladder. The configuration settings for these are found under the Profile and Ladder tabs.
3. **Width** – Width of the summary (in pixels).
4. **Time Span**:
    a. **Visible Bars** – Includes the bars that are currently visible on the chart.
    b. **Day** – Summary for the current trading day.
    c. **Week** – Summary for the current trading week.
    d. **Month** – Summary for the current trading month.

Summary Profile Tab
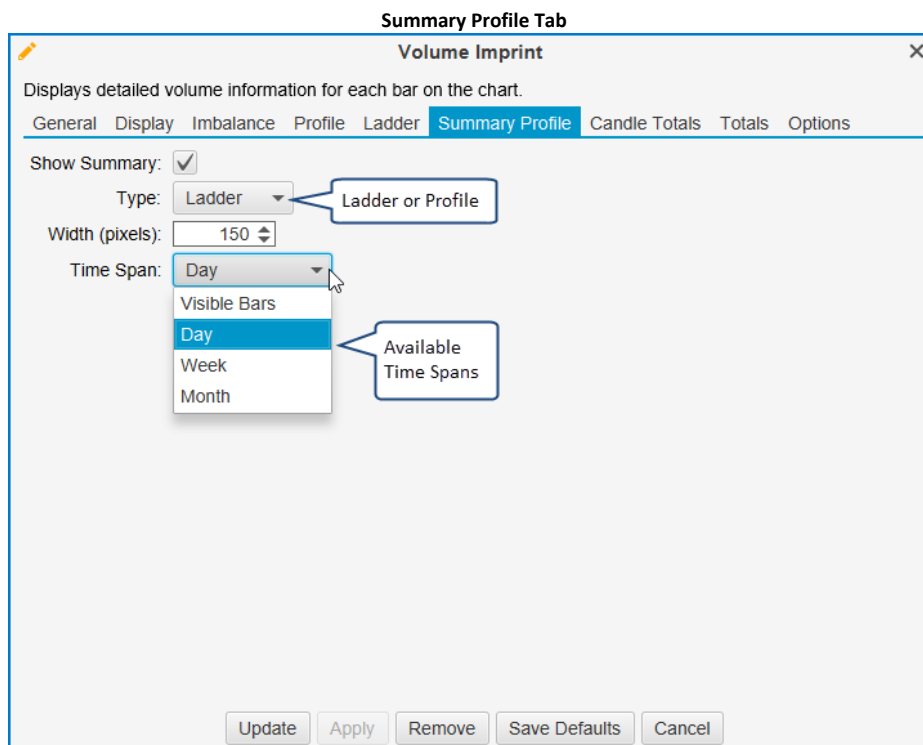
3.10 Candle Totals Settings

Candle totals can be displayed above/below each candle (price bar). The Candle Totals tab contains settings that you can adjust:

1. **Positive Delta** – This option is used when the Ask Volume – Bid Volume is greater than 0.
2. **Negative Delta** – This option is used when the Ask Volume – Bid Volume is less than 0.
3. **Volume Total** – Total volume for the candle.
4. **Bid/Ask Percentage** – Displays the percentage of the total volume for the Bid and Ask volume sides.
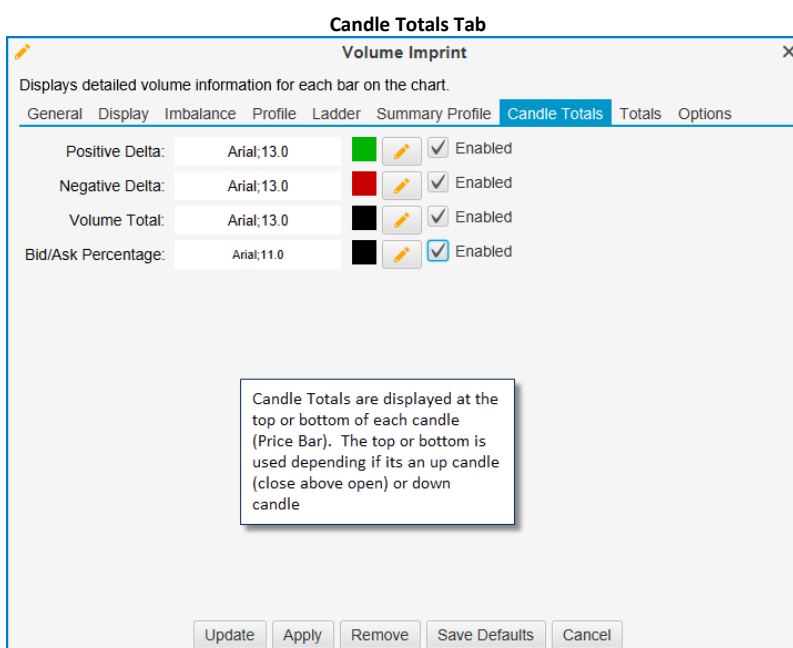
Candle Totals Tab

The screen shot below shows the candle totals using a ladder imprint.

Candle Totals Example

Candle Volume

Candle Totals. Top of bar when close > open, bottom of bar otherwise

Delta (red for negative, green for positive)

Bid/Ask Percentages

Summary Totals are always at the bottom
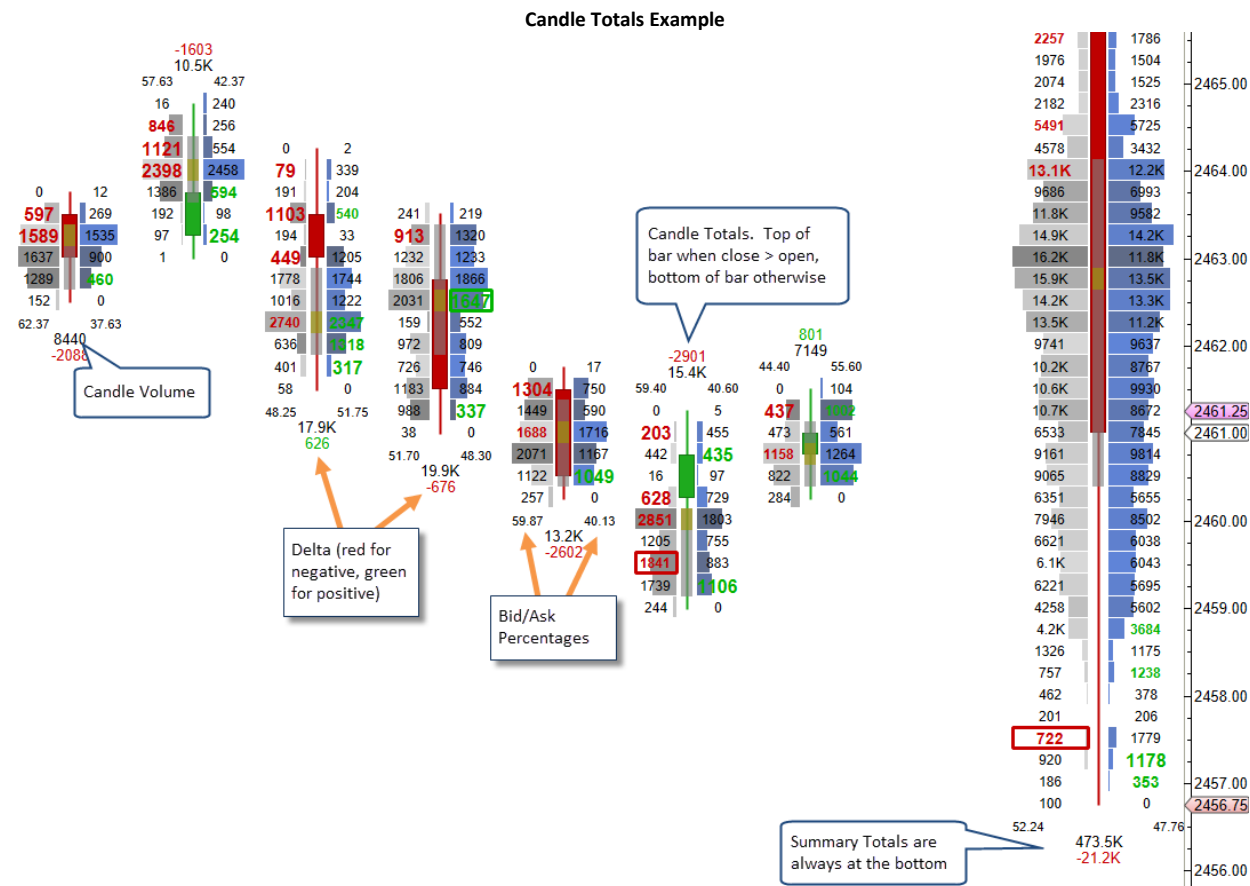
3.11 Totals Settings

Totals for volume, delta and delta change can be displayed at the bottom of the price graph from the settings in the Totals tab.

1. **Show Totals** – Check this box to show totals at the bottom of the price graph.
2. **Show Volume** – Shows a row that has the total volume for each candle.
3. **Show Average Volume At Price (AVAP)** – Shows a row that has displays the average volume at each price level. Total volume for the bar divided by the number of price levels in the bar.
4. **Show Delta** – Shows a row that has the difference between the ask volume and the bid volume.
5. **Show Cumulative Delta** – Shows a row that displays the cumulative delta for the session.
6. **Show Delta Change** – Shows a row that has the difference between the delta of the current candle and the previous candle.
7. **Show Minimum Delta** – Shows the minimum delta recorded for the bar.
8. **Show Maximum Delta** – Shows the maximum delta recorded for the bar.
9. **Show Delta %** - Shows the delta volume as a percentage of the total bar volume.
10. **Font** – Font to use for the totals.
11. **Positive Color** – Background color for positive numbers.
12. **Negative Color** – Background color for negative numbers.
13. **Use Levels** – If enabled, this will use colors to display high and low values. Select colors below.
14. **Pos Low/Pos High** – Select colors and percentages for high and low values with positive values.
15. **Neg Low/Neg High** – Select colors and percentages for high and low values with negative values.

Totals Tab

In the example below, the totals are displayed using the settings above.

Totals Example
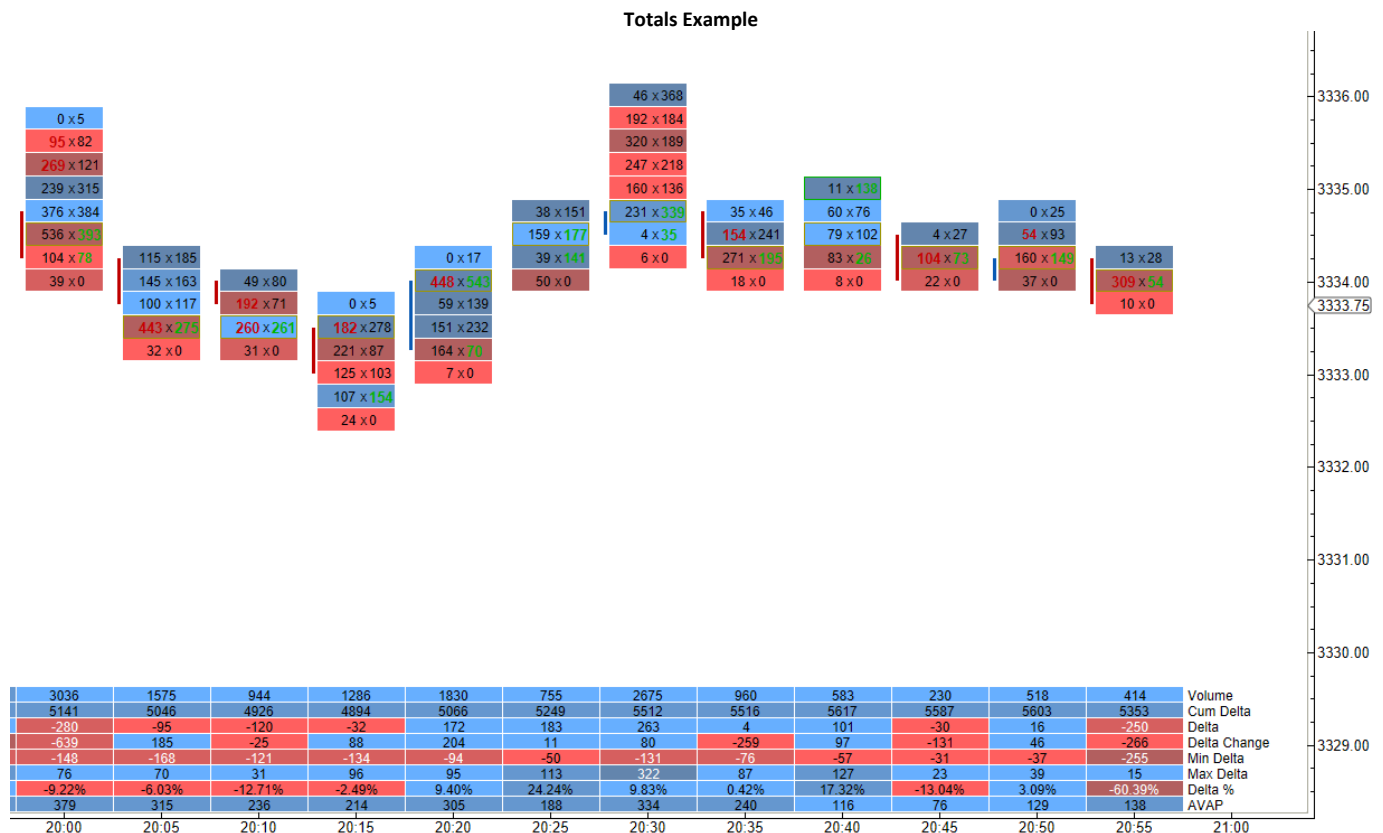
3.12 Options Settings

The settings changed in Options will effect all imprint types. The aggregate and trade size settings can be used to display imprints showing only specific trade sizes. This can be used to filter out small or large trades.

1. **Aggregate Period** – If enabled, trades will be aggregated together within the aggregate period.
2. **Min Trade Size** – Will only show trades with this size or greater.
3. **Max Trade Size** – Will only show trades with this size or smaller.

Option Tab

4   Depth of Market (DOM)

The Depth of Market (DOM) panel shows the number of resting (limit) buy and sell orders for the given instrument. The DOM can also be used to display other columns such as trades recently executed on the bid or ask, orders being added or pulled and volume traded at each price level.

Depth of Market
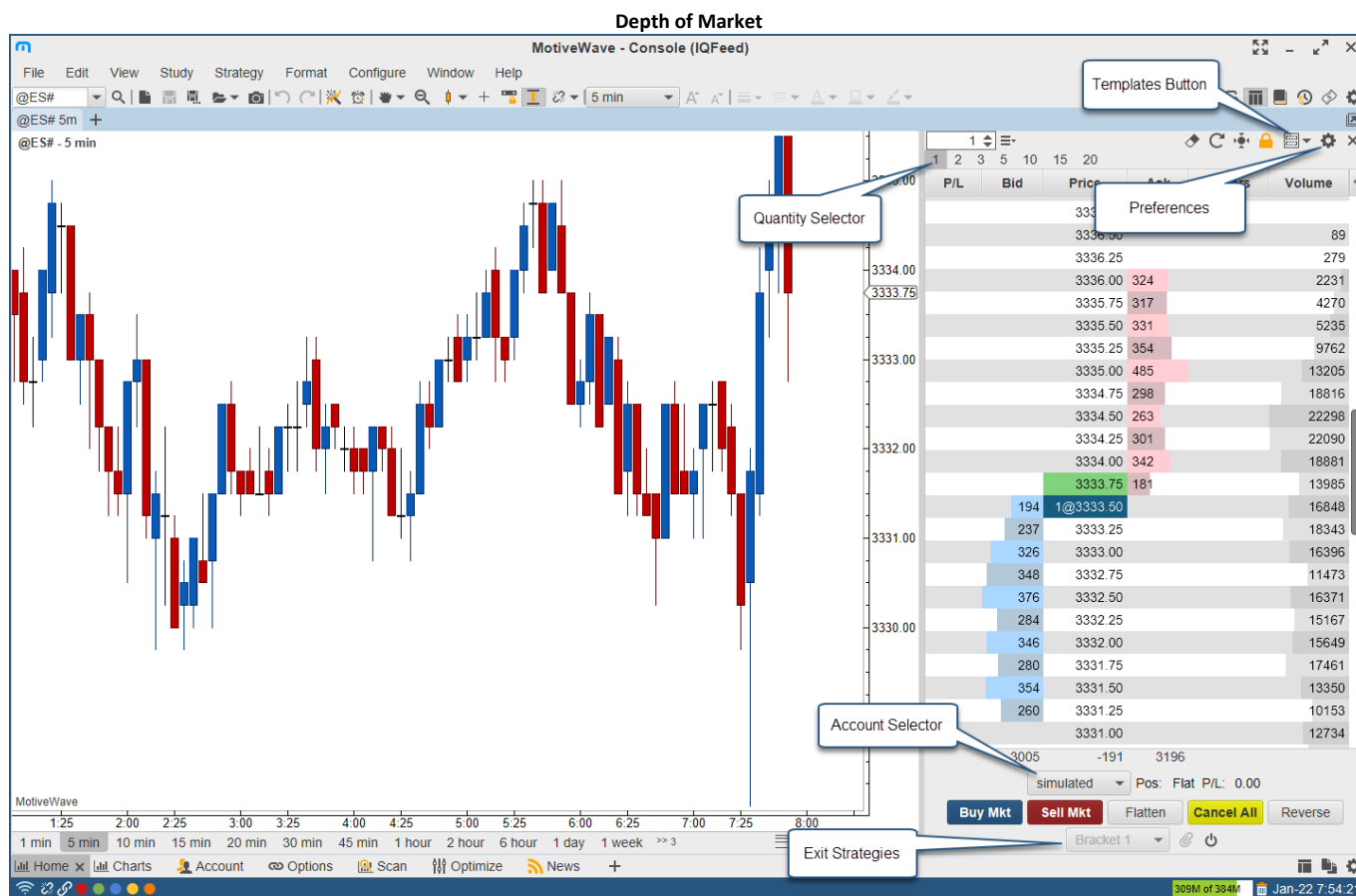
4.1 DOM Columns

Columns may be added/removed from the DOM table by click on the '+' button in the top right corner of the table (to the right of the column headers).

DOM Columns

The following columns are available:

1. **P/L** – Profit/Loss calculated for each price level using the current open position.
2. **P/L (Price)** – Profit/Loss displayed in the instrument price versus dollar value.
3. **Bid Delta** – Tracks the difference in contracts added/removed from the current bid size (see Bid column) for all depth levels in the DOM book (see bid column). These values are calculated on every DOM book update and are reset when the last price changes.
4. **Bid** – Displays the quantities of the current buy orders at the given price.
5. **@Bid** – Tracks the contracts traded at the bid price since that last reset (see reset button on the tool bar).
6. **Price** – Displays the price level for the row.
7. **@Ask** - Tracks the contracts traded at the ask price since that last reset (see reset button on the tool bar).
8. **Ask** – Displays the quantities of the current sell orders at the given price.
9. **Bid/Ask** – Bid and Ask columns combined into a single column.
10. **Ask Delta** - Tracks the difference in contracts added/removed from the current ask size (see Ask column) for all depth levels in the DOM book (see bid column). These values are calculated on every DOM book update and are reset when the last price changes.
11. **Orders** – Displays active orders at each price level. If "**Single Order Column**" is unchecked (see General tab of the Properties dialog below), then there will be two of these columns (buy and sell orders).
12. **Bid Vol** – Daily volume traded at the bid price.

13. **Ask Vol** – Daily volume traded at the ask price
14. **Delta Vol** – Difference between the ask and bid volume at the given price.
15. **Volume** – Daily volume traded at the given price.
16. **Notes** – Displays a text note that you can add to each price level (click on the field and type). All notes can be removed by pressing the eraser button on the tool bar.

4.2 Preferences

Configuration information for the DOM panel can be found in the DOM Preferences dialog (click on the gear icon in the toolbar). The dialog contains several tabs which are described in the following sections.

4.2.1   General Preferences

The following configuration options are available from the General tab:

1. **Rows** – Number of rows to display in the DOM (default 100).
2. **Max Depth** – Limit the number of rows that display depth for performance reasons.
3. **Time in Force** – Time in force setting for orders placed from the DOM.
4. **Re-center** – Defines the range (number of rows above/below the current center) for resetting the center point for the DOM. When the last price (or midpoint) crosses the top or bottom of the range the DOM will be centered on the current price.
5. **Re-center All DOMs** – If one DOM is re-centered, the other will be as well.
6. **Update Interval** – Sets the update threshold for depth of market updates (bid/ask quantities). By default, the table will be updated a maximum of once every 200 milliseconds.
7. **Location** – Select the location of the DOM. Options are right or left of the chart.
8. **Exit Attach** – When using an exit strategy and click attach (paper clip button) to attach an exit strategy to an existing position. You can attach based on average entry price or the last price.
9. **Show Tool Bar** – Toggles the display of the tool bar at the top of the DOM panel. If this is turned off, the preferences button (gear icon) will display in the button bar at the bottom.
10. **Show Quantity Selector** – Toggles the display of the preset order quantities.
11. **Locked** – If the DOM is locked, you cannot place or modify orders. Uncheck this option if you want to manage orders in the DOM.
12. **Show Order Ticket Window** – Displays the order ticket window when placing an order from the DOM.
13. **Double Click to Place Order** – Place orders on double click (as opposed to single click).
14. **Show Grid** – Toggles the display of the grid in the DOM table.
15. **Show Totals** – Toggles the display of the totals for Bid/Ask Sizes and the delta at the bottom of the DOM table.
16. **Single Order Column** – Displays all orders in a single column (instead of having separate buy and sell order columns).
17. **Show Filled Orders** – Displays filled orders in the order column(s).

DOM Preferences

4.2.2 Bottom Panel

The bottom panel in the DOM can be configured to add and remove buttons including the creating of custom buttons. Configuring the bottom panel is only available in the Professional and Ultimate Editions.

1. **Show Bottom Panel** – Toggles the display of the bottom panel.
2. **+ Icon** – Click to add a new item.
3. **Pencil Icon** – Click here to edit the selected item.
4. **X Icon** – Delete the selected item.
5. **Up/Down Icons** – Move the items up or down in the panel.

Bottom Panel
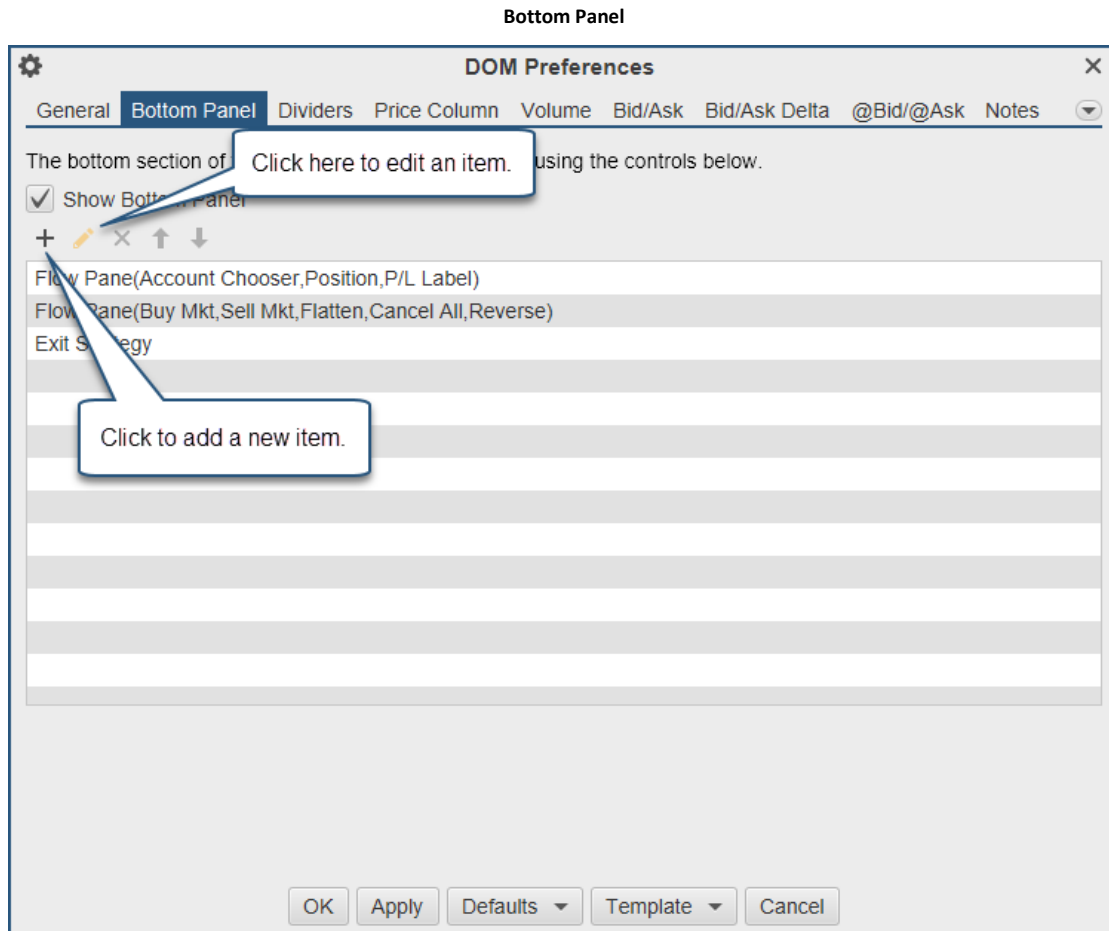
4.2.3 Dividers

Dividers may be used to highlight key price levels in the DOM table. The divider is placed between the rows and can be assigned a thickness and color:

1. **Center** – Center of the DOM. This will change when the DOM is re-centered.
2. **Bid** – Divider is placed just above the current bid price.
3. **Offset** – Shows the re-center threshold above and below the center price (see re-center option in General tab).
4. **High** – Daily high price. The divider is placed above this row.
5. **Low** – Daily low price. The divider is placed below this row.

Dividers

The example below shows the bid, center and offset dividers enabled in the DOM. The offset dividers indicate when a re-center will occur (green dividers below).

Dividers Example
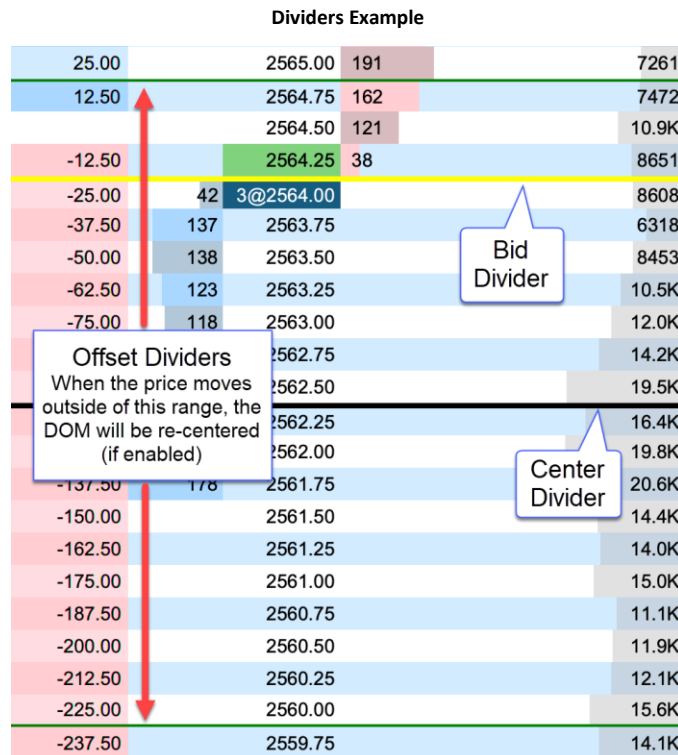
4.2.4 Price Column

Below are the options available for configuring the price column. Note: background fills that span several rows will use striping to help visualize the distinction between rows in the table:

1. **Column Fill** – Default background fill for price column. This is the color used to fill the price cells unless they are overridden by another setting.
2. **Session High/Low Fill** – Fill for the price rows that are between the high and low for the day's trading session.
3. **Fill Above Ask** – Fill for the prices above the current ask price.
4. **Fill Below Ask** – Fill for the prices below the current bid price.
5. **Bid Price** – Fill for the cell that contains the current bid price.
6. **Ask Price** – Fill for the cell that contains the current ask price.
7. **Last Price** – Fill for the cell that contains the last traded price. If "Show Last Size" is enabled, it will be added to the price cell. For example, 5@2570.00.
8. **Avg Entry** – Highlight for the price cell that contains the avg entry price for your open position. There are two color options. The first is for a long position and the second is for a short position. If "Show Entry Quantity" is enabled, it will be added to the price cell. For example, -5@2580.25
9. **Open** – Fill for the opening price for the day.
10. **High** – Fill for the highest traded price for the day.
11. **Low** – Fill for the lowest traded price for the day.
12. **Previous Close** – Fill for the closing price from the previous day.
13. **Allow orders to be placed with the mouse** – Select this to place orders from the price column.

Price Column

The example below shows some shading options for the price column:

Price Column Example
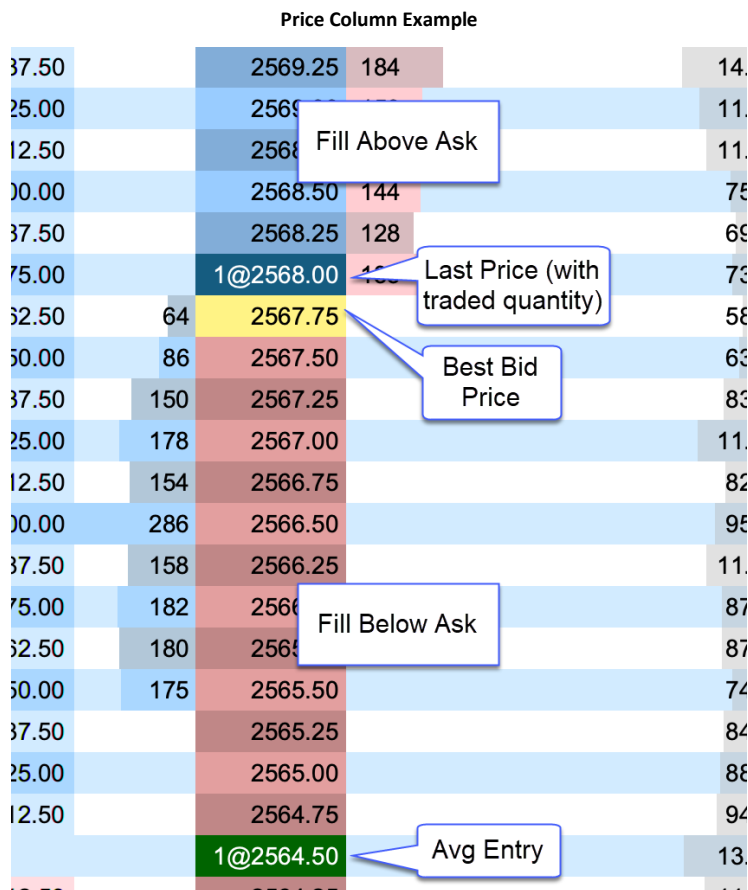
4.2.5 Volume

The volume-based columns (Volume, Bid Vol, Ask Vol and Delta Vol) may be customized from the Volume tab:

Display Section:

1. **Volume Align** – Cell alignment for the Volume column.
2. **Bid Vol Align** – Cell alignment for the Bid Vol column.
3. **Ask Vol Align** – Cell alignment for the Ask Vol column.
4. **Delta Vol Align** – Cell alignment for the Delta Vol column.
5. **Bar Color** – Bar color for the Volume column. This is not used if Show Bid/Ask Volume is checked
6. **Bid Color** – Bar color for the Bid Vol column. If Show Bid/Ask Volume is checked, this will be the fill for the bid volume portion in the Volume column.
7. **Ask Color** – Bar color for the Ask Vol column. If Show Bid/Ask Volume is checked, this will be the fill for the ask volume portion in the Volume column.
8. **POC Bar Color** – Color for the Point of Control cell (highest volume) in the DOM Table.
9. **Show Volume Labels** – Toggles the display of the text labels in the volume columns.
10. **Show Bid/Ask Volume** – Toggles the display of bid/ask volume for the Volume column. If this is selected each bar in the Volume column will be divided into bid and ask volume.
11. **RTH Data Only** – Only display volume profile for the RTH session.

Value Area Section:

The value area identifies the rows surrounding the Point of Control (POC) (row with the highest volume) that encompass X% (typically 70%) of the total trading volume (for the day).

1. **Show Value Area** – Toggles the display of the value area.
2. **Range %** - Percentage of the volume to include in the value area.
3. **Bar Color** – Shade color for the bars that are part of the value area. Typically, this is a semi-transparent color if you want to highlight bid/ask volume at the same time.
4. **Range Fill** – Background fill for the cells that are part of the value area.
5. **Range Lines** – Displays dividers at the top and bottom of the value area.

Volume

The example below shows the Bid Vol/Ask Vol and Volume columns in the DOM table. The Value Area (Show Value Area check box) has been enabled and the "Show Bid/Ask Volume" has also been enabled for the Volume column.

Volume Example

Bid	Price	Ask	Orders	Bid Vol	Ask Vol	Volume	+
	2576.00			10.3K	10.6K	20.9K	
	2575.75			7940	8875	16.8K	
	2575.50			7962	8131	16.1K	
	2575			9020	9436	18.5K	
	2575			13.7K	10.0K	23.7K	
	2574.75			13.9K	13.9K	27.8K	
	2574.50			14.1K	14.3K	28.5K	
	2574.25			12.0K	14.9K	26.9K	
	2574.00					19.2K	
	2573.75					17.1K	
	2573.50					15.9K	
	2573.25			9158	8044	17.2K	
	2573.00			9949	10.6K	20.6K	
	2572.75			7895	7734	15.6K	
	2572.50	7		8428	9234	17.7K	
	2572.25	14		8965	7368	16.3K	
	2572.00	8		12.3K	11.5K	23.7K	
	2571.75	9		9491	10.5K	19.9K	
	2571.50	5				25.4K	
	2571.25	5				22.1K	
	2571.00	6				26.1K	
	2570.75	5		14.0K	12.4K	26.4K	
	2570.50	6		12.9K	12.9K	25.9K	
	2570.25	73		11.8K	12.2K	24.0K	
	2570.00			11.4K	11.8K	23.2K	
39	1@2569.75			9346	10.3K	19.6K	
20	2569.50			7950	9216	17.2K	

Callouts: Top Range Divider; Point of Control; Bid/Ask Volume Enabled in the Volume Column; Semi-transparent color used for the range bar color

4.2.6 Bid/Ask

The Bid/Ask columns display total quantity of the active buy and sell orders at each price level. The number of depth rows available depends on the on the instrument, but is typically 10 prices levels for each of the bid and ask columns (total of 20 price rows). An optional histogram can be displayed to help visualize how the quantities are distributed.

1. **Bid Align** – Alignment of the Bid column.
2. **Ask Align** – Alignment of the Ask column.
3. **Bid/Ask Align** – Alignment of the Bid/Ask column.
4. **Bid Fill** – Fill color for the bid column (striping will be applied).
5. **Ask Fill** – Fill color for the ask column (striping will be applied).
6. **Show Totals** – Displays the total quantity for the bid and ask columns in the bottom panel.
7. **Show Histogram** – Shows the histogram for both the Bid and Ask columns using the Bid/Ask Align settings above.
8. **Bid Hist Fill** – Fill color for the Bid histogram.
9. **Ask Hist Fill** – Fill color for the Ask histogram.
10. **Fixed Max Size** – Sets the maximum size for the bid/ask columns to a fixed value.

11. **Max Scale Size** – Sets an upper limit on the max bid/ask sizes. Use this to lessen the effect of unusually large bid/ask values on the histogram.
12. **Scale Visible Rows Only** – Scale the bid /ask histogram on only the visible rows.
13. **Place In Queue (PIQ) Marker** – Enable the PIQ marker for your limit orders.

Bid/Ask

4.2.7 Bid/Ask Delta

The Bid Delta and Ask Delta columns display the difference in the Bid/Ask quantities at each price level since the last price changed. These values are updated with each depth book update.

1. **Bid Delta Align** – Alignment for the Bid Delta column.
2. **Ask Delta Align** – Alignment for the Ask Delta column.
3. **Bid Delta Fill** – Background fill color for the Bid Delta column (striping will be applied).
4. **Ask Delta Fill** – Background fill color for the Ask Delta column (striping will be applied).
5. **Bid Delta Text** – Text color for the Bid Delta column.
6. **Ask Delta Text** – Text color for the Ask Delta column.

Bid/Ask Delta
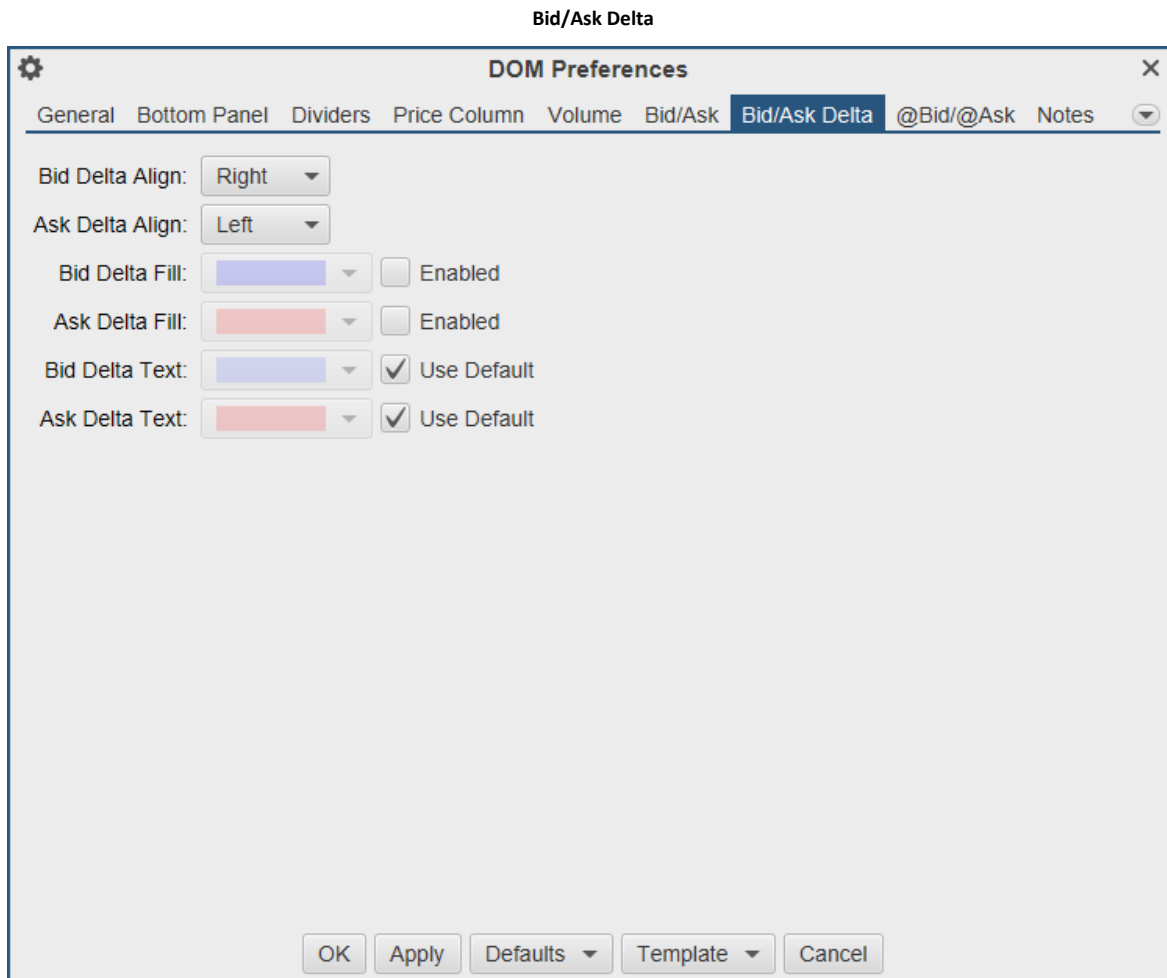
4.2.8 @Bid/@Ask

The @Bid and @Ask columns track the bid and ask volume at each price level since the last reset. These columns can be reset manually by pressing the reset button in the tool bar.

1. **@Ask Align** – Alignment of the @Ask column.
2. **@Bid Align** – Alignment of the @Bid column.
3. **@Ask Fill** – Background fill color for the @Ask column (striping will apply).
4. **@Bid Fill** – Background fill color for the @Bid column (striping will apply).
5. **Reset Interval** – The DOM panel tracks how long it's been since a trade occurred at each price level. The @Bid (on bid trade) or @Ask (on ask trade) value is reset to 0 when the elapsed time exceeds the reset interval. For example, consider a case where the DOM panel is showing 1164 contracts traded at an ask price of 2575.50 (since the last reset).   When the next trade that occurs at the ask for 2575.50 and the elapsed time exceeds the reset interval, the @Ask value will be reset to 0 before adding the new ask volume.
6. **@Ask Highlight** – Highlight color for the @Ask cell when the last trade occurs at the ask price. The highlight is cleared on the next trade.

7. **@Bid Highlight**– Highlight color for the @Bid cell when the last trade occurs at the bid price. The highlight is cleared on the next trade.
8. **Show Histogram** – Toggles the display of the histogram for the @Bid/@Ask columns.
9. **@Ask Hist Fill** – Fill color for the @Ask histogram (striping will apply).
10. **@Bid Hist Fill** – Fill color for the @Bid histogram (striping will apply).
11. **@Ask Text** – Text color for the @Ask column.
12. **@Bid Text** – Text color for the @Bid column.

@Bid/@Ask

The example below shows the @Bid and @Ask columns displayed in the DOM panel. Since the last trade occurred at the ask price, the @Ask cell is highlighted green (where the trade occurred).

@Bid/@Ask Example

4.2.9 Notes

The Notes column allows you to type a custom note for any price level. Notes are persisted when restarting MotiveWave™. For convenience all notes can be removed by pressing the eraser button in the tool bar (see below). If the DOM is attached to a chart, a guide may optionally be placed in the chart for each note. The guides and notes are synchronized between the DOM and the chart. Moving or removing a guide in the chart will affect the note in the DOM (and vice versa). The screen shot below illustrates some of the options available when adding or editing a note.

Notes Example
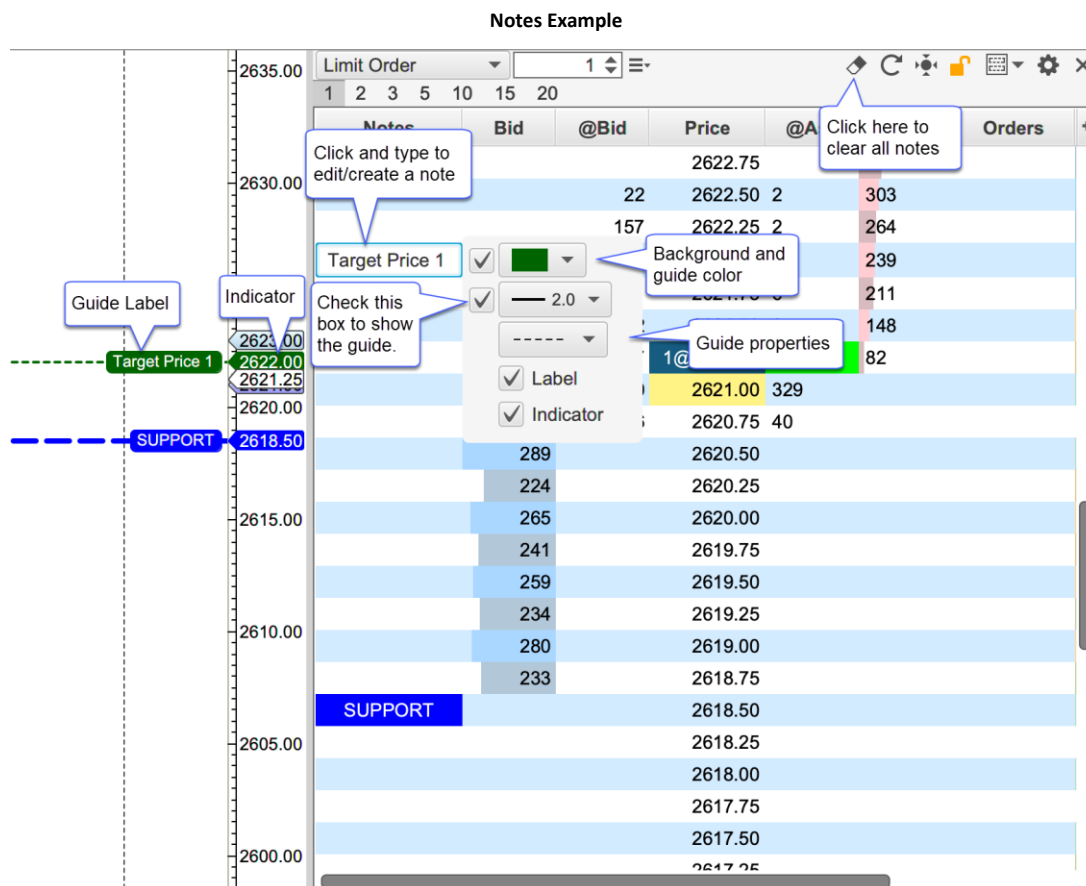
4.2.9.1 Note Styles

For convenience, notes including their formatting and guide settings may be saved as a style that can be applied later. Right click on an existing note to save or manage existing styles. An existing style can be applied to a note from the **Apply Style** menu.

Note Styles
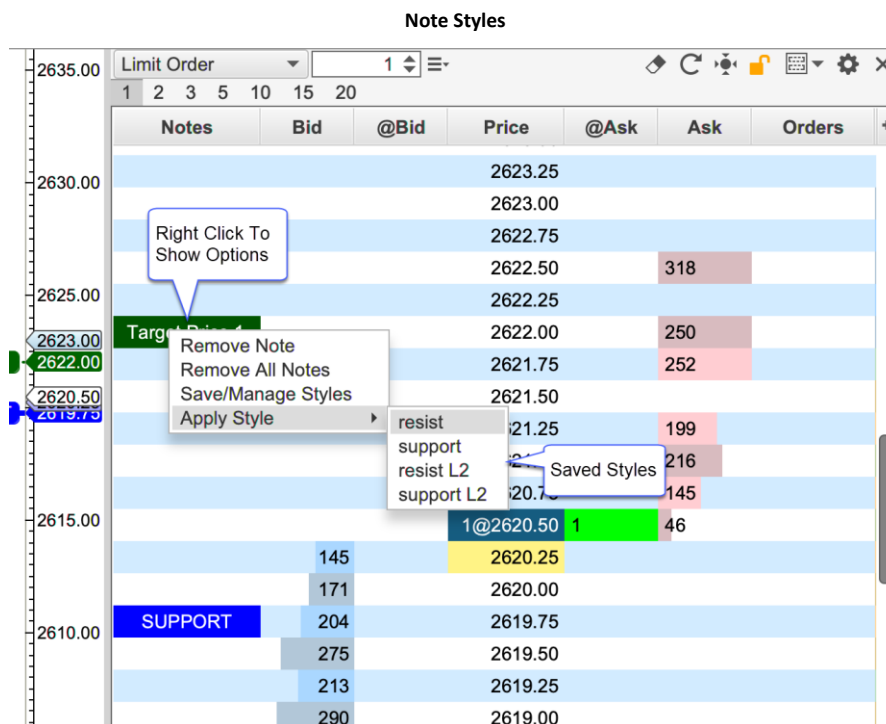
The dialog below will appear if you choose the **Save/Manage Styles** option. From this dialog, you can save a style and or manage existing styles. Use the up/down buttons to change the display order in the **Apply Styles** menu.

Save/Manage Styles

4.2.9.2 Note Preferences and Defaults

Note settings can be configured in the DOM Preferences dialog under the Notes tab:

1. **Notes Align** – Cell alignment for the Notes column.

2. **Show Guide** – This is the default setting for the showing the guide in the chart. This only applies to a DOM that is attached to a chart.
3. **Guide Width** – Default width for the guide line.
4. **Guide Dash** – Default dash pattern for the guide line.
5. **Show Guide Label** – Default setting for showing the label in the guide. The label will contain the same text in the Notes column.
6. **Guide Label Font** – Font for the guide labels.
7. **Guide Label Align** – Alignment for the guide labels.
8. **Show Indicator** – Default setting for showing the guide indicator in the price axis.
9. **Underlay** – Optionally draws the guides behind the price bars. This will also draw the guide indicators behind the other indicators on the chart.
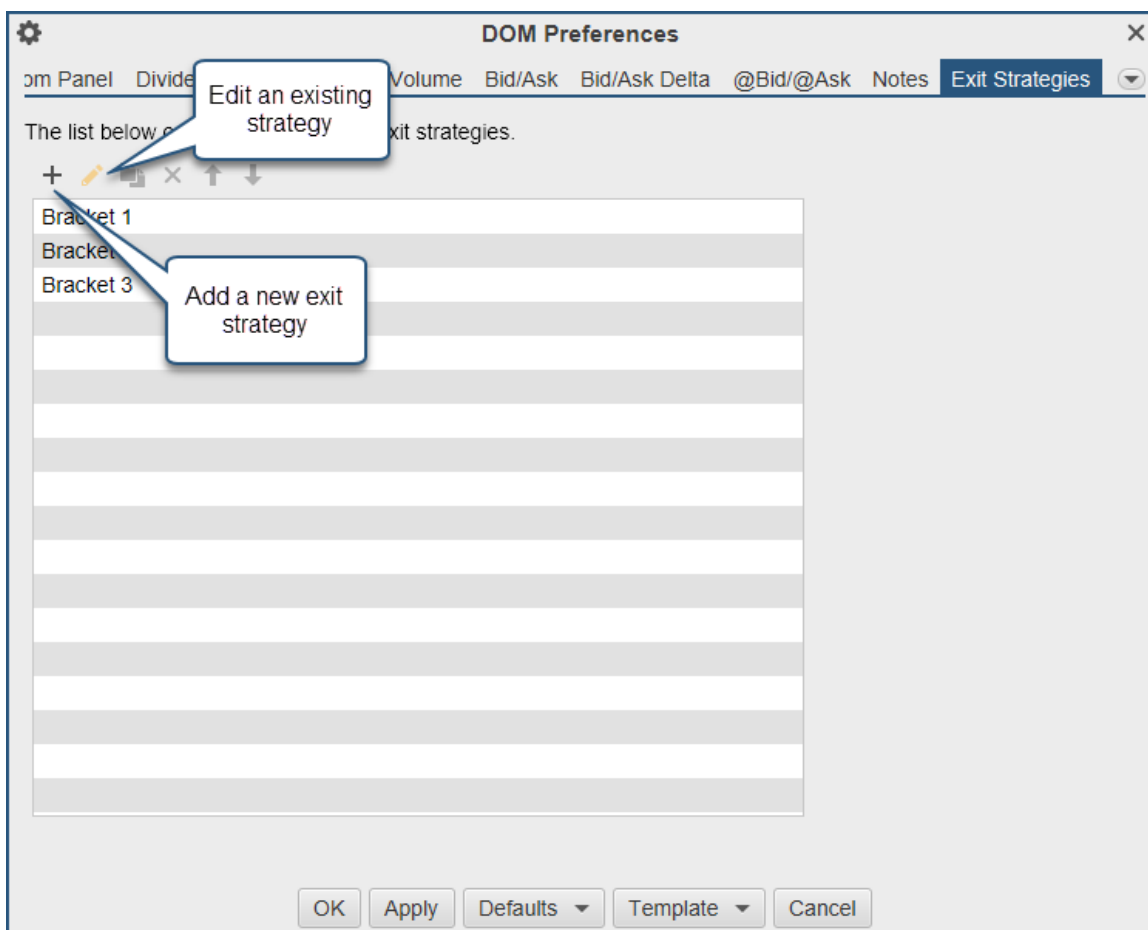
Notes
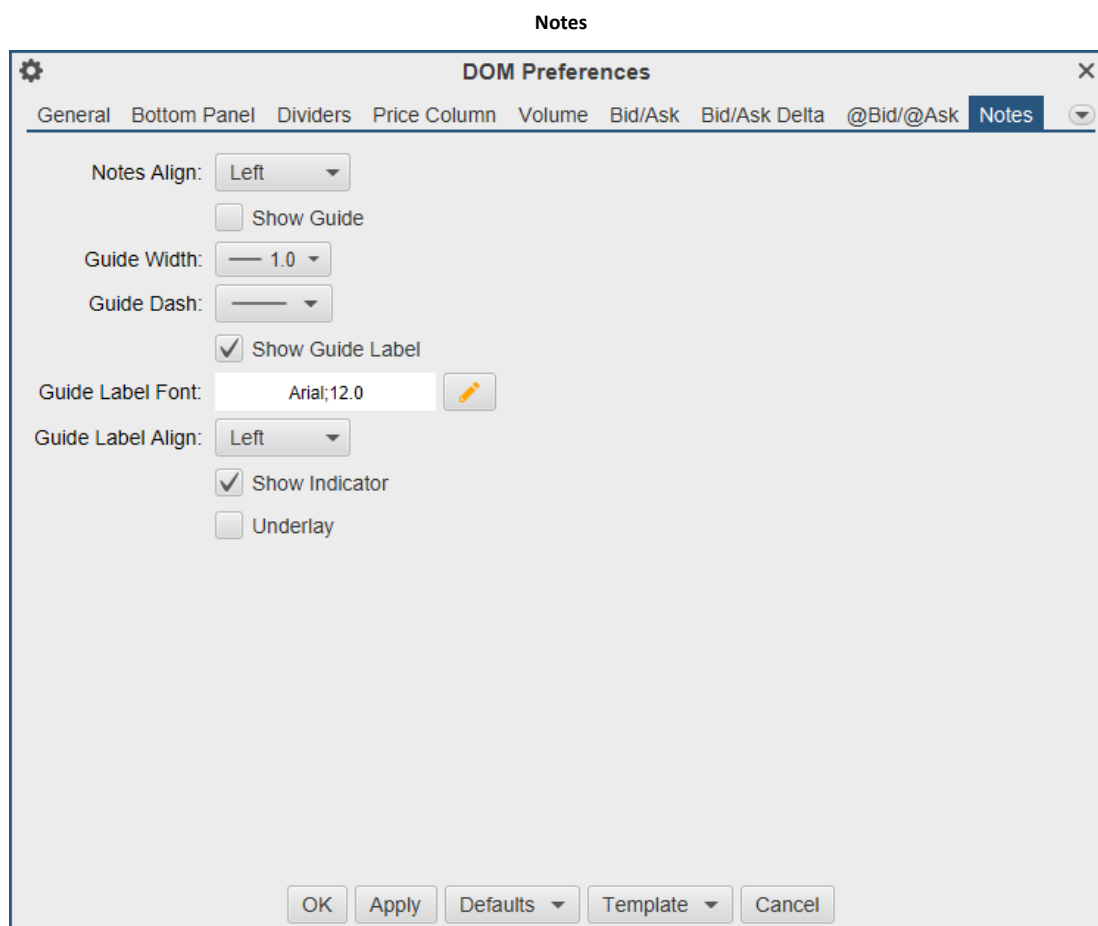
4.2.10 Exit Strategies

Exit strategies define how a position will be closed using a combination of one or more orders.
1. **+ Icon** – Click to add a new item.
2. **Pencil Icon** – Click here to edit the selected item.
3. **Paper Icon** – Copy an exit strategy.
4. **X Icon** – Delete the selected item.
5. **Up/Down Icons** – Move the items up or down in the panel.
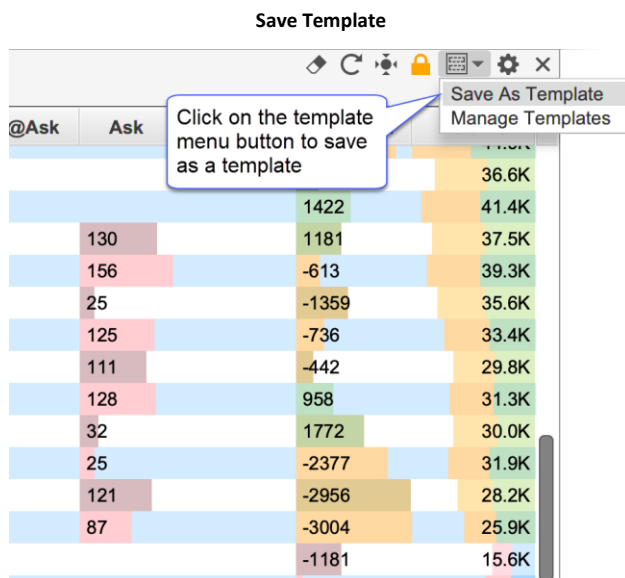
4.3 Templates

Templates allow you to save a specific configuration for later use. A DOM template includes the following:

1. **Width** – Width of the DOM panel.
2. **Table Columns** – Visible table columns and widths.
3. **Configuration Settings** – All settings in the DOM Preferences dialog.

Templates can be saved, managed and applied from the tool bar or the DOM Preferences dialog.

4.3.1 Saving Templates

From the tool bar, click on the Templates menu button (see screen shot below) and choose the **Save As Template** option. Alternatively, this can be done from the DOM preferences dialog (see **Template** menu button at the bottom of the dialog).
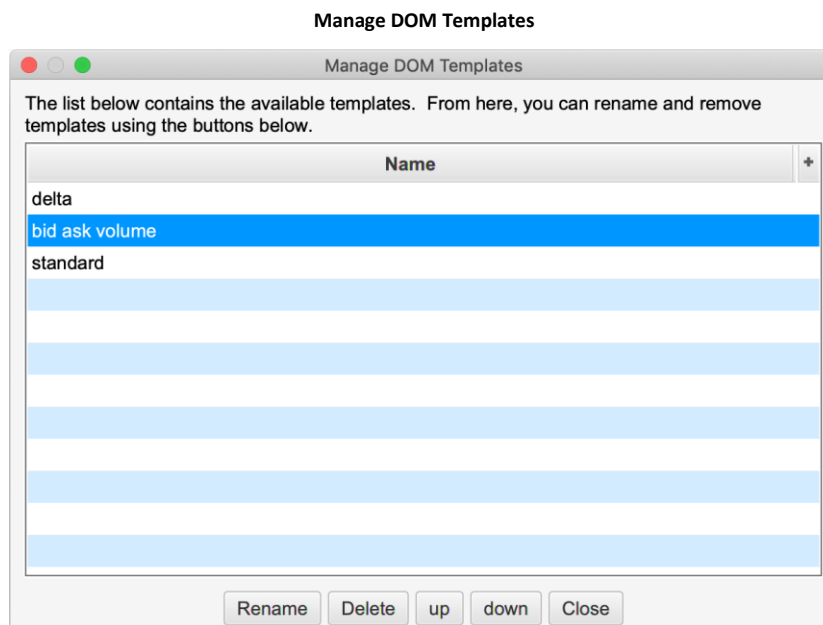
Save Template

Enter a unique name for the template and press the Save As button at the bottom of the dialog. Existing templates will be displayed in the list box. You can overwrite an existing template by selecting it.

Save As Template
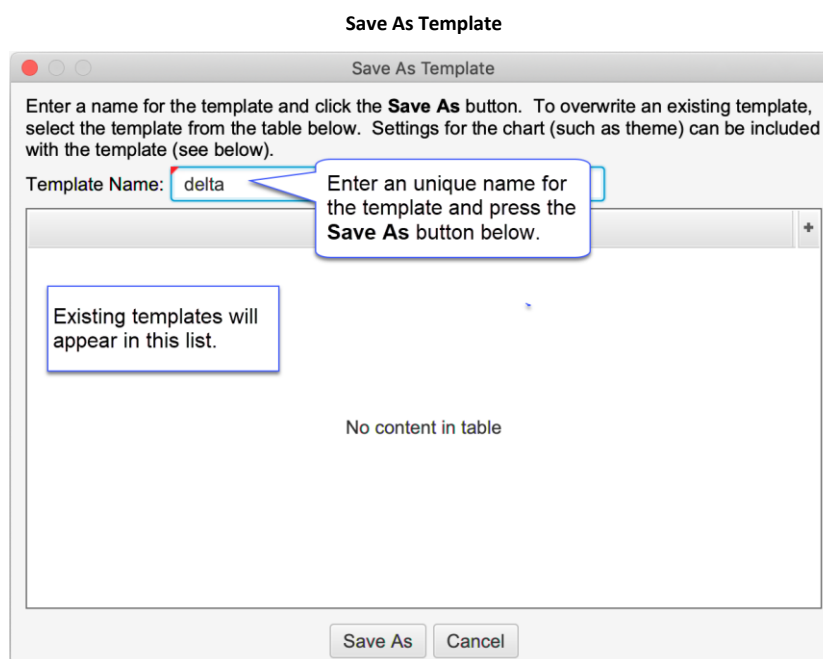
4.3.2 Managing Templates

The Manage Templates option will open the dialog below.   This dialog will allow to you to rename templates, delete them or change the order in which they appear in the templates drop down.

Manage DOM Templates

4.3.3 Applying Templates

A template can be applied to the DOM panel with 2 mouse clicks. Open the templates drop down and select the name of the template you would like to apply. The settings from the template (including the width of the panel and visible columns) will be applied.

Applying Templates
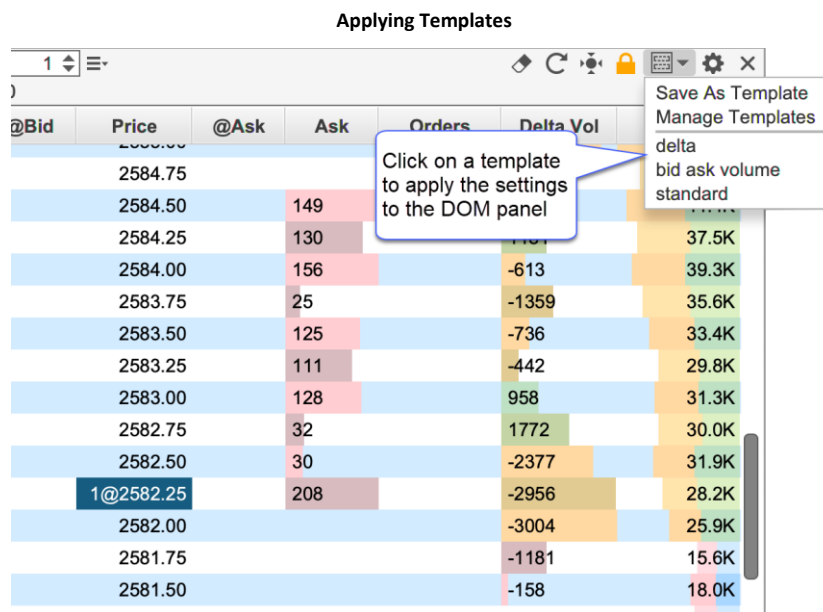
4.4 Market By Order

Market by Order displays individual order sizes in the Bid/Ask Columns (currently Rithmic connections only). For more details on Market By Order, see: https://www.cmegroup.com/education/market-by-order-mbo.html Note: this information is also available in the SDK.

The screen shot below shows an example of the Market by Order feature on the S&P E-mini contract. Limit order sizes are displayed in priority order. Smaller order sizes are auto hidden for simplicity. If you would like to see more detail, increase the width of the Bid or Ask columns by clicking/dragging the edge of the column in the table header.

Market By Order Example
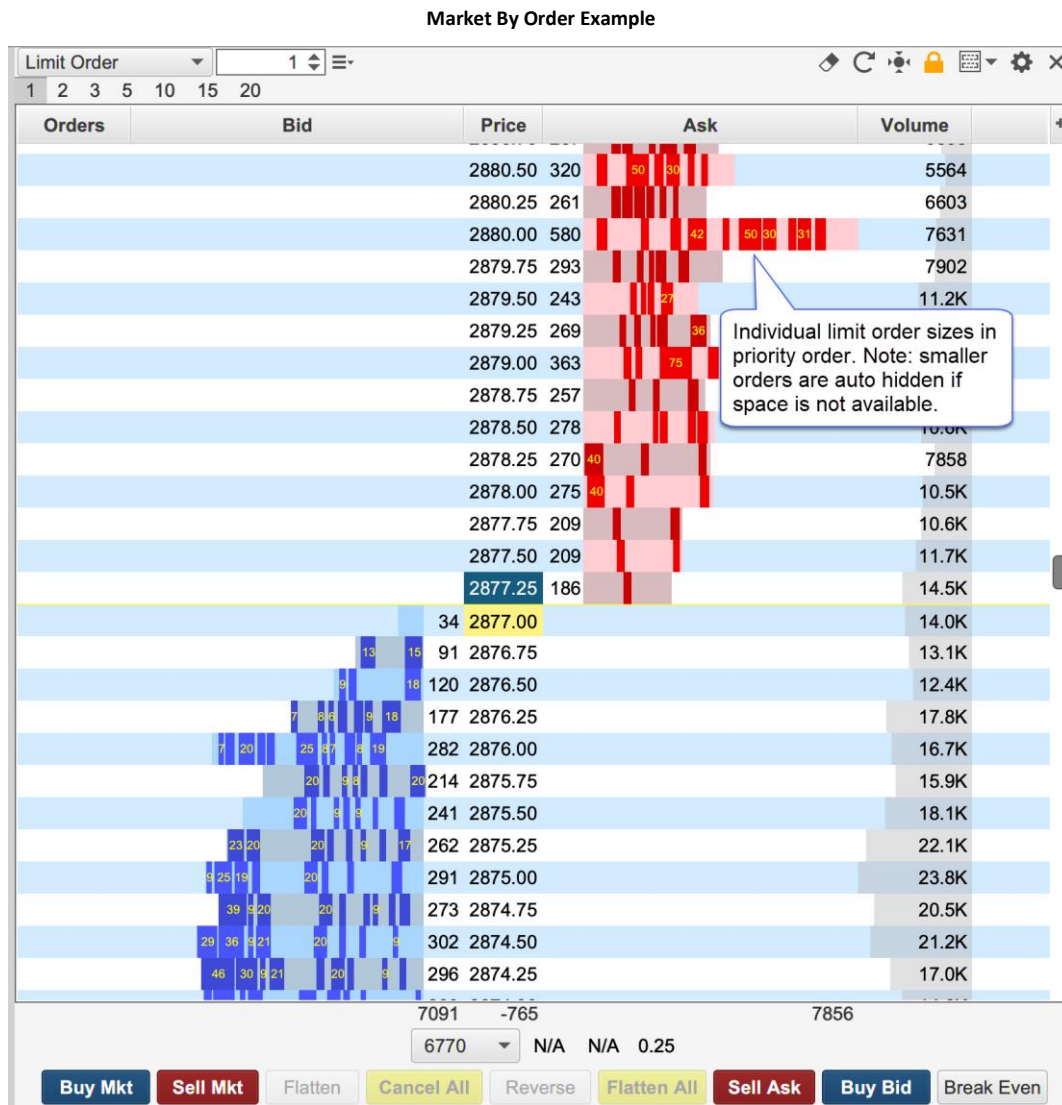
Configuration settings for this feature can be found in the **Bid/Ask** tab of the DOM Preferences Dialog (click on the Gear icon in the tool bar).

Bid/Ask MBO Configuration
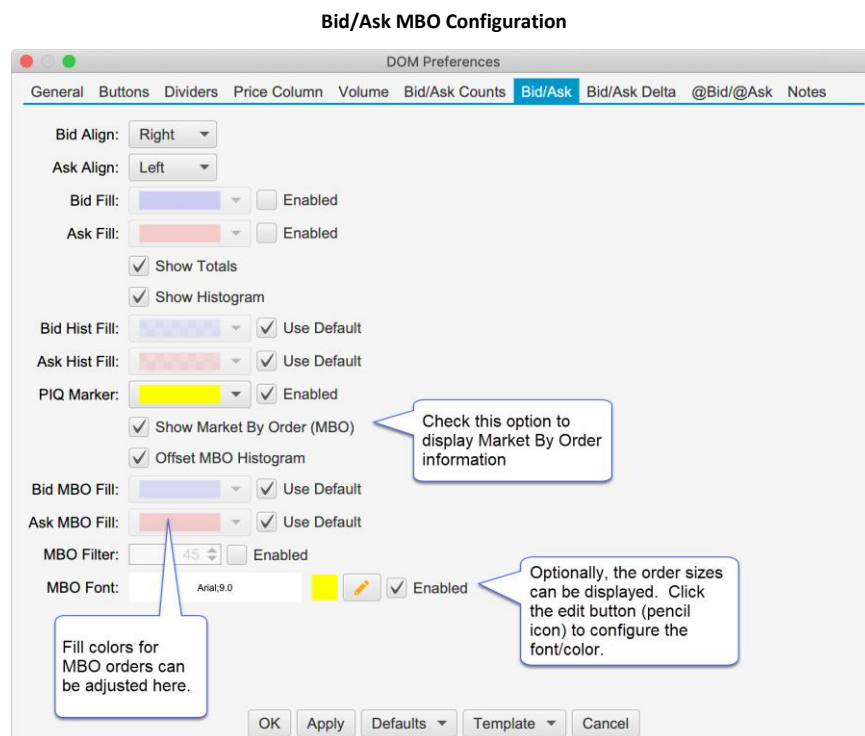
The following options are available for configuring Market by Order:

- **Show Market by Order (MBO)** – Toggles the display of the order sizes in the Bid and Ask columns.
- **Offset MBO Histogram** – Offsets the histogram to the left/right of the Bid or ask size to avoid obscuring order sizes at the front of the priority queue.
- **Bid MBO Fill** – Fill color for visible order sizes in the Bid column
- **Ask MBO Fill** – Fill color for the visible order sizes in the Ask Column
- **MBO Filter** – Optionally, filters orders that are smaller than the given size
- **MBO Font** – Optionally display the order size (if space available). Click on the edit button to configure the font size/color.

The screen shot below shows the MBO filter option with the size set to 50:

MBO Filter Example
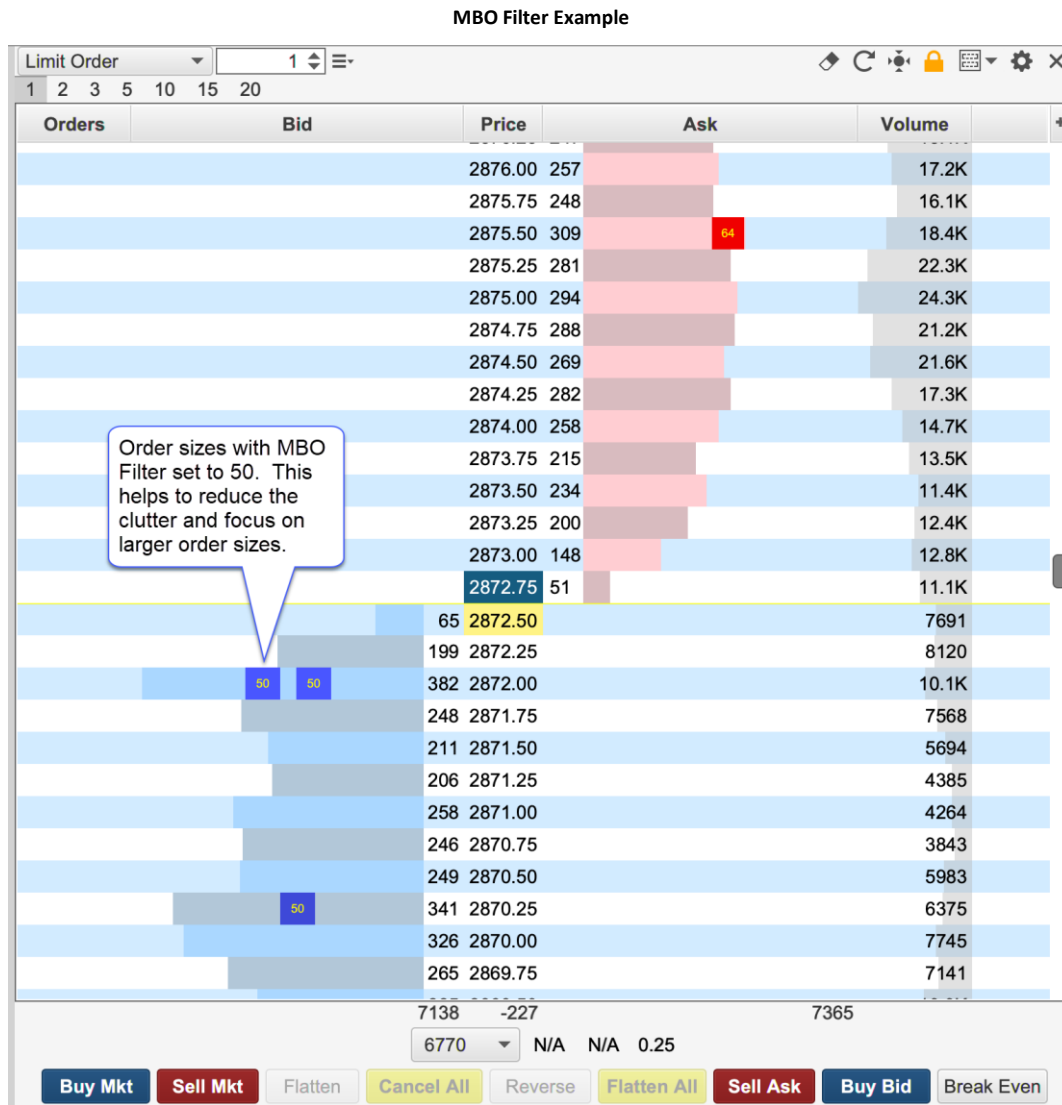
5 Time and Sales

The Time and Sales panel can be configured in the following ways:

1. **Rows** – Select the amount of rows to display.
2. **Location** – Select the location of the time and sales. Right or left of the chart.
3. **Colors** – Color based on the trade happening at the bid or ask or no coloring at all.
4. **Text Color** – The text color for the Time & Sales panel can now be configured.
5. **@Ask Text** – Select color for trades that happen at the ask.
6. **@Bid Text** – Select color for trades that happen at the bid.
7. **Min Trade Size** – Only show trades this size or larger.
8. **Max Trade Size** – Only show trades this size or smaller.
9. **Aggregate Period (ms)** – Trades are aggregated if they occur within the aggregation window, have the same price and them same Ask Tick value. These trades must occur in sequence (no non-matching trades between them).
10. **Highlight Big Sizes** – Background highlighting can be applied to larger trade sides.
11. **Locked** – Stop new sales from being entered. Can be used to analyze trades without them disappearing from view.
12. **Show Grid** – Show grid lines for rows and columns.

The following screen shot shows the changes that have been made to Time & Sales Preferences dialog (click on the gear icon on the tool T&S toolbar).

Time and Sales Preferences
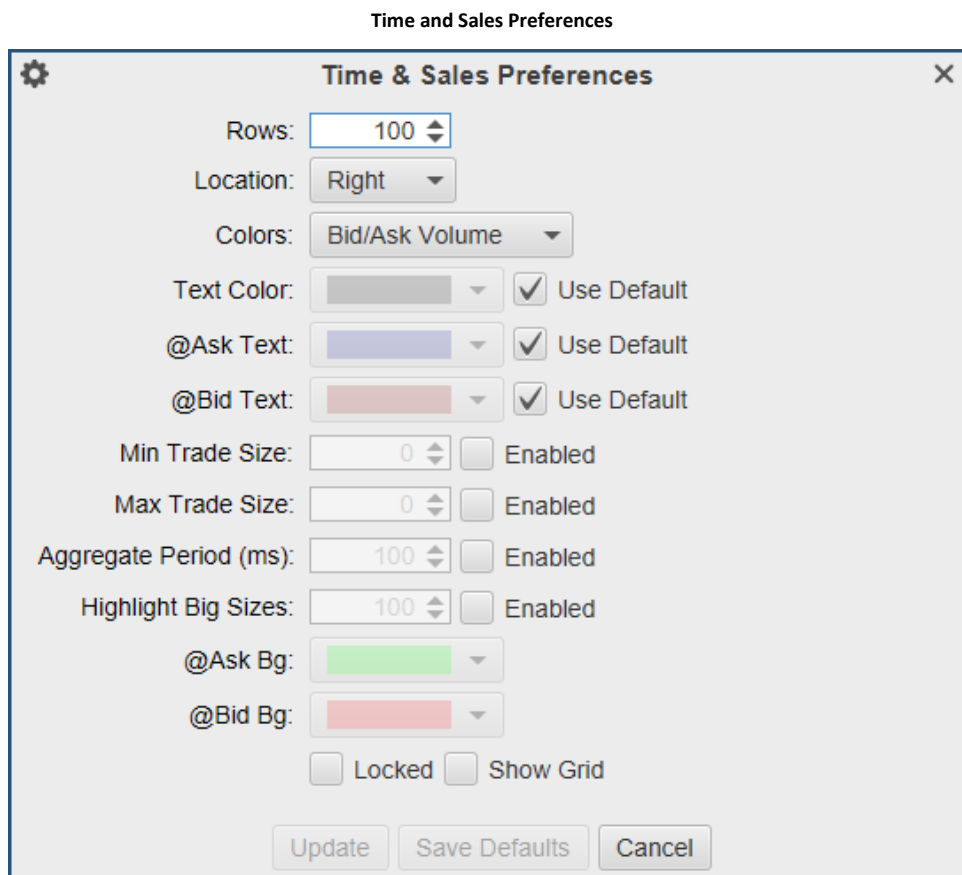
In the screen shot below you can see the highlighting applied to rows that have sizes of 25 or higher.

Time and Sales Example

6 Delta Volume

Delta volume (*Study -> All Studies* from the top menu bar) displays the difference between the Ask and Bid Volume as a candle chart in a separate graph. Positive values indicate buying pressure and negative values indicate selling pressure. The following screen shot shows the available settings for this study:

1. **Number of Bars** – Optionally limits the number of bars that are displayed. This is useful if you want to avoid loading a large amount of historical tick data. Check "Show All" to show a delta bar for every loaded candle.
2. **RTH Data only** – Check this box to only show bars that occurred during regular trading hours.
3. **Bar Type** – Type of bar to display (ie OHLC, Candle, Line, Bar etc).
4. **Indicator** – Settings for the latest value indicator in the vertical axis.

Delta Volume Settings

Delta Volume Example
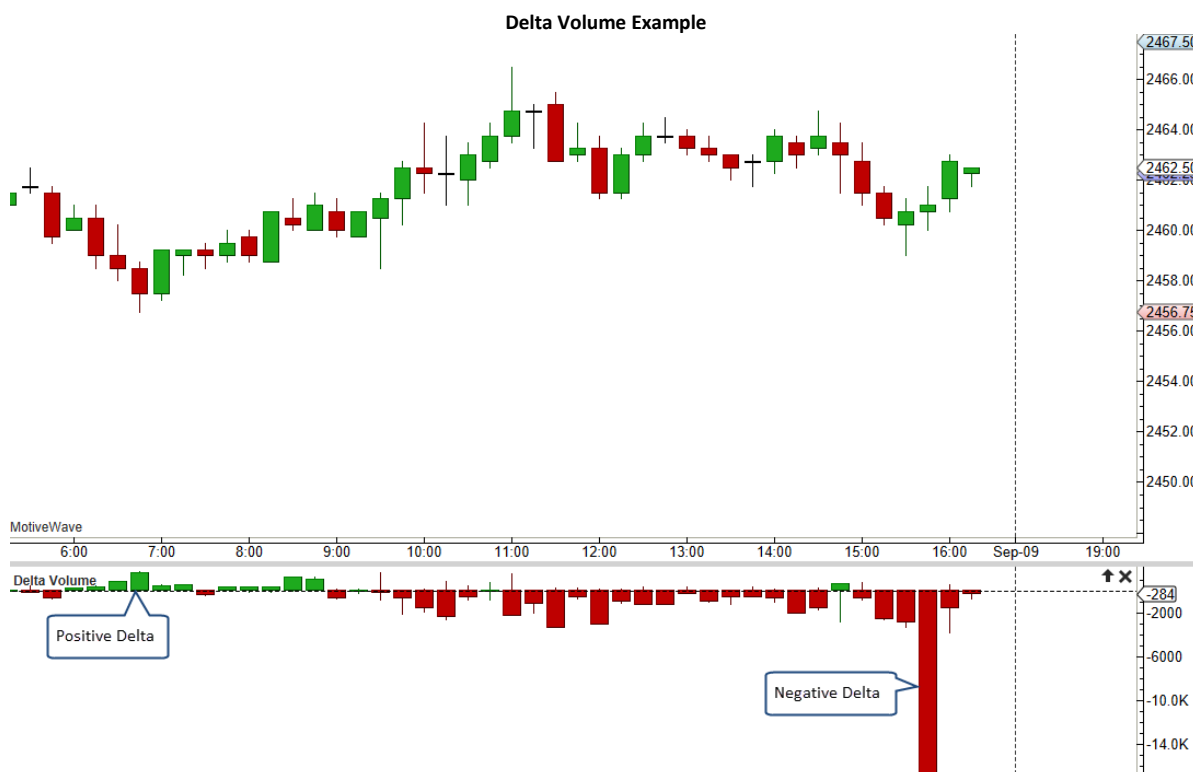
7 Cumulative Delta

Plots the accumulation of the delta (difference between ask and bid volume). The delta total is reset at the beginning of each session (RTH or ETH). These values are displayed as price bars (candles) in a separate plot.

1. **Bar Type** – Type of bar to display (ie OHLC, Candle, Line, Bar etc).
2. **Indicator** – Settings for the latest value indicator in the vertical axis.
3. **Reset RTH** – Reset back to zero at regular trading hours, otherwise reset will be on the extended trading hours.
4. **Recalculate On Close** – Downloads historical data that replaces the live data after each bar close. This will cause loading after each bar closes.

Cumulative Delta Settings

Cumulative Delta Example

Cumulative Delta study
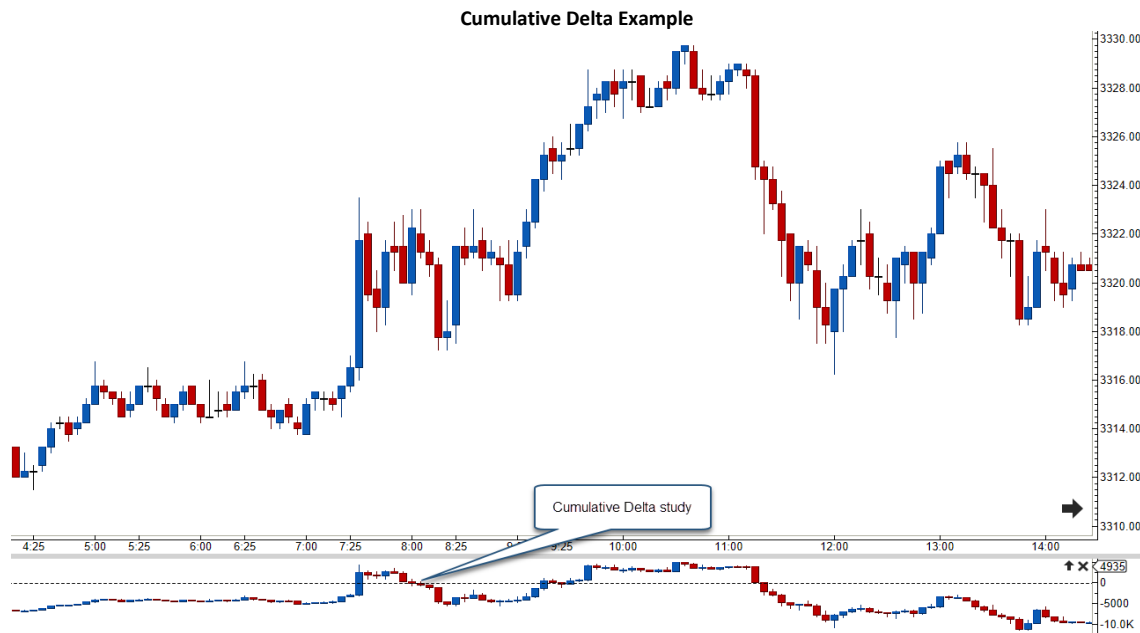
8 Bid/Ask Volume

Plots the bid volume and ask volume as separate paths and optionally shows where these paths cross (generating signals). This study can be accessed from the top menu bar: *Study -> Volume Based -> Bid/Ask Volume*. The following screen shot shows the general settings for this study:

1. **Bar Count** - Optionally limits the number of bars that are displayed. This is useful if you want to avoid loading a large amount of historical tick data. Check "Show All" to show for all bars.
2. **RTH Data only** – Check this box to only show data that occurred during regular trading hours.
3. **Ask Volume** – Settings for the ask volume path.
4. **Bid Volume** – Settings for the bid volume path.
5. **Ask Vol Ind -** Settings for the latest ask volume indicator in the vertical axis.
6. **Bid Vol Ind -** Settings for the latest bid volume indicator in the vertical axis.
7. **Up Marker** – Displays an up marker where the ask volume crosses above the bid volume.
8. **Down Marker** - Displays a down marker where the ask volume crosses below the bid volume.

Bid/Ask Volume General Tab

This study generates signals when the ask volume crosses above or below the bid volume. These signals can be configured to generate alerts:

Bid/Ask Volume Signals Tab

The following screen shot shows an example of the Bid/Ask Volume study. Markers are enabled to indicate where the ask volume path crosses the bid volume path.

9 Speed Of Tape

The Speed of Tape study measures the speed of a given statistic over an interval (in seconds).

This study uses tick data to compute the statistics and display historical values. The following screen shot displays the available configuration options:

1. **Speed Interval (sec) -** The interval in seconds for computing the statistic. For example, number of ticks that occurred in the last 15 seconds. For historical values this will be the computed from the end time of the price bar.
2. **Statistic** – Defines what you want to measure. This has the following values:
    a. **Ticks** – Number of ticks that occurred.
    b. **Volume** – Total volume that occurred during the interval.
    c. **Ask Volume** – Volume that occurred at the ask price.
    d. **Bid Volume** – Volume that occurred at the bid price.
    e. **Delta Volume** – Difference between the ask volume and the bid volume for the given interval.
3. **Bar Color** – Color of the bars. Press the edit button for more configuration options.
4. **Speed Indicator** – Configuration settings for the latest speed value (displayed on the vertical axis).
5. **Filter Count** – Used to filter generate signals. This is disabled if the auto filter option is used.
6. **Auto Filter Period** – Used to generate signals when the closing value for the bar crosses above the SMA of the given period.
7. **Auto Filter Line** – Configuration for the auto filter line.
8. **Highlight color** – Highlights bar where the closing value is above the filter value. Optionally the price bars can be painted this color as well.
9. **Auto Filter Indicator** – Display configuration for the current auto filter value in the vertical axis.
10. **Up Marker** – Displays a marker where the latest value has crossed above the filter.
11. **Down Marker** – Displays a marker where the latest value has crossed below the filter.

Speed Of Tape

Displays the number of ticks (or volume) that have occurred in the last interval. Signals may be generated using specific value of an auto filter (moving average).

General | Signals | Options

Speed Interval (sec):	15
Statistic:	Ticks
Bar Color:	
Speed Indicator:	Line ☑ Display
Filter Count:	100
Auto Filter Period:	14
Auto Filter Line:	— 1.0 ☑ Display
Highlight Color:	☑ Paint Price Bars
Auto Filter Indicator:	Line ☑ Display
Up Marker:	☐ Enabled
Down Marker:	☐ Enabled

Ticks
Volume
Bid Volume
Ask Volume
Delta Volume

Create | Save Defaults | Cancel

Speed of Tape Example

EPM8 - 15 min

Price bars painted where a signal has occured

Speed Of Tape(Ticks,15)

Signal marker

Current Auto Filter Value

Current Speed

OFA®(8,3) 1 min 5 min 10 min 15 min 20 min 30 min 45 min 1 hour 2 hour 6 hour 1 day 1 week 2 week >> 2
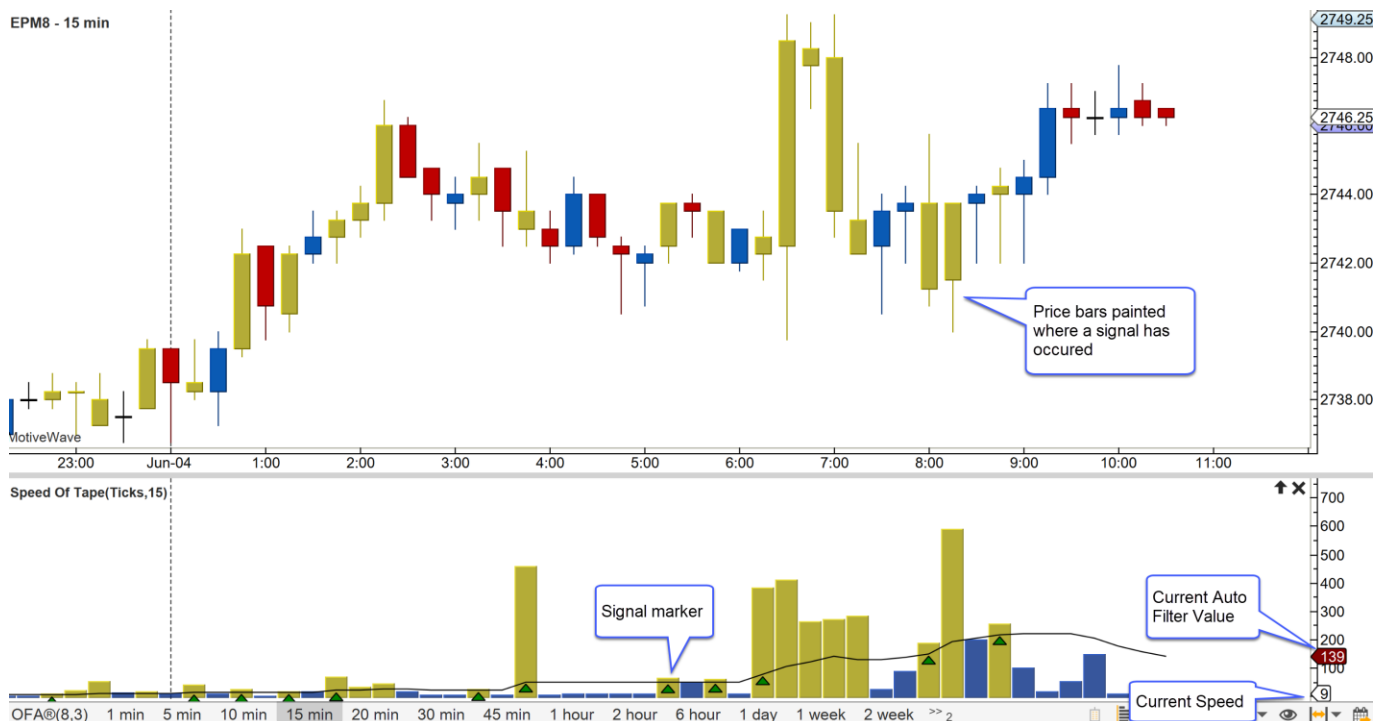
10 DOM Power

Displays historical bid/ask sizes for the Depth of Market (DOM). Note: Historical DOM values are built in memory. Recording begins when the study is opened or a DOM panel is opened. The delta is displayed to show where support and resistance exists. The delta is the difference between the total bid size and the total ask size. For convenience, the bid sizes are shown as negative values so they will appear below the ask bars.

DOM Power study

DOM Power Example
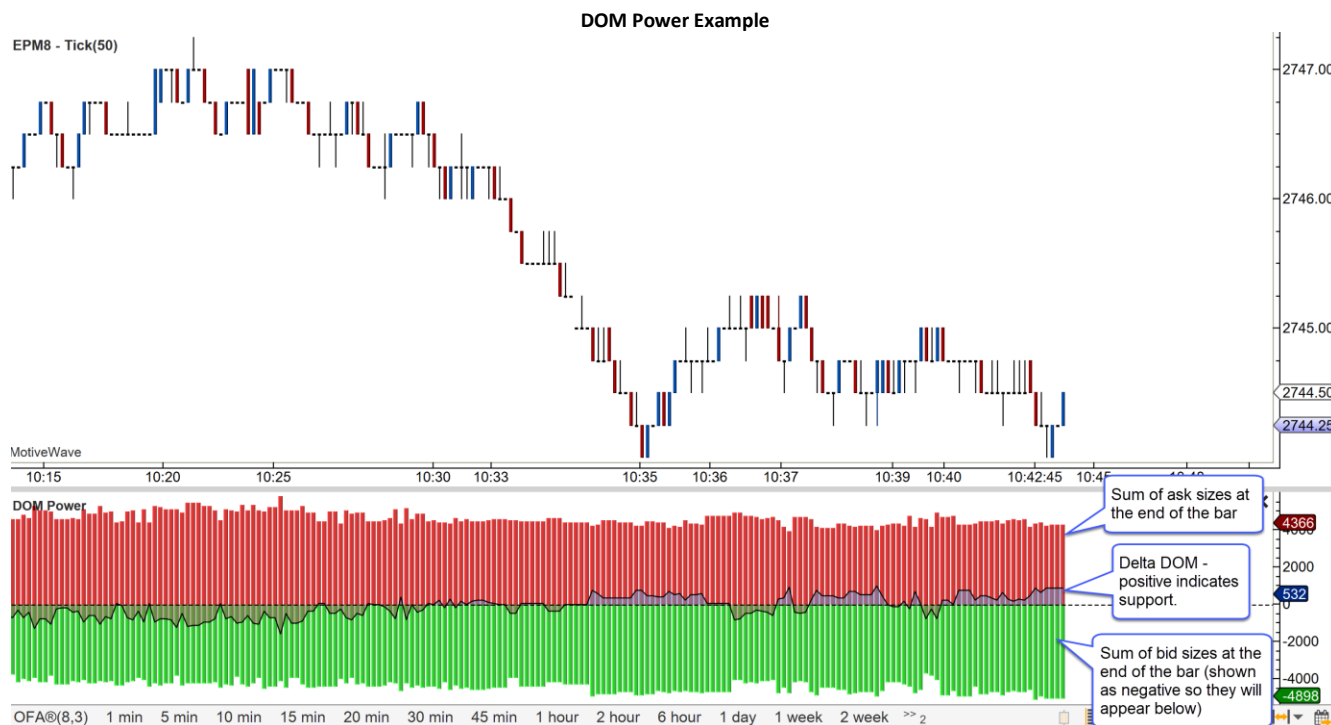
10.1 DOM History

Graphically displays historical Depth of Market sizes captured at the end of the bar (since version 5.4). Blocks are shaded according to their relative size. Darker shading indicates higher sizes (lighter shading on dark chart themes). Blocks where no depth currently exists are extended forward to show where orders may still exist (most depth of market feeds are limited to 10 bid/ask depth).

This study can be very useful to discover where potential support and resistance levels exist based on the cumulative size of the orders to buy or sell at the given price.

Configuration options for this study are simple. Just choose the base color for the ask and bid sizes. The shading is computed by changing the opacity of the color relative to the maximum size present in the DOM history.

1. **Max Depth Levels** – Limit the number of depth levels on connections that display full market depth. This is done for performance reasons.
2. **Min Quantity** – Only display depth levels of this size and larger.
3. **Max History** – Limit the DOM history for performance reasons.
4. **Extend Latest DOM** – Extend the most recent DOM level forward.
5. **Gradient Colors** – Select the DOM history gradient colors for the bid and ask.
6. **Level 1-5** – Select colors to highlight certain depth levels and above.

DOM History study
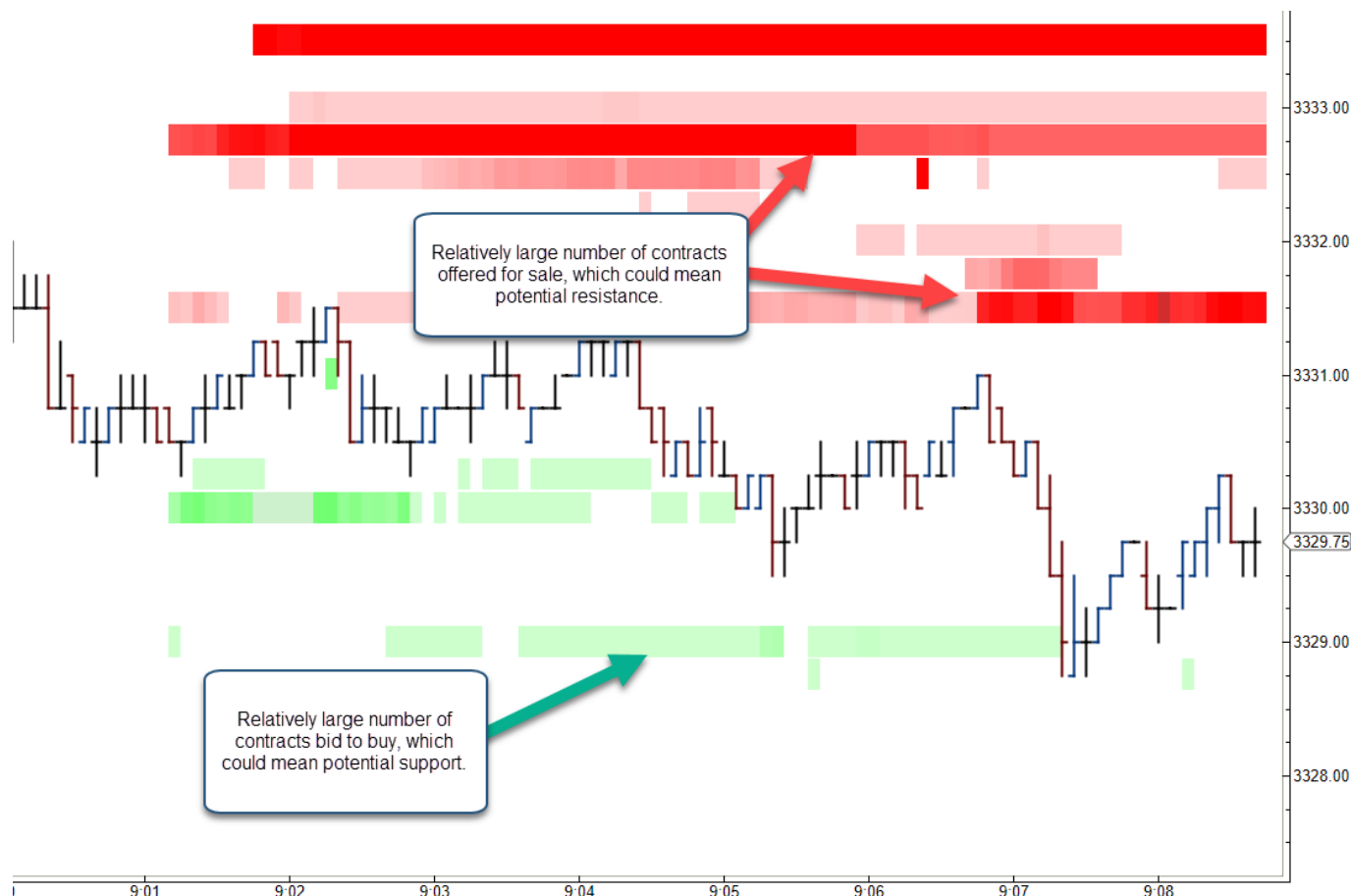
DOM History Example

10.2 Big Trades

This study shows historical trades on the chart. These are computed using historical tick data. This study has the following options:

1. **Aggregate Period (ms)** – Optionally aggregates trades that have occurred within the aggregate period (milliseconds). These trades must occur at the same price and the @Ask flag must be the same.
2. **Outline** – Options include:
   a. Circle (default)
   b. Rectangle
   c. Rounded Rectangle
   d. None (text only)
3. **Min Trade Size** – Up to 5 trade sizes can be defined to distinguish between smaller and larger trades. Use the Min Trade Size for each level to define the tiers.
4. **@Ask Trades** – These fields define the font, font color and background color for trades that occurred at the ask price. The size of the trade can be modified by changing the size of the font. Text can be hidden by choosing the same font color as the background color.
5. **@Bid Trades** – Same as @Ask trades, but applies to trades that occurred at the bid price.
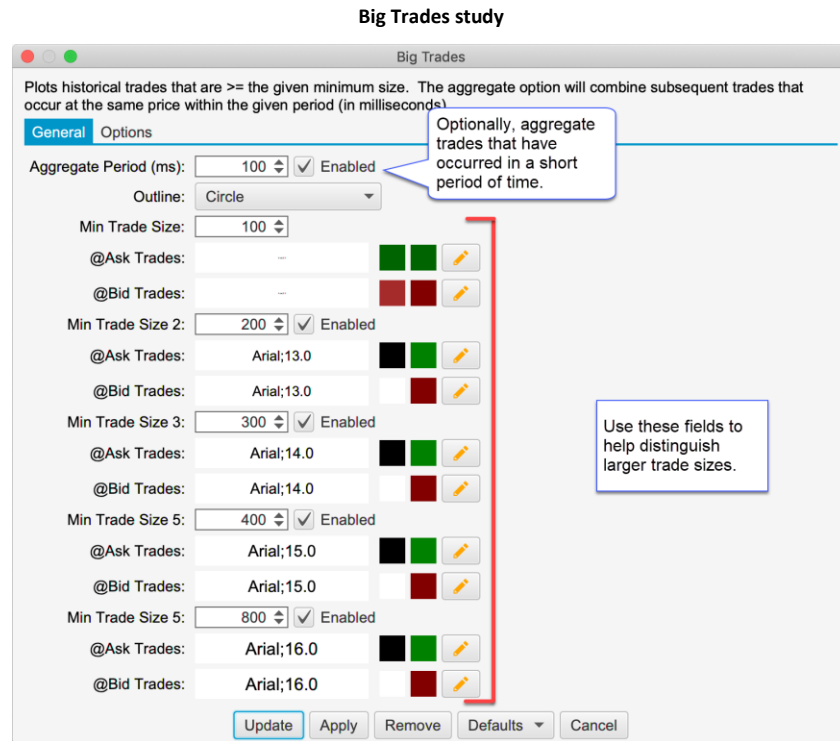
Big Trades study

The screen shot below shows the Big Trades study with the settings from above. For convenience larger trades are drawn on top (potentially hiding smaller trades underneath). The following limitations are imposed to avoid performance issues with the study:

1. **Max 25000 Trades** – The study will only compute a maximum of 25000 trades that meet the given criteria.
2. **Max 500 Visible** – A maximum of 500 trades will be drawn on the chart at one time.

Big Trades Example

ESM9 (Alternate 1) - 5 min
Big Trades(100)

Larger trades are always drawn on top
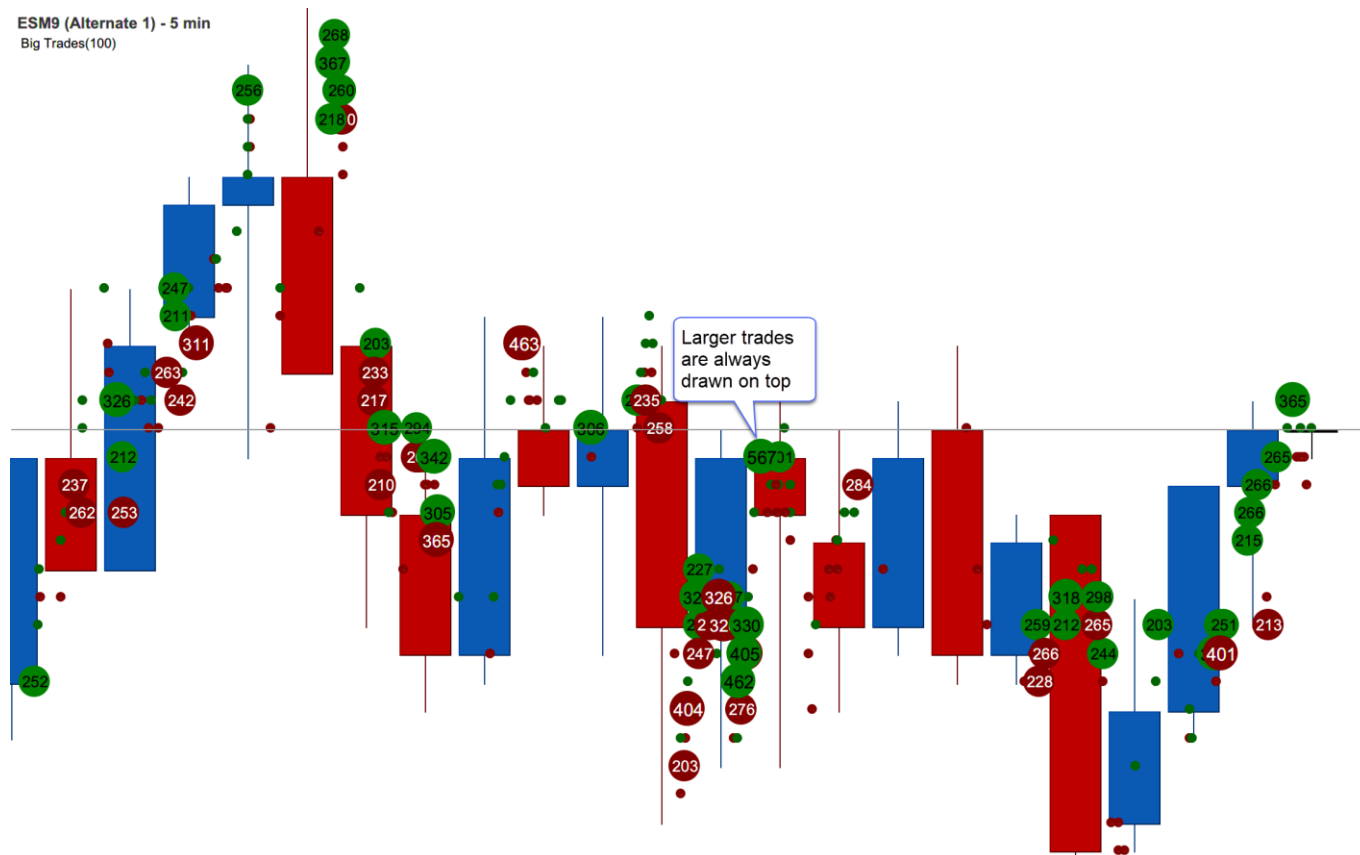
10.3 Speed Gauges

Speed gauges are useful for displaying live statistics on the price graph (since version 5.4). Up to 16 gauges can be displayed on a single price graph for multiple instruments (4 per study). Optionally, a historical graph shows values over the past minute.

Each study can display up to 4 gauges. The following summaries the configuration options for this study:

1. **Location** – Specifies where on the price graph to display the gauges.
2. **Show Gauge** – Toggles the display of the graphical gauge that shows the range of values.
3. **Gauge Tabs** – Each tab allows for the configuration of up to 4 gauges.
4. **Instrument** – Instrument used for the statistic. Check "Chart Instrument" to use the same instrument as the active chart.
5. **Statistic** – The following statistics are supported:
   a. **Ticks** – Number of ticks for the given interval (in seconds).
   b. **Volume** – Total volume that occurred in the current interval.
   c. **Bid Volume** – Total volume that occurred at the bid price.
   d. **Ask Volume** – Total volume that occurred at the ask price.
   e. **Delta Volume** – Difference between the ask volume and bid volume.
   f. **Delta Spread** – Difference between the current best bid size and the best ask size .
   g. **Delta DOM** – Difference between the total bid size and the total ask size in the DOM (Depth of Market).

6. **Interval (sec)** – Interval in seconds over which to compute the statistic. Note: this is only used for some of the statistics.
7. **Show History** – If checked this will show a historical graph (for the past minute) below the current value.
8. **Use Gradient** – Shows a gradient (green – yellow – red) as the background on the gauge.

Speed Gauges

Speed Gauge

Displays 1 or more gauges that illustrate the current market speed.

Display | Gauge 1 | Gauge 2 | Gauge 3 | Gauge 4 | Options

Location: Bottom Right ▼

Top Left
Top Right
Bottom Left
Bottom Right

Show Gauge: ✓

Update | Apply | Remove | Save Defaults | Cancel

Speed Gauge 1

Speed Gauge

Displays 1 or more gauges that illustrate the current market speed.

Display | Gauge 1 | Gauge 2 | Gauge 3 | Gauge 4 | Options

Instrument: EPM8 ▼ 🔍 ✓ Chart Instrument

Statistic: Ticks ▼

Ticks
Volume
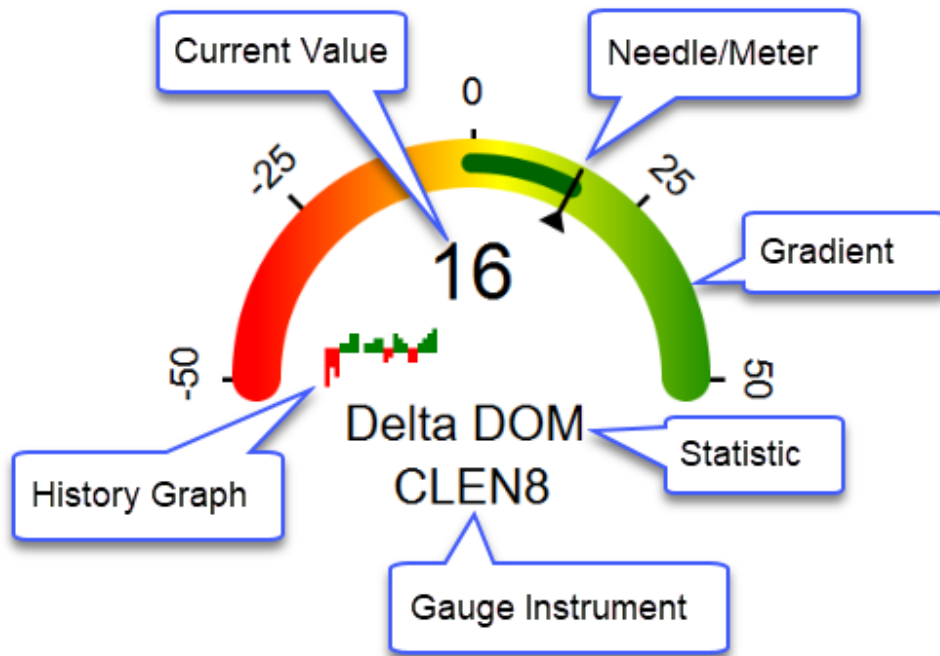Bid Volume
Ask Volume
Delta Volume
Delta Spread
Delta DOM

Interval (sec): 15

Show History: ✓

Use Gradient: ✓

Update | Apply | Remove | Save Defaults | Cancel

The following diagram names some of the elements of the speed gauge:

The example below shows speed gauges in the top right and bottom right corners of the price graph.

These gauges are for a different instrument (CLEN8)

Up to 4 gauges may be displayed in each corner.

11 Components

Starting with version 5.3 of MotiveWave™, two components have been added to the General tab of the Components panel. These components offer a convenient way to drag/drop a TPO or Volume Profile on a chart and dynamically adjust the range using the resize points.

Volume Profile and TPO Components
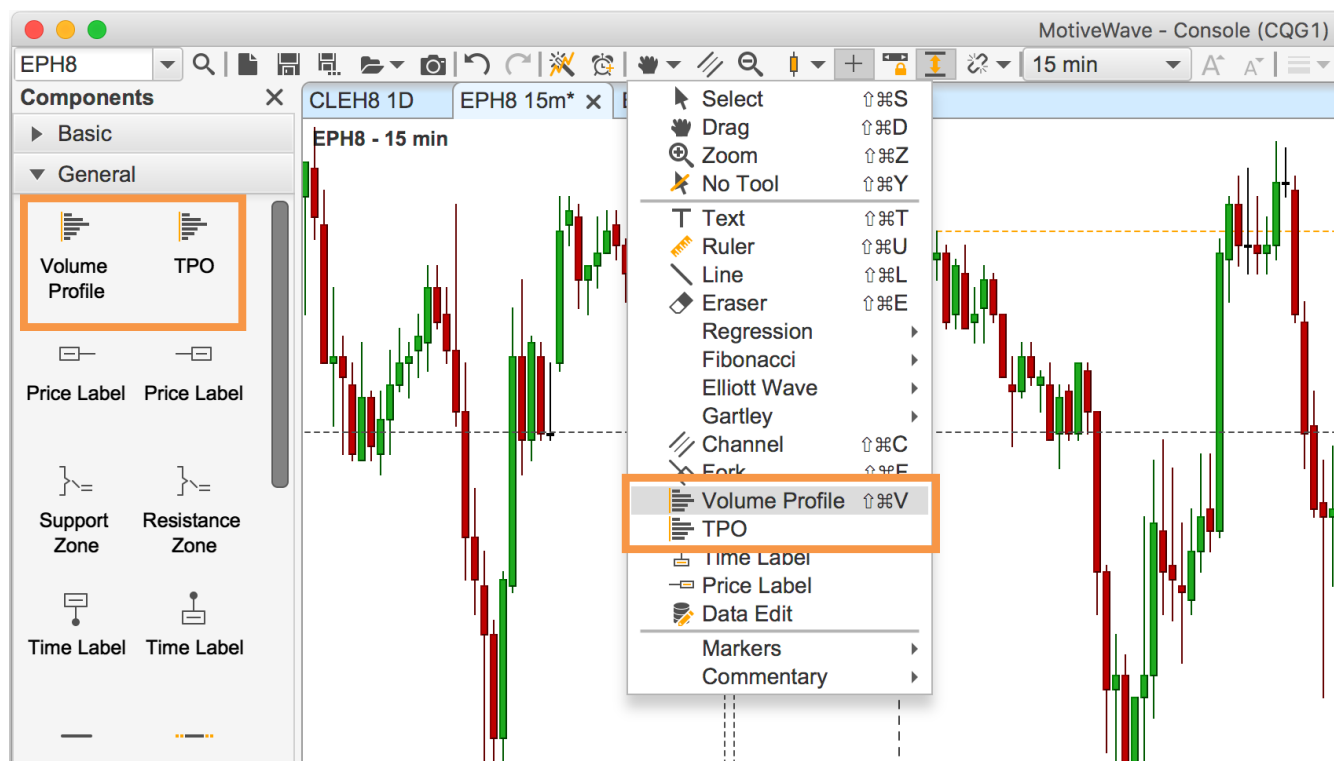
11.1 Volume Profile Component

The Volume Profile component uses tick data to display a histogram of volume at each price level for the given range of price bars. The volume profile will optionally compute common information such as:

1. Value Area.
2. Point of Control.
3. Bid vs Ask Volume and Deltas.
4. Midpoint, High/Low values.

The screen shot below shows an example of a live volume profile (updates in real time) that is aligned to the right. A profile can be made "live" by dragging the right resize point to the latest price bar.

The screen shots below show the configuration options available from the properties dialog (double click on the volume profile object to display). Some of the notable options include:

1. **Tick Interval** – Use this option to specify the number of ticks that make up each volume bar. In the example below 4 ticks are used (for the S&P mini futures contract this represents a single point (min tick is 0.25)).
2. **Use Historical Bars** – Enable the use of minute bars instead of tick data.
3. **Display Side** – Options include Left and Right. If displaying a "Live" profile the "Right" option will right justify the profile next to the price axis.
4. **Max Bar Width** – Maximum width in pixels of the volume profile.
5. **Bar Color** – Color for the volume profile bars.
6. **POC Bar Color** – Use this to highlight the "point of control" volume bar.
7. **Bid/Ask Colors** – Enable this option to display the bid vs ask volume in the volume bars. (Note: this will override the bar color option).
8. **Fill Color** – This will display a background fill color for the entire range of the volume profile component.
9. **Volume Totals** – Displays the total volume for each bar using the given font. The label will not be displayed if there is not enough room.
10. **POC/Mid/High/Low Lines** – Optionally draws lines for these values.
11. **Line/Label Font** – Font for price values on the lines above. If not enabled, the price labels will not be displayed.
12. **Show High/Low** – Displays text with the high and low values.

Volume Profile Properties

The value area for the profile may optionally be displayed from the "Value Area" tab (see below):

1. **Value Area Percent** – Percentage of volume to be included in the value area. The value area will always include the point of control (POC).
2. **Bar Color** – Optionally change the bar color for bars included in the value area.
3. **Range Fill** – Fill color to use as a background color for the value area.
4. **Range Lines** – Displays horizontal lines at the top and bottom of the value area. Price labels are controlled using the "Line/Label Font" option in the "General" tab.

Value Area
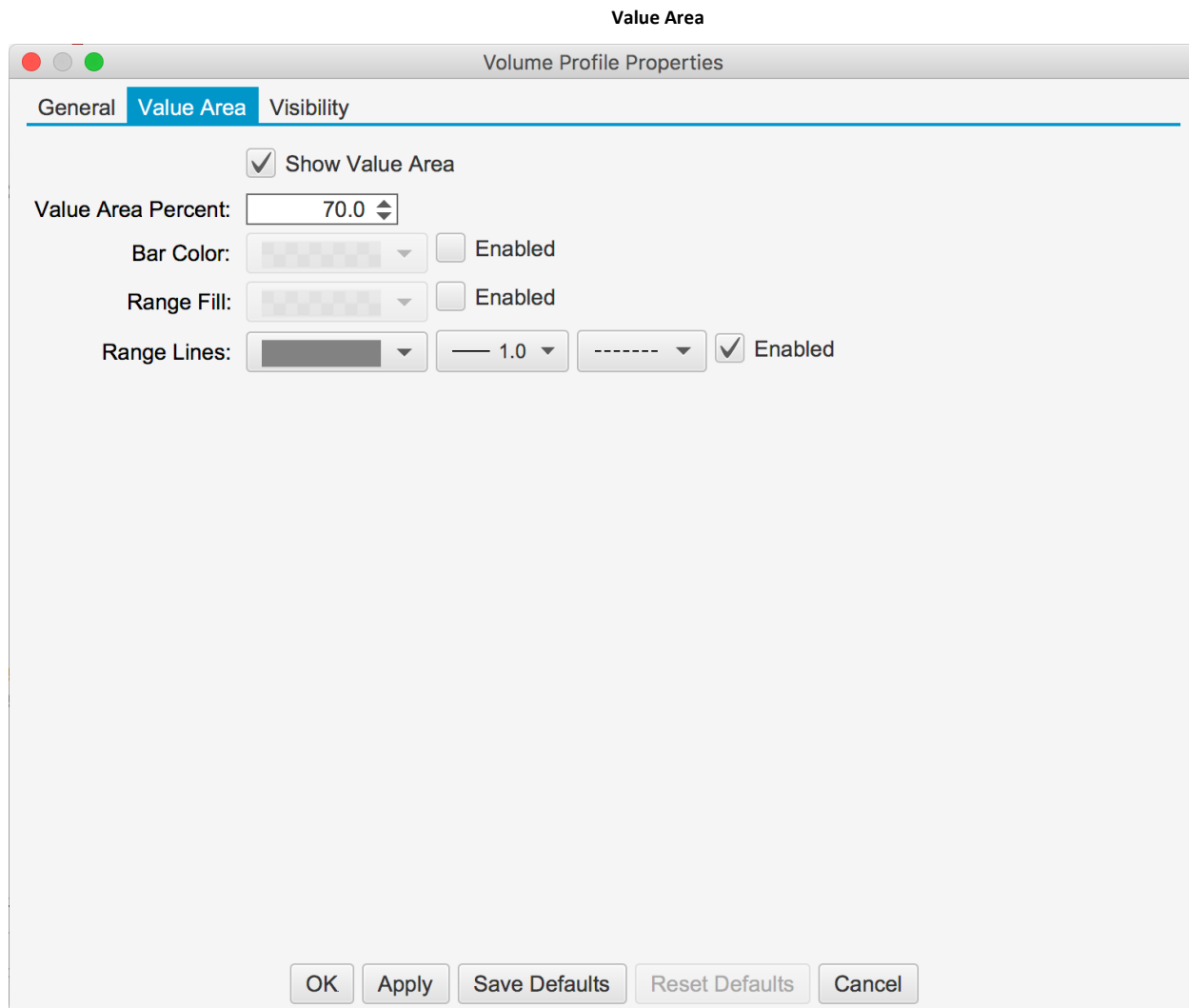
11.2 TPO Component

The Time Price Opportunity (TPO) component displays a histogram that represents the amount of time spent at each price range.

The component is effectively the same as the TPO Study (see section above for details) except that only one TPO is displayed and you can configure the data range by moving the resize points (see graph below).

TPO Example