



MULTICHARTS
Raising The Trading Standard

MultiCharts User Manual

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Charts

MultiCharts Work Area

The application window consists of Toolbars, Workspaces, and Windows (Chart , Scanner, Order and Position Tracker, DOM, Time and Sales).

For detailed information about Windows, [click here](#).

Understanding Workspaces

Workspaces help manage the working process. Several Workspaces can be open at the same time. It is possible to create, save, open, close, rename, and delete Workspaces, as well as to switch between Workspaces that are open in the application window. Each Workspace can contain multiple windows.

Names of all open Workspaces are shown in the tabs at the bottom of application window. The tab of the currently selected (active) Workspace is highlighted. To switch to another open Workspace click the tab of the Workspace you wish to switch to.

To achieve peak performance limit the number of simultaneously open workspaces to the ones you actually need.

Creating Workspaces

To create a new Workspace, click the **New Workspace**  icon on the **Main** toolbar.

Workspaces can also be created by using the **Ctrl + N** hot key, or by selecting **File** in the main menu, then pointing to **New** and clicking **New Workspace**.

Note: If there are no open Workspaces when a new Chart Window is created, a new Workspace for that window will be created automatically.

Saving Workspaces

A Workspace, complete with Chart/Scanner/Order and Position Tracker/DOM/Time and Sales Windows and all settings, is saved as a file with **.wsp** extension.

To save a Workspace, click the **Save Workspace**  icon on the **Main** toolbar. Workspaces can also be saved by using the **Ctrl + S** hot key, or by selecting **File** in the main menu and clicking **Save Workspace**.

If the Workspace has not yet been named, the **Save As** dialog box will appear, allowing to choose a file name for the workspace.

In order to save an already named Workspace under a new name, select **File** in the main menu and click **Save Workspace As**.

To save Workspaces automatically on application exit, see Workspaces Preferences.

Opening Workspaces

Saved Workspaces can be opened by using Windows Explorer/File manager as well as from the application.

To open a Workspace from the application, click the **Open Workspace**  icon on the Main toolbar; in the **Open** dialog box that appears, navigate to and select the Workspace file (.wsp extension) and click the **Open** button. Workspaces can also be opened by using the **Ctrl + O** hot key, or by selecting **File** in the main menu and clicking **Open Workspace**.

Recently used Workspaces can be opened by clicking the down-arrow to the right of the **Open Workspace**  icon on the Main toolbar and then clicking a Workspace name, or by selecting **File** in the main menu, then pointing to **Recent Workspaces** and clicking a Workspace name.

To open Workspaces automatically on application startup, see Workspaces Preferences.

Closing Workspaces

To close a Workspace, click the **Close Workspace**  icon on the **Main** toolbar. Workspaces can also be closed by using the **F4** key, or by selecting **File** in the main menu and clicking **Close Workspace**.

If any changes have been made to a Workspace since it was last saved, and: **Do not show "Save Workspace" dialog on Exit** checkbox in Workspace Preferences is not selected, the **Save Workspace** dialog box will appear:

- click **Yes** to save the changes and close the Workspace;
- click **No** to discard the changes and close the Workspace;
- click **Cancel** to cancel the operation and keep the Workspace open.

To disable the dialog box and close workspaces without confirmation, see Workspaces Preferences.

Important:

If both the **Do not show "Save Workspace" dialog on Exit** checkbox and **Do not save workspaces** option are selected in the **Workspace** tab of the **Preferences** window then no changes to the workspace will be saved on exit!

Renaming Workspaces

Workspaces can be renamed by two different methods:

- Save a copy of the Workspace under a different name. See Saving Workspaces; or:
- Use Windows Explorer or another program to rename a Workspace file as any other Windows file.

Note: Workspaces that are open cannot be renamed by Windows Explorer. Close the Workspace prior to renaming it.

Deleting Workspaces

Use Windows Explorer or another program to delete the Workspace file as you would any other Windows file. Deleting a Workspace does not delete the data or the studies.

Note: A Workspace that is open cannot be deleted. Close the Workspace prior to deleting it.

Workspaces Preferences

Workspaces preferences settings determine which workspaces, if any, will be opened on application startup, whether changes to workspaces will be saved on application exit, and if a confirmation prompt will appear when Chart/Scanner/Order and Position Tracker/DOM/Time and Sales Windows are closed.

To set workspace preferences:

1. Open the **Preferences** window by selecting **File** in the main menu and then clicking **Preferences**; the window can also be opened by using ALT+F, ALT+F keyboard shortcut sequence.

2. Select the **Workspaces** tab.
3. To open Workspaces on startup, select the **Open Workspaces on Start** checkbox; clear the checkbox to not open any Workspaces on startup.
4. To show the **Workspaces** dialog box on startup, select the **Show the dialog** checkbox; clear the checkbox to not display the dialog box.
5. Select the Workspaces to be opened on startup.
6. To show **Save Workspace** dialog box on exit, clear the **Do not show "Save Workspace" dialog on Exit** checkbox; select the checkbox to not display the dialog box.
7. Select **Save workspaces** or **Do not save workspaces** to save or not to save the workspaces on exit, respectively.
8. To prompt for a confirmation when a Chart/Scanner/Order and Position Tracker/DOM/Time and Sales Window is closed (deleted), clear the **Do not prompt for confirmation when I want to close a window** checkbox; check the checkbox to prompt for a confirmation when a window is closed.

Understanding Windows (Chart/Scanner/Order and Position Tracker/DOM/Time and Sales)

Chart Windows contain charts, studies, and drawings. The number of windows that can be added to Workspaces is limited only by your computer's hardware configuration.

In Workspaces with multiple windows only one window at a time is active. The active window is the window to which any changes will be applied, and is distinguished by the color of its title bar. Any one of the windows in a Workspace can be selected as the active at any time.

Windows can be moved within a workspace or detached and positioned anywhere on your computer's desktop, arranged in any order, resized, maximized, minimized, and closed. Closing a window deletes it from the Workspace.

Windows are saved only as a part of the Workspace that contains them.

Creating Windows

A Chart Window is always created at the same time as the chart/grid that is placed in it. It is not possible to create an empty window, without a chart/grid. A Chart/Scanner/Order and Position Tracker/DOM/Time and Sales Window is always created in the currently selected Workspace.

[Read more about Creating Charts](#)

[Read more about Workspaces.](#)

Selecting a Window as Active

Before making changes to a Window you should make sure that it is active. Only one window at a time can be active.

A Window can be selected as active by one of the following methods:

- Click anywhere on the window to make it active; or:
- Select **Window** in the main menu and click the name of the window.

Color change of the window's title bar will indicate that the window has become active.

Detaching and Attaching Windows

By default, Windows are displayed within a Workspace. Windows can be detached from a Workspace and positioned anywhere on your computer's desktop; on a multiple-monitor system, one or more Windows can be displayed on each monitor.

A Window can be detached by one of the following methods:

- Click the **Detach Window**  button on the title bar of the window;

or:

- Select **Window** in the main menu and click **Detach Window**.

Note: Detached windows' last chosen positions are retained the next time that the application is

started A Window can be attached back to the Workspace by one of the following methods:

- Click the **Attach Window**  button on the title bar of the window;

or:

- Select **Window** in the main menu and click **Attach Window**.

Detached Windows "Always on Top" Feature

To keep a detached Window displayed always on top of other windows click the **Stick**  button on the title bar of the window; the button will change to .

To cancel the feature click the **Unstick**  button again; the button will change to .

Note: Detached window's last chosen Always on Top status is retained the next time that the application is started.

Arranging Windows

It is possible to arrange windows in any order. A Window can be positioned anywhere by placing the mouse pointer over the window's title bar, holding the left mouse button, and dragging the window to the desired position.

Windows within a workspace can also be arranged automatically:

- To arrange all open windows for convenient viewing select **Window** in the main menu and click **Arrange All** any minimized windows will be placed at the bottom of the Workspace, below any open windows.
- To arrange all windows horizontally or vertically select **Window** in the main menu and click **Arrange Horizontally** or **Arrange Vertically**, respectively.
- To arrange all open windows in a cascade select **Window** in the main menu and click **Cascade**; any minimized windows will be placed at the bottom of the Workspace, below any open windows.

Note: Windows' last chosen positions are retained the next time that the application is started.

Deleting Windows

A window can be deleted from a Workspace. To close a Window means to delete it. It is possible to delete all of the windows from a Workspace, leaving the Workspace empty.

To delete a Window from a Workspace click the **Close** button on the title bar of the window; in the dialog box that appears, click **Yes** to delete the window, or click **Cancel** to cancel the operation and keep the window open.

To disable the dialog box and delete windows without confirmation, see Workspaces Preferences.

Switching between Windows

Within a Workspace you can switch between the open windows by using the **Ctrl + F6** hotkey combination, or by clicking anywhere on the window you wish to switch to.

Copying Windows

The active Chart/Scanner/Order and Position Tracker/DOM/Time and Sales Window can be copied, complete with all settings, data series, and studies, and pasted to any open Workspace.

To copy an active window use one of the following methods:

- Select **File** in the main menu and click **Copy Window**; or:
- Use CTRL+SHIFT+C hot key combination.

To paste the copied Window:

- Select **File** in the main menu and click **Paste Window**, or:
- Use **Ctrl + Shift + V** hot key combination.

Understanding Toolbars

Toolbars provide convenient access to commonly used functions. These functions can also be accessed by using the menus, but the toolbars let you do it with just one click.

There are six toolbars: Chart Analysis, Command Line, Control, Drawing, Main, and Resolution. Any of the toolbars can be made floating, allowing them to be positioned anywhere, or hidden if they are not needed.

Hiding and Redisplaying Toolbars

All toolbars are displayed by default.

To hide a toolbar select **View** in the main menu, then click **Toolbars** and uncheck the toolbar that is to be hidden.

A floating toolbar can also be hidden by clicking the **Close** button on the toolbar's title bar.

To redisplay a toolbar select **View** in the main menu, then click **Toolbars** **and check the toolbar that is to be displayed.**

The Resolution toolbar can also be hidden or redisplayed by clicking the **Resolution**  icon.

Floating or Docking Toolbars

By default, toolbars are displayed docked to the top of the application window. Any of the toolbars can be made floating or docked. A floating toolbar has its own title bar and can be positioned anywhere on your computer's desktop.

Toolbars can be made floating by using one of the following methods:

- Double-click the move handle of a docked toolbar; or:
- Position the mouse pointer over the toolbar's move handle; hold the left mouse button and drag the toolbar to the desired position.

Toolbars can be docked by one of the following methods:

- Double-click the toolbar's title bar. The toolbar will dock along the top border of the application window; or:
- Position the mouse pointer over the title bar of a floating toolbar; hold the left mouse button and drag the toolbar to any of the four borders of the application window. Once the mouse pointer comes close to a border of

the window, an outline will indicate where the toolbar will be docked. Releasing the mouse button will dock the toolbar.

Note: Toolbars' last chosen positions are retained the next time that the application is started.

Resizing Floating Toolbars

A floating toolbar can be resized the same way as any other window.

Note: Toolbars' last chosen sizes are retained the next time that the application is started.

Toolbar Icons Reference

Main Toolbar		
New Workspace		Creating Workspaces
Save Workspace		Saving Workspace
Open Workspace		Opening Workspace
Close Workspace		Closing Workspace
New Chart Window		Creating Charts
New Scanner Window		Understanding Real-Time Scanner
New QuoteManager		Understanding QuoteManager
New PowerLanguage Editor		Understanding PowerLanguage Editor
Control Toolbar		
Decrease Bar Spacing		Changing Bar Spacing
Increase Bar Spacing		Changing Bar Spacing
Compress Price Scale		Changing Price Scale Compression
Expand Price Scale		Changing Price Scale Compression
Move Up		Moving a Data Series Vertically
Move Down		Moving a Data Series Vertically
Scroll Left		Scrolling Horizontally through a Chart
Scroll Right		Scrolling Horizontally through a Chart
Increase Weight		Changing Bar Weight
Decrease Weight		Changing Bar Weight
Zoom In		Zooming In
Zoom Out		Zooming Out
Reset Scales		Resetting Both Scales
Reset Time Scale		Resetting Time Scale (Bar Spacing)
Reset Price Scale		Resetting Price Scale

Hide Object		Hiding Indicators
Chart Analysis Toolbar		
Insert Symbol		Inserting Additional Symbols into a Chart Window
Insert Study		Inserting Studies
Show / Hide Drawing Tools		Inserting Drawing Tools
Format Instruments		Changing Symbols
Format Window		Chart Appearance
Bar Chart		Setting OHLC Chart Style
Hollow Candlestick Chart		Selecting Hollow Candlestick Chart Style
Line on Close Chart		Selecting Line on Close Chart Style
Arrow Pointer		Pointer
Cross Pointer		Cross Pointer
Show/Hide Chart Hint		Understanding Hint Modes
Show/Hide Cross		Cross Mode
Tracking Time and Price		Cross Mode
Data Window		Data Window
Resolution Toolbar		
Tick Bar		Setting Resolution of Tick-Based Charts
Volume Bar		Setting Resolution of Volume-Based Charts
Range Bar		Setting Resolution of Range-Based Charts
Second Bar		Setting Resolution of Time-Based Charts
Minute Bar		Setting Resolution of Time-Based Charts
Hourly Bar		Setting Resolution of Time-Based Charts
Daily Bar		Setting Resolution of Time-Based Charts
Weekly Bar		Setting Resolution of Time-Based Charts
Monthly Bar		Setting Resolution of Time-Based Charts
Quarterly Bar		Setting Resolution of Time-Based Charts
Yearly Bar		Setting Resolution of Time-Based Charts
Drawings Toolbar		
Trend Line		Inserting Trend Line
Horizontal Line		Inserting Horizontal Line
Time Line		Inserting Time Line
Regression Channel		Inserting Regression Channel

Equidistant Channel		Inserting Equidistant Channel
Andrews' Pitchfork		Inserting Andrews' Pitchfork
Fibonacci Retracement Price Lines		Inserting Fibonacci Retracement Price Lines
Fibonacci Speed/Resistance Fan		Inserting Fibonacci Speed/Resistance Fan
Fibonacci Speed/Resistance Arcs		Inserting Fibonacci Speed/Resistance Arcs
Fibonacci Time Zones		Inserting Fibonacci Time Zones
Fibonacci Trend-Based Time Lines		Inserting Fibonacci Trend-Based Time Lines
Gann Fan		Inserting Gann Fan
Gann Square		Inserting Gann Square
Retracement Calculator		Inserting Retracement Calculator
Text		Inserting Text
Rectangle		Inserting Rectangle
Ellipse		Inserting Ellipse
Arc		Inserting Arc
Arrow Down		Inserting Arrow Down
Arrow Up		Inserting Arrow Up
Command Line Toolbar		
Resolution		Click the Resolution icon to hide or redisplay the Resolution Toolbar. Setting Resolution of Time-Based Charts
Command Line	<input type="text" value="Type a symbol/interval"/>	Understanding Command Line
Data Playback Toolbar		
Playback Resolution	<input type="text" value="As is (1 Day)"/>	Setting Playback Resolution
Playback Start Time	<input type="text" value="06.04.2013 00:00:00"/>	Setting Playback Start Time
Jump To Time		Using Jump To Time button
Jump To Bar		Using Jump To Bar mode
Step Backward		Using Step Backward
Step Forward		Using Step Forward
Pause/Resume Playback		Using Pause/Resume Playback
Terminate Playback/Go To Realtime		Terminate Playback/Go To Realtime
Playback Speed Slider		Setting playback speed
Global Mode	 Global Mode	Data Playback Modes

Understanding Command Line

Command Line toolbar allows the active window's chart resolution or symbol to be changed simply by entering a text command.

Type the appropriate command in the **Command Line** combo box and press **Enter**.

To select a previously used command use the drop-down function.

Examples:

Type in: "**5 minutes**" to change the chart resolution to 5 minutes.

Type in: "**AMD**" to change the symbol to AMD.

The List of Supported Commands

.bsi

Increases bar spacing.

.bsd

Decreases bar spacing.

.rep

Calls Strategy Performance Report.

.isy

Inserts additional symbol into existing chart or creates a new chart. Available parameters: **name, df, res, desc, from, to**. “,” is the delimiter.

.csy

Changes symbol (specific data series) plotted on chart to another specific symbol (if there is no chart, this command creates an empty chart window with no data series plotted). Available parameters: **dnum, name, df, res, desc, from, to, mute**. “,” is the delimiter.

.iind

Inserts specific indicator to the active chart. Available parameters: **name, base, bref, fmt**. “,” is the delimiter.

.isig

Inserts specific signal to the active chart. Available parameters: **name1, name2, nameN** (up to 99). “,” is the delimiter.

.rld

Reloads data on the active chart and on all charts with the same symbol. Available parameters: **glob, ResSize ResName, int**.

SymName

Changes the symbol to a specified one on the active chart. If there is no selected symbol, the symbol that is plotted on data series 1 is changed.

ResSize ResName

Changes resolution of the symbol plotted as data series 1 of the active chart to a specified one.

.at_toggle

Turns on/off auto trading on the active chart.

.shs

Switches between different styles for Hint window.

.eds

Shows the entire data series of the active chart window.

Table of Parameters for .ISY and .CSY Commands

Description	Parameter
Number of data series	dnum
Symbol name	name
Data provider	df
Resolution of the chart	res
Symbol description	desc
Starting point of data interval	from
Ending point of data interval	to
Do not show the Format Instrument dialogue window if there is an error in the request	mute

Example 1: Enter to command line: **.isy name=@ES#, df=IQFeed, res=1 min, desc=E-MINI S&P 500 MARCH 2013, from=12/31/2012, to=5/10/2013** in order to insert 1 minute graph of S&P mini 500 from IQFeed starting from 31th of December 2012 up to 10th of May 2013 as additional data series to the active chart window.

Example 2: Enter to command line: **.csy dnum=1, name=@ES#, df=IQFeed, res=1 min, desc=E-MINI S&P 500 MARCH 2013, from=12/31/2012, to=5/10/2013** in order to change the data series 1 to 1 minute graph of S&P mini 500 from IQFeed starting from 31th of December 2012 up to 10th of May 2013 as additional data series to the active chart window.

Note: If **dnum** parameter is not specified, the selected data series will be affected. If no particular data series is selected, the data series 1 will be affected.

Table of Parameters for .IIND and .ISIG Commands

Description	Parameter
Name of an indicator/signal	name
Number of data series to base an indicator on	base

Maximum number of bars a study will reference, or maximum bars back	brief
Show Format Indicator window	fmt

Example 1: Enter to command line: **.iind name=MACD, base=1, brief=100** in order to apply MACD indicator to the data series 1 with MaxBarsBack parameter = 100 to the active chart window.

Example 2: Enter to command line: **.isig name=Bollinger Bands LE** in order to apply Bollinger Bands LE signal to the active chart window.

Note: If no parameters are specified, the **Insert Indicator** or **Insert Signal** window is called.

Table of Parameters for .RLD Command

Description	Parameter
Reloading of all charts with all data series	dnum
Reloading of particular charts	ResSize ResName
Reloading a specified number of days/weeks/months back	int ResSize ResName

Example 1: Enter to command line: **.rld 1 min** in order to reload data on all charts with 1 minute resolution.

Example 2: Enter to command line: **.rld int 2 weeks** in order to reload 2 weeks of data on the active chart.

Note: If a parameter is specified incorrectly, the **.rld** will be used for the active chart.

Table of Resolutions for Command Line

Resolution name	Value 1	Value 2	Value 3	Value 4
Tick	tick	ticks	t	ts
Contract	volume	volumes	contract	contracts
Point	point	points	pt	pts
Point Original	origpoint	origpoints	orpt	orpts
Change	change	changes	chg	chgs
Second	second	seconds	sec	secs
Minute	minute	minutes	min	mins
Hour	hour	hours	hr	hrs
Day	day	days	d	ds
Week	week	weeks	wk	wks
Month	month	months	mth	mths
Quarter	quarter	quarters	qrt	qrts
Year	year	years	yr	yrs

Customizing Toolbars

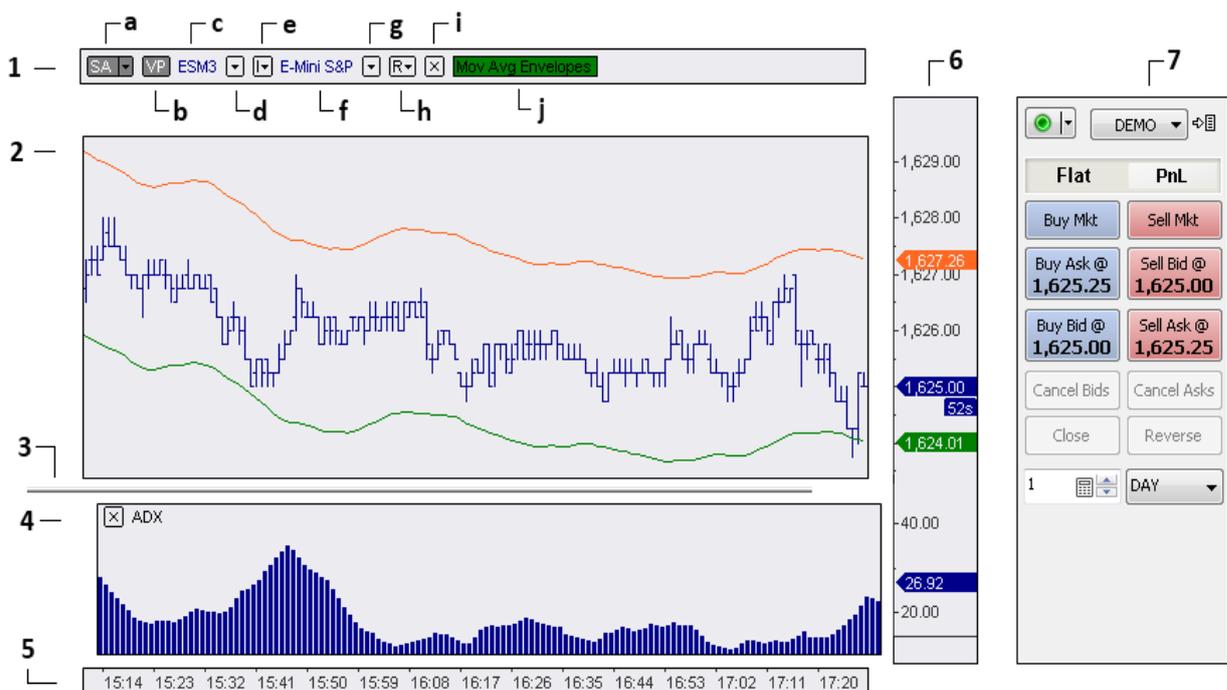
With Custom Toolbars, the user can not only choose which toolbar to display, but also which buttons appear on the toolbar. Adding more toolbars and buttons makes it easier to access certain functions. Consolidating the most frequently used buttons onto one toolbar saves space and permits a larger display area in the workspace.

To customize the toolbars,

1. Select **View** from the main menu, then select **Toolbars** and **Customize**. The **Customize** window will appear.
2. In the **Toolbars** pane, select the type of toolbar to customize. Check the selected toolbar's check box to display the toolbar. Uncheck the selected toolbar to remove the toolbar.
3. In the **Commands** pane, select which buttons will appear on the toolbar.
4. Select the **Close** button.

Understanding Chart Window

Chart Window consists of several Chart Window Areas:



Where:

1 - Status Line Area

- a. Auto Trading Status Switch
- b. Volume Profile Switch
- c. Instrument name
- d. Instrument Dropdown
- e. Linking Chart by Instrument
- f. Instrument description
- g. Chart resolution

- h. Resolution Dropdown
 - i. Linking Chart by Resolution
 - j. Study Status Switch
- 2 - Chart Area
 - 3 - Subchart Divider
 - 4 - Subchart Area
 - 5 - Time Scale Area
 - 6 - Price Scale Area
 - 7 - Chart Trading Panel

Each area intended for manipulation for its own set of objects.

Note: There can be several Subchart Areas in a Chart window.

Note: There can be one or two Price Scale Areas in a Chart window.

Chart Number Format

MultiCharts uses the **Regional Settings** of the Windows operating system to format numbers. The Regional Settings can be edited by going to **Customize Regional Options** in the Windows operating system. The items that can be edited include the following:

- Decimal symbol
- Digit grouping symbol
- Negative sign symbol
- Negative number format
- Display leading zeros
- List separator
- Measurement system

To access the **Customize Regional Options**, please refer to the help files from the Windows operating system.

The number of digits behind a decimal depends on whether the number is associated with a symbol or study. For symbols, the number of digits after a decimal is defined in the **Price Scale**. For studies, the number of digits after a decimal is based on the number of significant digits.

Creating Charts

A Chart is created for a financial instrument, designated by a **Symbol**, such as "GOOG".

A new chart can be created by entering the symbol parameters into the Command Line toolbar, or by using the **Format Instruments** window.

If the symbol name is known, the simplest way to create a new chart is to enter the symbol name and all known symbol parameters into the command line. Any omitted symbol parameters will automatically be selected, and the symbol plotted.

Creating Chart Using Format Instruments Window

To create a new chart:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Instrument** tab.
 3. Select a data feed from the **Data Source** drop-down list box.
 4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header.

If you can't find a symbol, see Adding Symbols to Symbol List

5. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Merging Data Sources into a Single Chart

In some instances real-time data and historical data must be obtained from two separate data sources. A real-time data source and a historical data source can be merged into a single chart.

To create a new chart:

Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Instrument** tab.
 3. Check **Merge Data Sources into a Single Chart** check box.
 4. From the **For** drop-down list box, select **History**.
 5. Select a data feed for the historical data from the **Data Source** drop-down list box.
 6. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header.

If you can't find a symbol, see Adding Symbols to Symbol List

7. From the **For** drop-down list box, select **RealTime**.
8. Select a data feed for the real-time data from the **Data Source** drop-down list box.
9. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header.

If you can't find a symbol, see Adding Symbols to Symbol List

10. Double-click the symbol, or click **OK** , to create a chart with default settings.

To learn more about changing the symbol settings read the following:

Changing Symbols

Chart Resolution

Quote Field

Sessions

Data Range

Time Zone

Data Numbers

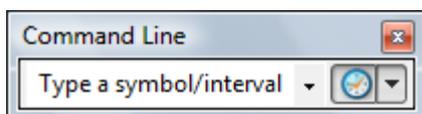
Using SubCharts

Chart Style

Chart Scaling

Creating Charts Using the Command Line Toolbar

A new chart can be created by entering the symbol parameters into the Command Line toolbar:



By default, the Command Line toolbar is displayed docked to the top of the application window. If the toolbar is not displayed, it may have been hidden. To learn how to redisplay the toolbar, see Floating or Docking Toolbars

To learn more about toolbars, see Understanding Toolbars

Symbol parameters consist of the **Symbol Name**, **Data Source**, **Category**, and **Exchange** parameters. Depending on the data source and the symbol category, one or more parameters are required in order to precisely identify the symbol to be plotted.

Automatic Selection of Omitted Symbol Parameters

MultiCharts simplifies the process of symbol selection by automatically selecting, whenever possible, any omitted symbol parameters, by analyzing the Symbol Name.

Note:

When symbol parameters are entered into the command line the first time that MultiCharts is used, the Data Source must be specified.

Automatic selection of omitted symbol parameters is based on both the Symbol Name and on the Data Source.

Once specified a single time, the Data Source will be selected automatically if DataSource parameter is not specified.

Entering a symbol name alone is often sufficient to create a chart for a stock. For example, a plot for Google, Inc. can be created by simply typing **goog** into the command line toolbar; all the other parameters will be selected

automatically. However, for some symbol categories and data sources, additional parameters may be required in order to precisely identify the symbol to be plotted.

If the exact symbol name is not known, but only the symbol description or the symbol root, or if plotting the symbol through the command line does not work, QuoteManager can be used to search for and identify the correct symbol.

Note: When symbol parameters are entered into the command line the first time that MultiCharts is used, the Data Source must be specified.

Entering Symbol Parameters into a Command Line

Symbol parameters are entered in the following format:

DataSource: SymbolName; Exchange; Category

Note:

Data Source and Symbol Name are separated by a colon (:), while Symbol Name, Exchange Name, and Category are separated by a semicolon (;).

- If *DataSource* parameter is not specified, *SymbolName* parameter does not have to be preceded by a colon.
 - In neither *Exchange* nor *Category* parameters are specified, *SymbolName* does not have to be followed by a semicolon.
 - If *Category* parameter is not specified, *Exchange* parameter does not have to be followed by a semicolon.
 - If *Exchange* parameter is not specified, and *Category* parameter immediately follows the *SymbolName* parameter, two semicolons must separate *SymbolName* and *Category* parameters (*SymbolName;; Category*).
- DataSource* - an optional parameter; specifies the data source

- *DataSource* - is specified by the DataSource abbreviation :

Data Source Name	Abbreviation
ASCII Mapping	ASC
AvaTrade	AVA
Barchart.com	BC
Bloomberg	BL
CQG	CQG
CSI	CSI
Dukascopy	DUK
eSignal	ES
Free Quotes	F
GlobalServer	GS
IQFeed	IQ
Interactive Brokers	IB
IQBank QuickTrade	IWB
LMAX	LM
MB Trading	MB

MCFX	FX
Metastock	MS
MIG Bank	MIG
Open E Cry	OEC
Patsystems	PS
Rithmic 01	RT
TradeStation	TS
Trading Technologies	TT
Universal DDE	DDE
WeBank	WB
Zen-Fire	ZF

Note: DataSource parameter is not case-sensitive

A list of available data sources and corresponding abbreviations can also be found in the **Data Sources** window in QuoteManager. To open the **Data Sources** window in QuoteManager, click the **Data Sources** icon  or select **Tools** in the main menu and click **Data Sources**.

- If *DataSource* is not specified, the most recently used Data Source will be used.
- If *DataSource* is not specified and cannot be selected automatically, a **Format Instruments** window will open.

SymbolName - a required parameter; specifies the symbol name

- SymbolName parameter is not case-sensitive.
- The maximum symbol name length is 31 characters; longer symbol names will be truncated to 31 characters.
- Symbol name can contain any number of spaces and characters, separated by spaces.
- Spaces at the beginning and at the end of a symbol name are discarded.

Exchange - an optional parameter; specifies the exchange abbreviation

• Exchange is specified by the exchange abbreviation; the list of available exchanges and corresponding abbreviations can be found in the **Exchanges & ECNs** window in QuoteManager. To open the **Exchanges & ECNs** window in QuoteManager, click the **Exchanges & ECNs**  icon, or select **Tools** in the main menu and click **Exchanges & ECNs**.

• If the specified exchange abbreviation is not in the **Exchanges & ECNs** list, a **Format Instruments** window will open.

• If *Exchange* parameter is not specified, a default exchange will be selected based on the data source and category (category selection takes place prior to default exchange selection). *Category* - an optional parameter; specifies the symbol category

- Category is specified by the category name abbreviation:

Category	Abbreviation
Stock	Stk
Index	Idx

Future	Fut
Stock Option	Opt
Forex	Fx
Bond	B
Cash	C
Spread	Spd

Note: category parameter is not case-sensitive.

- If the specified *Category* is not a valid category abbreviation, a **Format Instruments** window will open.
- If *Category* is not specified, the symbol name will be analyzed in order to select the symbol category automatically.

Automatic Symbol Category Selection

Symbol category is automatically selected by evaluating the symbol name according to the following rules, in the order that they are listed; once a symbol name satisfies any one rule, a category is assigned and MultiCharts proceeds to exchange selection.

Symbol category is Future if any of the following are true:

- Symbol name ends with a number
- Symbol name ends with a **#F**, preceded by a space
- Symbol name begins with an **@**
- Symbol name begins with a **c#** (except TradeStation(R) symbols) Symbol category is Index if any of the following are true:

- Symbol name begins with a **\$**
- Symbol name ends with a **.X**

Symbol category is Forex if any of the following are true:

Note: For InteractiveBroker data source, symbol category will be Cash

- Symbol name ends with a - **FX**
- Symbol name contains any two different sets of the following combinations of letters:
EUR, USD, GBP, AUD, CAD, CHF, JPY, HKD, KRW, SEK, MXN, NOK, PLZ, CZK, ILS, HUF, MXP, NZD,
PLN, RUR, BRE, USS, SKK, TWD, SIT, SGD, RUB, SON, MTL, LVL, LTL, SEK, HRK, EEK, DKK, CYP

if the *Category* cannot be selected automatically, category Stock will be selected; category selection takes place prior to default exchange selection.

Sample Entries and Corresponding Parameters

Command Line Entry	Data Source*	Symbol	Exchange	Category
ES:O #F	eSignal	O #F	UNDEF	Futures
	ES:ES H8	ES H8	UNDEF	Futures
	ES:\$INDU	\$INDU	UNDEF	Indexes
	ES:EURGBP A0-FX	EURGBP A0-FX	UNDEF	Forex
IQ:@ES#	IQfeed	@ES#	UNDEF	Futures

	IQ:NUH8	NUH8	UNDEF	Futures
	IQ:ADR.X	ADR.X	UNDEF	Indexes
IB:ESH8	IB	ESH8	GLOBEX	Futures
	IB:MSFT	MSFT	SMART	Stock
	IB:EUR.USD	EUR.USD	IDEALPRO	Cash
OEC:6AH8	OEC	6AH8	UNDEF	Futures
TS:ESH08	TS	ESH08	CME	Futures
	TS:AUDCAD	AUDCAD	FOREX	Forex
	TS:\$TSTOP	\$TSTOP	NASDAQ	Indexes
	TS:@ES	@ES	CME	Futures

* The Data Source is specified in the table's Command Line entries for illustration purposes only; once specified a single time, the Data Source will be selected automatically even if *DataSource* parameter is not specified.

Understanding Multi-Symbol Charts

It is possible to add several symbols' data series to the same Chart Window. Each data series in a multi-symbol chart has a unique Data Number. The Data Number is assigned according to the order in which the data series was added to the Chart Window.

Important: Any data series can be deleted from the Chart Window, except for the data series that was added first (Data #1).

Inserting Additional Symbols into a Chart Window

To insert an additional symbols' data series into a Chart Window, click the **Insert Instrument**  icon on the main toolbar.

Additional data series can also be inserted by one of the following methods:

1. Use the **F5** key; or:
2. Select **Insert** in the main menu and click **Symbol**; or:
3. Right-click on the chart area and then click **Insert Instrument**; or:
4. If the Chart Window already contains more than one data series, right-click on the chart area, then click **Format Instruments**, and click the **Add** button.

Deleting Symbols from a Multi-Symbol Chart

Any of the symbols (data series) can be deleted from a multi-symbol Chart Window, except for the first symbol that was added (the symbol with the Data # = 1).

To delete a symbol (data series), right-click on the chart area and then click **Format Instruments**; in the **Format Objects** window that appears, select the data series that is to be deleted and click the **Remove** button.

Data series can also be deleted by one of the following methods:

- Position the mouse pointer over the data series that is to be deleted; once the **Pointer**  changes into a **Hand** , right-click and then click **Remove Series**; or:
- Position the mouse pointer over the data series that is to be deleted; once the **Pointer**  changes into a **Hand** , click on the data series and then press the **Delete** key on the keyboard.

Selecting the Active Symbol (Data Series) in a Multi-Symbol Chart

In a multi-symbol Chart Window only one of the data series at a time is active. The active data series is the data series to which any changes will be applied. Any one of the data series in a multi-symbol chart can be selected as active at any time.

Before making changes to a particular symbol's chart within a multi-symbol Chart Window you should first make sure that it is the active symbol (data series).

The first symbol (data series) added to a multi-symbol Chart Window is the active symbol by default.

To select a symbol (data series) as active simply click on the data series.

Understanding Data Server Mode

Data server mode selection provides flexibility for working with data feeds. This feature makes it possible to overcome limitations of some of the data feeds. If a data feed is available only on weekdays, the locally stored data can be used on weekends. If a data feed makes gap filling impractical by forcing a lengthy download of 24 hours of data for any intraday query, the gap filling feature can be disabled.

Two Data server modes are available:

Online – The locally stored data is used to for a historical chart. A check for gaps is not performed. Once the historical chart is completed, the real-time data will be received from a real-time data feed. Check **Download missing historical data** check box to perform a check for gaps and to fill any gaps found by connecting to a historical data feed.

Offline – Only the locally stored data is used. No connections to data feeds are made.

Setting Data Server Mode

To change the Data server mode close all the Workspaces containing windows, or close all the windows in open Workspaces. Once a new Data server mode has been set, all Chart Windows will function according to the new mode, even if they were originally created under another Data server mode.

Note: The Data server mode can not be changed while there are any open Chart Windows in any of the open Workspaces.

To set the Data server mode:

1. In the main menu select **File** and click **Preferences**.
2. Select the **Data Server Mode** tab.
3. Choose the data mode.
4. Check **Show this dialog box on startup** check box to display the **Data Server Mode** dialog box on startup, or uncheck the box to simply use the last selected Data mode.

Volume Analysis

Volume is the number of shares or contracts that trade over a given period of time. The higher the volume, the more active the security. To determine the movement of the volume (up or down), volume tools (such as indicators or specific chart types) illustrate in different ways how many shares have traded per period and show trends in the same way that prices do.

Here are some tools that MultiCharts offers for Volume Analysis:

Volume Profile

Volume Delta

Cumulative Delta

Volume Profile

Understanding Volume Profile

Volume Profile tracks trading activity volume across different price levels and varying time lengths. It is an advanced chart attribute providing traders the opportunity to see the most traded volume areas, how much volume was traded on particular price levels recently or within a specified time period and divides total traded volume into BUY traded volume and SELL traded volume.

Using Volume Profile

Volume Profile can be turned on/off from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Volume Profile** tab.
3. Check the **Show Volume Profile** check box to turn Volume Profile on/off. The **Show Volume Profile** check box is unchecked by default.
4. Select one of the available **Profiles**:

- **Tick Count.** If this profile is selected, volume provided by the data source is not taken into account. Each tick volume equals to 1. Each line demonstrates the number of ticks traded on a specific price level colored in blue (by default). The following components are available for this volume profile style :
- **Volume Bar Color.** Identical to **Total Volume**, shows total ASK + BID **ticks** traded on each price level. Default color is blue, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Volume Shading, it can be changed to Solid Blocks, HollowGram or Invisible.
- **Up OC.** Shows price movement within volume profile at its end as green bar if the opening price of the profile is lower than its closing price. Default color is dark green, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **Down OC.** Shows price movement within volume profile at its end as red bar if the opening price of the profile is higher than its closing price. Default color is red, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **POC.** Shows the price level with largest amount of traded volume. Default color is pale pink, it can be changed to any other color. Default size is 10, it can be decreased or increased up to 100. Default style is Invisible, it can be changed to Volume Shading, HollowGram or Invisible.
- **Value Area.** It is the area (specified in %) of most traded volume of the profile (100%).**Example 1:** Assume there are 5 price levels in volume profile. Total volume of level 1 is 400; total volume of level 2 is 600 ; total volume of level 3 is 1000; total volume of level 4 is 500; total volume of level 5 is 300. The total volume of the whole volume profile is 2800. Default Value are is 70%; 70% of 2800 = 1960. It always starts with POC, that is the level 3 with 1000 total volume. $1960 - 1000$ (POC) = 960. Check closest levels: 2 and 4; each of these levels total volume is less than 960. Total volume of level 2 is higher then total volume of level 4. $960 - 600$ (level 2) = 360. Check closest levels: 1 and 4; only level 1 total volume (400) is enough to cover 360.**Example 2:** Assume there are 5 price levels in volume profile. Total volume of level 1 is 200; total volume of level 2 is 600; total volume of level 3 is 1000; total volume of level 4 is 200; total volume of level 5 is 300. The total volume of the whole volume profile is 2300. Default Value are is 70%; 70 % of 2300 = 1610. It always starts with POC, that is the level 3 with 1000 total volume. $1610 - 1000$ (POC) = 610. Check closest levels: 2 and 4; each of these levels total volume is less than 610. Total volume of level 2 is higher then total volume of level 4. $610 - 600$ (level 2) = 10. Check closest levels: 1 and 4; each of these levels total volume is more than 10. Both levels are identical (200 and 200 total volume), in this case the rest 10 volume goes to the level then is lower, in this example it is the level 4.
- **Display Text.** Shows numeric values for each price level. Default color is white, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Total Ticks, it can be changed to Invisible or to POC.
- **Outline.** Frames traded volume on specified price levels. Default color is yellow, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to All Blocks or POC.
- **Price Range.** Shows highest and lowest price levels of traded volume per profile. Default color is yellow, it can be changed to any other color. Default size is 10, it can be decreased or increased. Default style is Extended, it can be changed to Volume Shading or Invisible.
- **Total Volume.** If this profile is selected, it displays **ask + bid** volume provided by a data source for every tick. Each line demonstrates total volume traded on a specific price level and colored in blue (by default). The following components are available for this style of volume profile:
 - **Total Volume.** Shows total ASK + BID **volume** traded on each price level. Default color is blue, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Volume Shading, it can be changed to Solid Blocks, HollowGram, Invisible.

- **Up OC.** Shows price movement within volume profile at its end as green bar if the opening price of the profile is lower than its closing price. Default color is dark green, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **Down OC.** Shows price movement within volume profile at its end as red bar if the opening price of the profile is higher than its closing price. Default color is red, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **POC.** Shows the price level with largest amount of traded volume. Default color is pale pink, it can be changed to any other color. Default size is 10, it can be decreased or increased up to 100. Default style is Invisible, it can be changed to Volume Shading, HollowGram or Invisible.
- **Value Area.** It is the area (specified in %) of most traded volume of the profile (100%). See the example above.
- **Display Text.** Shows numeric values for each price level. Default color is white, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Total Volume, it can be changed to Invisible or POC.
- **Outline.** Frames traded volume on specified price levels. Default color is yellow, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to All Blocks or POC.
- **Price Range.** Shows highest and lowest price levels of traded volume per profile. Default color is yellow, it can be changed to any other color. Default size is 10, it can be decreased or increased. Default style is Extended, it can be changed to Volume Shading or Invisible.
- **Buy x Sell Volume.** If this profile is selected, it displays **ask x bid** volume provided by a data source for every tick. Depending on the ask and bid volume amounts each line is colored in green and red (by default) proportionally. **Example:** If the ASK volume is 3000 and BID volume is 2000, the displayed value is 3000 x 2000.
- **Buy Volume.** Shows ASK volume traded on each price level.
- **Sell Volume.** Shows BID volume traded on each price level.
- **Up OC.** Shows price movement within volume profile at its end as green bar if the opening price of the profile is lower than its closing price. Default color is dark green, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **Down OC.** Shows price movement within volume profile at its end as red bar if the opening price of the profile is higher than its closing price. Default color is red, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **POC.** Shows the price level with largest amount of traded volume. Default color is pale pink, it can be changed to any other color. Default size is 10, it can be decreased or increased up to 100. Default style is Invisible, it can be changed to Volume Shading, HollowGram or Invisible.
- **Value Area.** It is the area (specified in %) of most traded volume of the profile (100%). See the example above.
- **Display Text.** Shows numeric values for each price level. Default color is white, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Total Volume, it can be changed to Invisible, POC, Buy x Sell Volume or Delta.
- **Outline.** Frames traded volume on specified price levels. Default color is yellow, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to All Blocks or POC.

- **Price Range.** Shows highest and lowest price levels of traded volume per profile. Default color is yellow, it can be changed to any other color. Default size is 10, it can be decreased or increased. Default style is Extended, it can be changed to Volume Shading or Invisible.
- **Delta.** If this profile is selected, it displays **total volume** value and **ask - bid** result as a part of the total volume in each line. If the ASK - BID result value is negative, it is colored in red, if the value is positive it is colored in green (by default).**Example:** If the ASK volume is 3000 and BID volume is 2000, their delta is 1000, so the 4 /5 of the line is colored in blue and 1/5 of the line is green, meanwhile the displayed value is 5000 (Total Volume).

The following components are available for this style of volume profile:

- **Total Volume.** Shows total ASK + BID **volume** traded on each price level. Default color is blue, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Volume Shading, it can be changed to Solid Blocks, HollowGram, Invisible.
- **Buy Volume.** Shows ASK volume traded on each price level.
- **Sell Volume.** Shows BID volume traded on each price level.
- **Up OC.** Shows price movement within volume profile at its end as green bar if the opening price of the profile is lower than its closing price. Default color is dark green, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **Down OC.** Shows price movement within volume profile at its end as red bar if the opening price of the profile is higher than its closing price. Default color is red, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **POC.** Shows the price level with largest amount of traded volume. Default color is pale pink, it can be changed to any other color. Default size is 10, it can be decreased or increased. up to 100. Default style is Invisible, it can be changed to Volume Shading, HollowGram or Invisible.
- **Value Area.** It is the area (specified in %) of most traded volume of the profile (100%). See the example above.
- **Display Text.** Shows numeric values for each price level. Default color is white, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Total Volume, it can be changed to Invisible, POC, Buy x Sell Volume or Delta.
- **Outline.** Frames traded volume on specified price levels. Default color is yellow, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to All Blocks or POC.
- **Price Range.** Shows highest and lowest price levels of traded volume per profile. Default color is yellow, it can be changed to any other color. Default size is 10, it can be decreased or increased. Default style is Extended, it can be changed to Volume Shading or Invisible.
- **Buy vs Sell Volume.** If this profile is selected, it displays **total volume** value in each line and the line is colored in green/red (by default) depending on whether the ask volume is greater or smaller than bid volume.**Example:** If the ASK volume is 3000 and BID volume is 2000, the ASK volume is greater than BID volume, the line is colored in green, however the displayed value is 5000 (Total Volume).

The following components are available for this style of volume profile:

- **Buy Volume.** Shows ASK volume traded on each price level.
- **Sell Volume.** Shows BID volume traded on each price level.
- **Up OC.** Shows price movement within volume profile at its end as green bar if the opening price of the profile is lower than its closing price. Default color is dark green, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.

- **Down OC.** Shows price movement within volume profile at its end as red bar if the opening price of the profile is higher than its closing price. Default color is red, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to Volume Shading.
- **POC.** Shows the price level with largest amount of traded volume. Default color is pale pink, it can be changed to any other color. Default size is 10, it can be decreased or increased up to 100. Default style is Invisible, it can be changed to Volume Shading, HollowGram or Invisible.
- **Value Area.** It is the area (specified in %) of most traded volume of the profile (100%). See the example above.
- **Display Text.** Shows numeric values for each price level. Default color is white, it can be changed to any other color. Default size is 100, it can be decreased. Default style is Total Volume, it can be changed to Invisible, POC, Buy x Sell Volume or Delta.
- **Outline.** Frames traded volume on specified price levels. Default color is yellow, it can be changed to any other color. Default size can be decreased or increased. Default style is Invisible, it can be changed to All Blocks or POC.
- **Price Range.** Shows highest and lowest price levels of traded volume per profile. Default color is yellow, it can be changed to any other color. Default size is 10, it can be decreased or increased. Default style is Extended, it can be changed to Volume Shading or Invisible.

5. Select **Breakdown by:**

- **Up Ticks vs Down Ticks** method:

If the current tick price is higher than the previous tick price, the volume of the current tick goes to BUY volume.

If the current tick price is lower than the previous tick price, the volume of the current tick goes to SELL volume.

If the current tick price is the same as the previous tick price, the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume.

Example: If a new tick comes with higher than previous price and volume is recorded as BUY volume, and then another tick comes with the same as previous price, the volume is recorded also to BUY volume.

If a tick is first one in the series, its volume goes to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick trade** data from your data source for the specified in chart settings data range, if **Up Ticks vs Down Ticks** is selected.

- **Ask Traded vs Bid Traded** method:

If the current tick price is higher or equals current ASK tick price, the volume of the current tick goes to BUY volume.

If the current tick price is lower or equals current BID tick price, the volume of the current tick goes to SELL volume.

If the current tick price is between ASK and BID prices, than the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume. **Example:** If a new tick comes with a price higher or equals current ASK tick price and its volume is recorded as BUY volume, and then another tick comes with a price that is between ASK and BID prices, the volume is recorded also to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick ask** and **bid** data from your data source for the specified in chart settings data range, if **Ask Traded vs Bid Traded** is selected.

6. Adjust **Ticks per Row** value (set to 1 by default) to change the the amount of minimum price increments (set in QuoteManager by Price Scale and Min. Movement covered by each line of Volume Profile.

7. Select 1 of 3 available **Time** parameters for the Volume Profile to be shown:

- If **Last** option is selected, it shows Volume Profile for a specified:
- Number of last **Bars**;
- Number of last **Sessions**.

Note: In comparison to **Every**, the starting point for **Last** is the current/latest bar on chart. Volume profile will not cover a period more than the specified Data Range in chart settings.

- If **Every** option is selected, it shows Volume Profile for a specified:
- Number of every **Bars**;
- Number of every **Sessions**.

Note: In comparison to **Last**, the starting point for **Every** is the first bar on chart. Volume profile will not cover a period more than the specified Data Range in chart settings.

- If **Start ... End ...** option is selected, it shows Volume Profile for a specified period of time according to your regional settings.**Example:** Show volume Profile from *dd/mm/yy hh:mm:ss* to *dd/mm/yy hh:mm:ss*.

8. Two **Alignment** modes are available:

- To show Volume Profile from the **Right**;
- To show Volume Profile from the **Left**.

9. It is possible to adjust the **Transparency** of the Volume Profile.

Note: Though the Volume Profile transparency can be set to 100%, one can see the bars of plotted chart symbol. This is because by default Volume Profile is shown in the background and the data series is on the foreground.

10. It is possible to adjust the **Width** of the Volume Profile.

- If **Last** is selected in **Time** section, the 100% of **Width** is 100% of visual chart space.
- If **Every** is selected in **Time** section, the 100% of **Width** is 100% of space allocated for specified number of bars/sessions.
- If **Start ... End ...** is selected in **Time** section, the 100% of **Width** is 100% of space allocated for specified time period.

11. It is possible to adjust the **Value Area** of the Volume Profile. Value Area is the area (specified in %) of most traded volume of the profile (100%).

12. Check **Use As Default** box to use your custom settings of volume profile as default ones.

13. Check **Display Above Price Bars** to put volume profile in front and the bars in the background. By default the volume profile is in the background.

Displaying Multiple Volume Profiles

Volume profile is a tool that can be enabled or disabled for a particular data series. 1 data series can have only 1 Volume Profile displayed, however it is possible to see multiple different Volume Profiles for the same instrument on 1 chart:

1. Create a chart with Volume Profile,
2. Make a **right-click** on this chart and select **Insert Instruments...**,
3. Do not change anything in settings of the new data series, except for the following fields:
 - The data should be shown on **SubChart #1** in **Settings** tab,

- The chart **Style** should be **Invisible Bars**,
 - **Volume Profile** can be set differently to the first one.
4. Click **Ok** to load second data series with another volume profile.

All the rest settings should be 100% identical to the original data series.

Volume Profile Switch

Since MultiCharts 8.7 beta 1 Volume Profile can be plotted on the chart with a single click on the **Volume Profile Switch**  button located in the status line.

Go To Specified Bar

Go To Specified Bar feature allows you to jump to needed bars and dates without scrolling.

To jump to a specific bar or time and date:

1. Select **View** in the main menu and click **Go To Specified Bar**.
2. Select the **Bar Number** or the **Date Time** option and specify the number of the bar or the time and date you want to jump to.
3. Click **Go**.

Chart Settings

Chart Scaling

The **Price Scale** is located on the left and/or the right side of the chart and consists of a vertical line with marks indicating values and identified by **Labels**.

The values on the scale are specific to the symbol or indicator plotted on the chart.

The scale represents the value range within which the chart is plotted. To determine the value of a point on a chart the vertical position of the point is referenced to a value on the Price Scale.

The Range of the Price Scale and the chart's top and bottom Margins can be set.

The Labels, identifying scale's marks, can be customized.

Five Price Scale range modes (scaling modes) are available:

Screen

Entire Series

User Defined

Movement Size

Price Range

Two Scaling Types are available (except for the **Movement Size** scaling mode):

Linear

Semi-Log

Each scale range setting and scaling type offers its own advantages.

Expanding Scale to Indicator

If the price scale is based on the data series and an indicator is overlaid on the data series, the range of the price scale may not be wide enough to capture all parts of the indicator. In this case, the parts of the indicator that fall outside of the range of the price scale will not be displayed in the chart.

To automatically expand the range of the price scale so that it will capture all parts of the indicator:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;

- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **General** section, select **Expand Scale to Indicators**.

Note: This feature only works if the indicator's scaling range is set to **Same as Symbol**.

Overlaying Data Series

When two or more data series exist in the same subchart, it is possible to overlay the data series:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **General** section, select **Overlay Data Series**.

By default, the price scale of the first data series is shown.

To change to the price scale of another data series:

1. Right-click on the price scale.
2. Select the data series in the window.

Tip: Two different **Price Scales** can be displayed at the same time by setting the left and right price scales.

Margins

Margins are the extra spaces between the visual representation of a data series and the chart's upper and lower borders and are set as a percentage of the data series' price range. Margins can not be set for a chart with a User Defined price scale.

How to set

Margins are set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In **Use Margins** section, check the **Use Margins** check box to add margins; uncheck the box to not add margins.
 4. In the **Top Margin** text box enter the top margin as a percentage of the series price range.
 5. In the **Bottom Margin** text box enter the bottom margin as a percentage of the series price range.

Note: To use these margin settings for all new charts, check **Use as Default** check box.

Scale Labels

Scale Labels are the numbers that appear next to the marks on the price scale that indicate what value the marks represent.

If a chart contains multiple objects, the object, for which the label values are displayed, can be selected. The object is selected separately for the right and for the left price scales, making it possible to display different label values on the right than on the left scale of the chart.

The numbers displayed on the labels can be abbreviated, and either the increment (step size) between the labels or the total number of labels can be set.

Selecting Object for Label Values

The object, for which the label values on a price scale are displayed, can be selected by right-clicking on the price scale and then clicking the **#) Object Name**, where **#** is the number, indicating the order in which the object has been added to the chart.

Dividing Scale Label Values

The values of some indicators, for example volume, can be rather large, such as 25,000,000,000.

The numbers displayed on the labels can be abbreviated by dividing the values they represent by a set factor.

For example, a label for the value of 25,000,000,000, divided by a factor of 1,000,000,000, will read "25.00".

Characters can also be added to the end of the label, for example a "b", resulting in a label that reads "25.00 b" instead of the "25,000,000,000".

Tip: You can elect to set the division factor automatically or manually.

Dividing Label Values Automatically

The division factor with the corresponding characters is selected automatically.

To change the characters, see Dividing Label Values Manually.

Automatic selection of the division factor can be chosen from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Divide Scale Labels** section, check **Divide Scale Labels** check box.
 4. Select the **Auto** radio button.

Tip: To use these scaling settings for all new charts, check **Use as Default** check box.

Dividing Label Values Manually

The division factor can be set manually, and the corresponding characters assigned, from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Divide Scale Labels** section, check **Divide Scale Labels** check box.
 4. Select the **Manual** radio button.

5. In the drop-down list box select the division factor.
6. In the **Displayed as** text box enter the characters to be added to the end of the label for the selected division factor; these characters will also be used when Dividing Label Values Automatically.

Tip: To use these scaling settings for all new charts, check **Use as Default** check box.

Canceling Label Value Division

Label value division is canceled from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Divide Scale Labels** section, uncheck **Divide Scale Labels** check box.

Tip: To use these scaling settings for all new charts check **Use as Default** check box.

Setting Label Step

You can choose from three different settings that determine the increment (step size) between labels:

- **Automatic** - the increment is optimized dynamically to aid the visual assessment of price levels
- **Set Step Size** - the increment between labels is set manually
- **Set Number of Labels** - a set number of labels is always displayed

Automatic

Increment between the labels is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Scaling** tab.
- 3. In the **Set Labels Manually** section, uncheck **Set Labels Manually** check box.

Tip: To use these scaling settings for all new charts, check **Use as Default** check box.

Set Step Size

Increment between the labels is set from the **Format Instruments** window:

1. Open the **Format Symbol** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar;

if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Scaling** tab.
- 3. In the **Set Labels Manually** section, check **Set Labels Manually** check box.
- 4. Select the **Set Step Size** radio button.
- 5. In the **Set Step Size** text box enter the increment value (step size), in units displayed on the scale.

Note: A label at each step will only be displayed if there is enough room on the scale.

Tip: To use these scaling settings for all new charts, check **Use as Default** check box.

Set Number of Labels

A fixed total number of labels can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Scaling** tab.
- 3. In the **Set Labels Manually** section, check **Set Labels Manually** check box.
- 4. Select the **Set Number of Labels** radio button.
- 5. In the **Set Number of Labels** text box enter the fixed number of labels desired.

Note: The set number of labels will only be displayed if there is enough room on the scale.

Tip: To use these scaling settings for all new charts, check **Use as Default** check box.

Using Fractional Price Scale Format

MultiCharts can display prices in both decimal and fractional format.

Configuring Fractional Price Scale Format for Symbols

Configuring Fractional Price Scale Format for Studies Configuring

Fractional Price Scale Format for Drawings

Fractional format is available for the following values:

Open

High

Low

Close

Last

Bid

Ask

Net Change

Last Price Marker

Price value in the Status Line

Price value in the Chart Hint

Price value in the Drawing Properties

Minimum and **Maximum** check boxes values under the **Scale** tab of the Format Instruments dialog window

Fractional format is not available in the following scenarios:

When exporting data from the chart:

When exporting data from Strategy Performance Report

When accepting/rejecting orders in the dialog window

When closing open positions in the dialog window

When assigning market position at the broker in the dialog window

In the Alert messages

Setting the Number of Digits After the Decimal

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
3. In the **General** section, select **No. of digits after decimal**.
4. Select the number of digits in the drop-down list.

Scale Range

Five types of Price Scale Range can be used: Screen, Entire Series, User Defined, Price Range, and Movement Size.

Screen Scale Range

The range of the price scale is equal to the range of the data series that's visible on the chart. The price scale will adjust automatically if the user scrolls to another part of the data series.

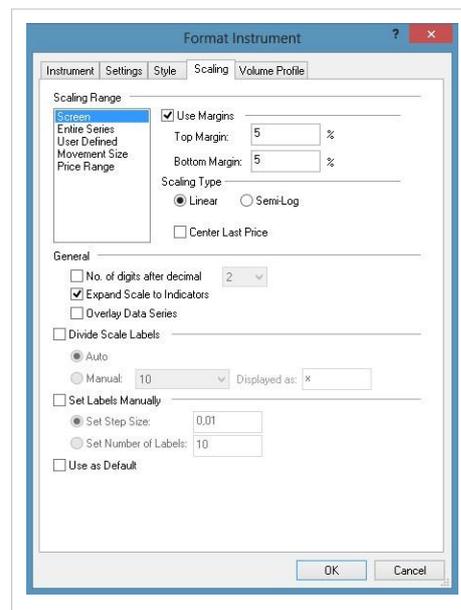
Setting Screen Scale Range

Scale range can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; once the **Pointer** changes into a **Hand** right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;



- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Scaling** tab.
- 3. In the **Scaling Range** list box, select **Screen**.
- 4. Select the **Use Margins** check box to set a margin between the plot and the chart's upper and lower borders.
- 5. Enter numbers in the **Top Margin %** box and **Bottom Margin %** box to define the top margin and bottom margins.
- 6. In the **Scaling Type** section select Linear or Semi-Log.
- 7. Select the **Center Last Price** check box to center the last price of the data series in the middle of the price scale.

Note: To use these scaling settings for all new charts, check **Use as Default** check box.

Entire Series Scale Range

The range of the price scale is equal to the range of the entire data series, including parts of the data series not currently shown on the chart. Since the range of the price scale is that of the entire data series, the range of the price scale will not change if the user scrolls to another part of the data series.

Setting Entire Series Scale Range

Scale range can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Scaling Range** list box, select **Entire Series**.
 4. Select the **Use Margins** check box to set a margin between the plot and the chart's upper and lower borders.
 5. Enter numbers in the **Top Margin %** box and **Bottom Margin %** box to define the top margin and bottom margins.
 6. In the **Scaling Type** section select Linear or Semi-Log.
 7. Select the **Center Last Price** check box to center the last price of the data series in the middle of the price scale.

Note: To use these scaling settings for all new charts, check **Use as Default** check box.

User Defined Scale Range

The range of the price scale is defined manually. Any part of the data series that falls outside of the defined range will not be displayed in the Chart Window.

Setting User Defined Scale Range

Scale range can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Scaling Range** list box, select **User Defined**.
 4. In the **Maximum** box, enter the maximum value of the range.
 5. In the **Minimum** box, enter the minimum value of the range.
 6. In the **Scaling Type** section select Linear or Semi-Log.

Note: User Defined scale range can not be used as a default.

Movement Size Scale Range

The range of the price scale is defined manually. The scale will be based on the number of points within a unit of length. For example, the user can specify that each inch of the price scale represents 10 points.

Setting Movement Size Scale Range

Scale range can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Scaling Range** list box, select **Movement Size**.
 4. Enter a unit length.

5. Select either inches or centimeters in the drop-down box.
6. Enter the number of points that the unit of length in Step 4 will represent.

Note: To use these scaling settings for all new charts, check **Use as Default** check box.

Price Range Scale Range

The range of the price scale is defined manually. The range of the scale will be based on the number of points above and below the Last Price Marker. For example, if the last price market is at 100, the user can specify that the range of the scale will be 20 points above and 20 points below the Last Price Marker (i.e., 120 to 80)

Setting Price Range Scale Range

Scale range can be set from the Format Instruments window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
 3. In the **Scaling Range** list box, select **Price Range**.
 4. In the **Above** box, enter the number of points above the Last Price Marker. This is the maximum value of the range.
 5. In the **Below** box enter the number of points below the Last Price Marker. This is the minimum value of the range.

Note: To use these scaling settings for all new charts, check **Use as Default** check box.

Scale Type

Two types of chart **Scaling** can be selected: **Linear** or **Semi-Log**.

Linear Scaling

A Linear price scale is the conventional, absolute scale. A \$10 change in price will always be represented by the same displacement along the vertical axis, regardless of the base price from which the change took place.

Setting Linear Scaling Type

Scaling Type is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Scaling** tab.
3. In the **Scaling Type** section, click the **Linear** radio button.

To center the last quote in the middle of the price scale, check the **Center Last Price** check box; the last quote can not be centered for a chart with a User Defined price scale.

To use these scaling settings for all new charts, check **Use as Default** check box.

Semi-Log Scaling

A Semi-Log (percent-of-change) price scale is a percentage-based scale. A 10% change in price will always be represented by the same displacement along the vertical axis, regardless of the absolute price change. A \$5 price change from a \$50 base price (10%) will be represented by the exact same vertical displacement as a \$10 price change from a \$100 base price (10%), even though the absolute values of \$5 and \$10 are not equal.

Important: Margins should not be used with a Semi-Log price scale.

Setting Semi-Log Scaling Type

Scaling Type is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Scaling** tab.
3. In the **Scaling Type** section, click the **Semi-Log** radio button.

To center the last quote in the middle of the price scale, check the **Center Last Price** check box; the last quote can not be centered for a chart with a User Defined price scale.

To use these scaling settings for all new charts, check **Use as Default** check box.

Candlestick Chart

Candlestick Chart visually presents the data series as a sequence of "Candlesticks".

A **Candlestick** emphasizes the range between the Open and the Close price points (ticks), and the direction of price movement (trend) between them.

Each candlestick consists of a "Body" and a "Wick". The body is a pillar-like rectangle, connecting the Open and the Close (the first and the last ticks') prices of the tick group, on which the candlestick is based. The body's color indicates the trend – the direction of price movement – between the Open and the Close ticks. The wick consists of two vertical lines, one extending from the top and one from the bottom of the body, to the High and Low price points. Each part of the wick is displayed only if its corresponding price point falls outside of the body's range.

A Candlestick has three components: **Up**, **Down**, and **Wick**; Up is the body in an uptrend, and Down is the body in a downtrend.

The color of each of the components, the width of the wick, and the body's border is customized in the **Chart Style** section.

Selecting Candlestick Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Type** list box select **Candlestick**.

Selecting Candlestick Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Style** section click on the component element to be changed.
 4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
 5. From the **Width** drop-down list box select a width of the body border and the wick.
 6. To show candlestick borders, select **Show Candlestick Border** check box; clear the box to hide the border. The style of the border is the same as of the Wick.
 7. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
 8. To display the Last Price Marker select the **Last Price Marker** check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
 9. To use these style settings for all new charts of this type, select **Use as Default** check box.

Chart Style

Several types of charts can be created. Chart style can be customized for each type of a chart.

The following types of charts are available:

OHLC Bar Chart

HLC Bar Chart

HL Bar Chart

Candlestick Chart

Dot On Close Chart

Line On Close Chart Invisible

Chart

Each chart type offers an alternative visual representation that has its own advantages.

The type and style of a chart are set in the **Style** tab of the **Format Instruments** window.

Chart Type is selected in the **Chart Type** section, and Chart Style settings can be customized in the **Chart Style** section.

Changes to Chart Type and Chart Style settings will be applied to the Chart Window in real time.

Last Price Marker

Last Price Marker is a special label displayed on the price scale that indicates the latest price value of the data series.

If multiple data series are plotted in different subcharts within the same chart window, then the marker is displayed for each data series.

However, if multiple data series are plotted in the same subchart, then the marker is displayed only for the series that was added first (Data #1).

To turn off/on Last Price Marker for a data series:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Style** tab.

3. Under the **Advanced** group box, check or uncheck the **Last Price Marker** checkbox.

Chart Style

Changing Bar Weight

Chart's bars' **Weight** can be changed by

- clicking **Increase Weight**  or **Decrease Weight**  icons on the **Control** toolbar
- selecting **Format** in the main menu and clicking **Increase Weight** or **Decrease Weight**

Dot on Close Chart

Dot On Close chart visually presents the data series as a sequence of dots that are not connected by a line.

Each dot graphically represents the **Close** (last tick's) price of each tick group.

The color and size of the dots can be customized in the **Chart Style** section.

Selecting Dot on Close Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Type** list box select **Dot on close**.

Selecting Dot on Close Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.
4. From the drop-down list select a style.
5. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as of the Close component.
6. To use these style settings for all new charts of this type, check **Use as Default** check box.

Changing Dot Weight

To change the Weight (size) of the dots:

- click **Increase Weight**  or **Decrease Weight**  icon on the **Control** toolbar, or

- select **Format** in the main menu and click **Increase Weight** or **Decrease Weight**.

HL Bar Chart

HL Bar Chart visually presents the data series as a sequence of bars.

Each **HL** bar is a vertical line connecting the **High** and the **Low** price points (ticks), and graphically represents the range of an instrument's price movement over a defined interval.

An HL Bar has one component: **High/Low**.

The color and width of each of the bar's component can be customized in the **Chart Style** section.

Note: HL Bar Type is available only for Regular, Renko and Cumulative Delta chart types.

Selecting HL Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Type** list box select **HL Bar**.

Setting HL Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;

- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Style** section click on the component element to be changed.
 4. From the drop-down list select a style.
 5. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as of the Close component.
 6. To use these style settings for all new charts of this type, check **Use as Default** check box.

Changing Bar Weight

To change bars' Weight:

- click **Increase Weight**  or
- click **Decrease Weight**  icon on the **Control** toolbar,
- select **Format** in the main menu and click **Increase Weight** or **Decrease Weight**.

HLC Bar Chart

HLC Bar Chart visually presents the data series as a sequence of bars.

Each **HLC** bar is a vertical line connecting the **High** and the **Low** price points (ticks), and graphically represents the range of an instrument's price movement over a defined interval. The price of the last tick of the tick group, on which the bar is based, is indicated on the right side of the line by a mark known as the bar's **Close** component.

An HLC Bar has two components: **High/Low** and **Close**.

The color and width of each of the bar's components can be customized in the **Chart Style** section.

Selecting HLC Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Style** tab.
3. In the **Chart Type** list box select **HLC Bar**.

Setting HLC Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Style** section click on the component element to be changed.
 4. From the drop-down list select a style.
 5. To apply the most recently selected component's style of to all components, click the **Apply to all components** button.
 6. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as of the Close component.
 7. To use these style settings for all new charts of this type, check **Use as Default** check box.

Changing Bar Weight

To change bars' Weight:

- click **Increase Weight**  or
- click **Decrease Weight**  icon on the **Control** toolbar,
- select **Format** in the main menu and click **Increase Weight** or **Decrease Weight**.

OHLC Bar Chart

OHLC Bar Chart visually presents the data series as a sequence of bars.

Each **OHLC** bar is a vertical line connecting the **High** and the **Low** price points (ticks), and graphically represents the range of an instrument's price movement over a defined interval. The price of the first tick of the group, on which the bar is based, is indicated on the left side of the line by a mark known as the bar's **Open** component. The price of

the last tick of the group, on which the bar is based, is indicated on the right side of the line by a mark known as the bar's **Close** component.

An OHLC Bar has three components: **Open**, **High/Low**, and **Close**.

The color and width of each of the bar's components can be customized in the **Chart Style** section.

Selecting OHLC Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Type** list box select **OHLC Bar**.

OHLC Chart Type can also be selected by one of the following methods:

- Click the **Bar Chart**  icon on the **Chart Analysis** toolbar; or:
- In the main menu select **View** and click **Bar Chart**.

Setting OHLC Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.

4. From the drop-down list select a style.
5. To apply the most recently selected component's style of to all components, click the **Apply to all components** button.
6. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as of the Close component.
7. To use these style settings for all new charts of this type, check **Use as Default** check box.

Changing Bar Weight

To change bars' Weight:

- click **Increase Weight**  icon on the **Control** toolbar,
- click **Decrease Weight**  icon on the **Control** toolbar,
- select **Format** in the main menu and click **Increase Weight** or **Decrease Weight**.

Hollow Candlestick Chart

A Hollow Candlestick Chart plots the data series using a sequence of candlestick figures. A single candlestick consists of a body and a wick. The entire length of the candlestick represents the distance from the high to the low.

The body represents the distance between the open price and the close price.

The wick can be on either end or both ends. A wick above the body represents the distance from the high to the open/close, whichever is closer. A wick below the body represents the distance from the low to the open/close, whichever is closer.

On the chart, the body of a candlestick takes the form of a pillar-like rectangle. The wick is the line above and/or below the body.

The body of a candlestick can be either hollow or solid.

Hollow A candlestick with a hollow body is called a bullish candlestick. The close is higher than the open.

Solid A candlestick with a solid body is called a bearish candlestick. The close is lower than the open.

Additionally, a candlestick can be one of three colors.

Green (Up) The close of the current candlestick is higher than the close of the previous candlestick.

Grey (Neutral) The close of the current candlestick is the same as the close of the previous candlestick.

Red (Down) The close of the current candlestick is lower than the close of the previous candlestick.

Tip: These are the default colors.

To change the colors,

1. Double-click on the data series in the chart.
2. Select the **Style** tab.
3. Select **Hollow Candlestick** under **Chart Type**.
4. Click the color bars under **Chart Style** to select different colors.

Selecting Hollow Candlestick Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Type** list box select **Hollow Candlestick**.

Candlestick Chart Type can also be selected by one of the following methods:

- Click the **Hollow Candlestick Chart**  icon on the **Chart Analysis** toolbar; or:
- In the main menu select **View** and click **Hollow Candlestick**.

Selecting Hollow Candlestick Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.
4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
5. From the **Width** drop-down list box select a width to change the thickness of the candlestick.
6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.

7. To display the Last Price Marker select the **Last Price Marker** check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Invisible Chart

In an Invisible Chart the data series is present, but not visually presented.

An invisible chart can be used when the data series is needed for a calculation, but the visual presentation of the data series is not required.

Selecting Invisible Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Type** list box select **Invisible Chart**.

Selecting Invisible Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Style** tab.
- 3. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as the Dot on Close Chart's Close component.
- 4. To use this style setting for all new charts of this type, check **Use as Default** check box.

Line on Close Chart

Line On Close chart visually presents the data series as a sequence of dots that are connected by a line.

Each dot graphically represents the **Close** (last tick's) price of each tick group.

The color and width of the line can be customized in the **Chart Style** section.

Selecting Line on Close Chart Type

Chart type can be selected from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Type** list box select **Line on Close**.

Line on Close Chart Type can also be selected by one of the following methods:

- Click the **Line on Close Chart**  icon on the **Chart Analysis** toolbar; or:
- In the main menu select **View** and click **Line on Close**.

Selecting line on Close Chart Style

Chart style can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Style** section click on the component element to be changed.
 4. From the drop-down list select a style.
 5. To display the Last Price Marker check the **Last Price Marker** check box, or uncheck the box to hide the marker; the color of the marker is the same as of the Close component.
 6. To use these style settings for all new charts of this type, check **Use as Default** check box.

Changing Line Weight

To change line's Weight:

- click **Increase Weight**  or
- click **Decrease Weight**  icon on the **Control** toolbar,
- select **Format** in the main menu and click **Increase Weight** or **Decrease Weight**.

Symbol Settings

Changing Symbols

Symbols can be changed using either Command Line Toolbar or Format Symbol Window.

Changing Symbol Using the Command Line Toolbar

To learn more review [Creating Charts Using the Command Line Toolbar](#)

Changing Symbol Using Format Symbol Window

Symbols can be selected either by the symbol name or by the security description.

Changing Symbol by Symbol Name

Only the symbols which have already been added to the Symbol List will be available. The 32 most common Futures symbols are pre-loaded into the Symbol List; all other symbols must be added by the user.

Note: To learn more see [Adding Symbols to Symbol List](#)

To change a symbol by symbol name:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

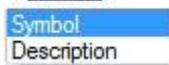
- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Symbol** tab.

3. Select a data source in the **Data Source** drop-down list box.

▼ Symbol:

Symbol
Description

4. Click the **Symbol/Description**  selector and choose **Symbol**.

5. Enter all or part of the symbol name in the name/description combo box; as the name is entered, a dynamically filtered list of the available matching symbols and their descriptions will be displayed.

6. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbols to Symbol List.

7. Double-click the symbol or click **OK**.

Changing Symbols

Changing Symbol by Security Description

Symbols can be selected by the security description as well as by the symbol name.

Only the symbols which have already been added to the Symbol List will be available.

The 32 most common Futures symbols are pre-loaded into the Symbol List; all other symbols must be added by the user.

Note: To learn more see Adding Symbols to Symbol List

To change a symbol by security description:

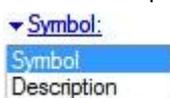
1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Symbol** tab.

3. Select a data source in the **Data Source** drop-down list box.



4. Click the **Symbol/Description** selector and choose **Description**.

5. Enter all or part of the security description in the name/description combo box; as the description is entered, a dynamically filtered list of the available matching symbols and their descriptions will be displayed.

6. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbols to Symbol List.

7. Double-click the symbol or click **OK**.

Chart Resolution

A **Tick** is the information about each real trade (or each bid, or each ask, of a potential trade) received from a data vendor. A tick consists of the price, time, and volume.

A Bar Chart is the most popular format for visually presenting a Data Series. Each **Bar** is a vertical line connecting the **High** and the **Low** price points (ticks), and graphically represents the range of an instrument's price movement over a defined **Interval**. The price of the first tick of the group, on which the bar is based, is indicated on the left side of the line by a mark known as the bar's **Open** component. The price of the last tick of the group, on which the bar is based, is indicated on the right side of the line by a mark known as the bar's **Close** component.

Defining the **Interval** on which each of the chart's bars is based determines the **Chart Resolution**. Chart resolution is also sometimes referred to as the Chart Compression.

Chart resolution can be based on a **Time** interval (seconds, minutes, hours, days, weeks, months, or years), or on a **Count** interval (tick, volume, change, or range).

The choice of time- versus count-based charts depends on the user's preference and trading style. Daily or weekly bars can be used to help identify long-term trends, while tick bars are better suited for day trading.

Count-based charts are becoming increasingly popular because they focus in on the price movement and filter out the periods of low market activity.

Understanding Tick-Based Charts

Each bar in a tick-based chart is based on a tick group that consists of a defined number of successive ticks. The first tick of the group forms the bar's Open component, the tick with the highest price forms the bar's High component, the tick with the lowest price forms the Low component, and the last tick of the group forms the bar's Close component. The bar is closed once the defined number of ticks has been reached. The first tick of the following group forms the next bar's Open component.

A 1-tick chart consists of the dots, representing the price values of each of the incoming raw ticks (quotes).

Note: If 1-Tick resolution is used, only the following chart types are available: Dot on Close, Line on Close, Invisible Bar

You can elect to use the price data from Trades, Asks, or Bids by Setting Quote Field.

Setting Resolution of Tick-Based Charts

Resolution of tick-based charts can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;

- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;

- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Settings** tab.

3. In the **Chart** section, in the **Resolution Interval** text box, enter the number of ticks to be used for each bar.

4. In the **Resolution** Unit drop-down list box select **Tick**.

Note: The maximum number of ticks that can be used to create a single bar is 1,000,000.

Resolution of tick-based charts can also be set by one of the following methods:

- Click the **Tick Bar**  icon on the **Resolution** toolbar; from the drop-down list select the number of ticks to be used for each bar; or:
- Click the down-arrow to the right of the **Resolution**  icon on the **Command Line** toolbar, then point to **Tick Bar** and select the number of ticks to be used for each bar from the drop-down list; or:
- Enter the appropriate command into the Command Line toolbar combo box.

[Click here to find out how to use the Command Line.](#)

Understanding Time-Based Charts

Each bar in a time-based chart is based on a tick group that consists of all ticks over a defined interval of time. The first tick of the group forms the bar's Open component, the tick with the highest price forms the bar's High component, the tick with the lowest price forms the Low component, and the last tick of the group forms the bar's Close component. The first tick with a time stamp past the original bar's interval forms the next bar's Open component.

You can elect to use the price data from Trades, Asks, or Bids by Setting Quote Field.

Setting Resolution of Time-Based Charts

Resolution of time-based charts can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Settings** tab.

3. In the **Chart** section, in the **Resolution** Interval text box, enter the number of time periods to be used for each bar.

4. In the **Resolution** Unit drop-down list box select the time period.

Note: The maximum interval values that can be used for each of the time period units are: 86400 seconds, 1440 minutes, 24 hours, 30 days, 52 weeks, 12 months, 4 quarters, or 10 years. Resolution of time-based charts can also be set by one of the following methods:

- Click the **Second Bar**  or the **Minute Bar**  icon on the **Resolution** toolbar; from the drop-down list select the number seconds or minutes, respectively, to be used for each bar; or:
- Click the **Hourly Bar** , the **Daily Bar** , the **Weekly Bar** , the **Monthly Bar** , the **Quarterly Bar** , or the **Yearly Bar**  icon on the **Resolution** toolbar to select a 1-hour, 1-day, 1-week, 1-month, 1-quarter, or 1-year bar, respectively;
- Click the down-arrow to the right of the **Resolution**  icon on the **Command Line** toolbar and select the time period. For Second and Minute bars the number of time period units can also be selected from a drop-down list;
- Enter the appropriate command into the Command Line toolbar combo box.

Understanding Range-Based Charts

Each bar in a range-based chart is based on a tick group that consists of successive ticks over a defined price range. The bar's Open component is always one tick above or below the Close component of the previous bar, and the bar's Close component is always at the High or the Low of the bar. All the bars are of the same height, equal to the range. The next bar is started once the tick with a price outside of the original bar's range has been received. If the price movement is greater than the combined range of two consecutive bars, additional "virtual" bars are inserted between the bars to fill the gap.

You can elect to use the price data from Trades, Asks, or Bids by Setting Quote Field.

A range-based chart can only be created from tick data.

Note: The maximum period of the price data that can be used to create a single bar in a range-based chart is one trading day, including all of the trading sessions on that day.

Setting Resolution of Range-Based Charts

Resolution of range-based charts can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Chart** section, in the **Resolution** Interval text box, enter the price movement, in points, that is to trigger creation of the next bar.
 4. In the Resolution Unit drop-down list box select **Point**.

Note: The maximum number of points that can be used to create a single bar is 10,000.

Resolution of range-based charts can also be set by one of the following methods:

- Click the **Range Bar**  icon on the **Resolution** toolbar; from the drop-down list select the number of points to be used for each bar;
- Click the down-arrow to the right of the **Resolution**  icon on the **Command Line** toolbar, then point to **Range Bar** and select the number of points to be used for each bar from the drop-down list;
- Enter the appropriate command into the Command Line toolbar combo box.

Understanding Volume-Based Charts

Each bar in a volume-based chart is based on a tick group that consists of successive ticks for a defined number of contracts. The first tick of the group forms the bar's Open component, the tick with the highest price forms the bar's High component, the tick with the lowest price forms the Low component, and the last tick of the group forms the bar's Close component. The bar is closed once a tick, bringing the current bar's total to the defined number of contracts, has been received. If the last tick's volume is greater than is required to complete the current bar, the tick is split. The volume required for the current bar is used for that bar, and the balance is used to start the next bar.

You can elect to base this chart on the actual volume of all transactions, or on the total number of transactions (ticks) only, by using the Build Volume On selector.

You can elect to use the data from Trades, Asks, or Bids for this chart by Setting Quote Field.

Setting Resolution of Volume-Based Charts

Resolution of volume-based charts can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Chart** section, in the **Resolution** Interval text box, enter the number of contracts to be used for each bar.
 4. In the **Resolution** Unit drop-down list box select **Contract**.

Note: The maximum number of contracts that can be used to create a single bar depends on the data vendor.

Resolution of volume-based charts can also be set by one of the following methods:

- Click the **Volume Bar**  icon on the **Resolution** toolbar; from the drop-down list select the number of contracts to be used for each bar
- Click the down-arrow to the right of the **Resolution**  icon on the **Command Line** toolbar, then point to **Volume Bar** and select the number of contracts to be used for each bar from the drop-down list
- Enter the appropriate command into the Command Line toolbar combo box. Click here to find out how to use the Command Line.

Build Volume On Selector

You can elect to base a chart on the actual volume of all transactions, or on the total number of transactions (ticks) only, by using the **Build Volume On** selector.

Build Volume On selector is set from the **Format Instruments** window:

1. Open the **Format Instruments** window.
2. Select the **Settings** tab.
3. In the **Chart** section, in the **Build Volume On** drop-down list box, select **Trade Volume** or **Tick Count** to base the chart on the actual volume, or on the number of ticks, respectively.

Understanding Change-Based Charts

Each bar in a change-based chart is based on a tick group that consists of successive ticks over a defined number of price changes.

The first tick of the group forms the bar's Open component, the tick with the highest price forms the bar's High component, the tick with the lowest price forms the Low component, and the last tick of the group forms the bar's Close component.

The bar is closed once the tick with a price, bringing the current bar's total number of price changes to the defined number, has been received. The first tick of the following group forms the next bar's Open component.

You can elect to base this chart on the Trades, on the Asks, or on the Bids by Setting Quote Field.

Setting Resolution of Change-Based Chart

Resolution of change-based charts can be set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Chart** section, in the **Resolution** Interval text box, enter the number of price changes to be used for each bar.
 4. In the **Resolution** Unit drop-down list box select **Change**.

Resolution of change-based charts can also be set by entering the appropriate command into the Command Line toolbar combo box.

Data Numbers

Each data series in a multi-symbol chart has a unique **Data Number**. Data Numbers are used to differentiate data series in multi-symbol charts, and for the calculation of indicators that use several data series. The Data Number is automatically assigned according to the order in which the data series was added to a Chart Window.

The Data Number can also be set manually while a series is being added, except for the very first series to be added to a Chart Window, which is always Data #1. A Data Number can no longer be changed once the series has been plotted.

Note: Any data series can be deleted from a multi-symbol Chart Window, except for the data series with the Data #1. Data series # 1 can only be deleted by closing the Chart Window.

Setting Data Number

The Data Number can be set manually from the **Format Instruments** window only when the series is being added. Once the series has been plotted, the Data Number can not be changed.

To manually set a Data Number to a data series:

1. Follow the instructions for inserting an additional data series into a Chart Window; to learn how insert an additional series, see Inserting Additional Symbols into a Chart Window.
2. Before clicking **OK** select the **Settings** tab in the **Format Instruments** window.
3. In the **Display** section, in the **Data Number** drop-down list box, select a Data Number for the data series being created.

Data Range

Data Range is the entire period of data that is covered by the chart.

Data Range can be defined by two different methods:

1. By defining the number of bars, or days, back from a particular date; or:
2. By defining the start and end dates.

Setting Bars/Days Back

Data Range is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button.

The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Settings** tab.
- 3. In the **Data Range** section click the top radio button.
- 4. In the text box enter the number of bars or days back to be used.
- 5. In the drop-down list box choose **Bars Back** or **Days Back**.
- 6. In the **...Back From** combo box, your computer's system date is set up by default; if required, enter another date or use the drop-down calendar.
- 7. Click  to save the data range and disable auto adjustment to the current date.

Setting Dates Range

Data Range is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Data Range** section click the bottom radio button.
 4. In the **From** combo box enter the starting date or use the drop-down calendar; your computer's system date is set up by default.
 5. In the **To** combo box, your computer's system date is set up by default; if required, enter another date or use the drop-down calendar.
 6. Click  to save the data range and disable auto adjustment to the current date.

Quote Field

There are three types of quotes:

- **Asks** - the prices asked for by the sellers
- **Bids** - the prices offered by the buyers
- **Trades** - the prices of completed trades

Setting Quote Field

You can elect to use the data from the Trades only, from the Asks only, or from the Bids only, by setting the **Quote Field**.

Quote Field is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
3. In the **Chart** section, in the **Quote Field** drop-down list box, select **Ask**, **Bid**, or **Trade**, to use ask, bid, or trade data, respectively.

Sessions

Trading sessions are the hours in which a contract is available for trading. The trading session for each contract varies depending on the contract and the exchange.

A user may also want to only plot certain hours of the trading session instead of the entire session. Additionally, the user may want to plot the same symbol using different trading sessions.

Setting Sessions

Sessions are set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
- 2. Select the **Settings** tab.
- 3. In the **Chart** section, in the **Sessions** drop-down list box, select an applicable trading session.

Tip: To create custom session templates, see [Setting Custom Session Templates](#)

Time Zone

You can elect for the Local Time or for the Exchange Time to be displayed on the chart's time scale, by setting the **Time Zone**.

Local Time is the system time of your computer, and the **Exchange Time** is the local time at the location where the exchange is based.

Setting Time Zone

Time Zone is set from the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Display** section, in the **Time Zone** drop-down list box, choose **Local** or **Exchange** Time Zone.

Using Subcharts

When additional objects are inserted into a Chart Window, the window is divided horizontally into **SubCharts**. A single window can contain up to 20 SubCharts.

SubCharts allow several data series or other objects to be synchronized and viewed alongside each other.

Each SubChart is assigned a sequential number according to its position in a Chart Window, starting from the top. A chart that is the only chart in the Chart Window is SubChart number 1.

SubCharts can be **Resized**, **Maximized**, and **Hidden**. Each SubChart can contain a number of charts or studies, and objects can be moved from one SubChart to another.

Resizing SubCharts

To Resize SubCharts, position the mouse pointer over the border line between two SubCharts; once the pointer changes into a **Splitter**  , hold the left mouse button and drag the border to the desired position.

Maximizing and Restoring SubCharts

A SubChart can be maximized to fill the entire Chart Window, and a maximized SubChart can be restored to its original size.

Maximizing SubCharts

To maximize a SubChart, right-click on the chart area of the SubChart to be maximized and then click **Maximize SubChart**.

Restoring SubCharts

To restore a maximized SubChart to its original size, right-click on the chart area and then click **Restore SubChart**.

Moving Data Series between SubCharts

A data series in one SubChart can be moved to an existing or a new SubChart within the same Chart Window. Each SubChart can contain a number of objects.

Moving Data Series to Existing SubChart

A data series can be moved using the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Settings** tab.

3. In the **Display** section, in the **SubChart** scrolling list box, select the **SubChart #** you wish to move the series to.

A data series can also be moved by the following method:

1. Position the mouse pointer over the over the series or the Status Line of the series to be moved.
2. Once the **Pointer**  changes into a **Hand**  , hold the left mouse button and drag the pointer to another SubChart.
3. Release the mouse button to complete moving the series.

Moving Data Series to New SubChart

A data series can be moved using the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
3. In the **Display** section, in the **SubChart** scrolling list box, select **Show On Top** or **Show On Bottom** to move the series to a new SubChart at the top or at the bottom of the Chart Window, respectively.

A data series can also be moved by the following method:

1. Position the mouse pointer over the series or the Status Line of the series to be moved.
2. Once the **Pointer**  changes into a **Hand**  , hold the left mouse button and drag the pointer to the upper or lower border of the Chart Window, or of another SubChart.
3. Once the pointer changes into the **Create New SubChart**  symbol, release the mouse button to create a new SubChart.

Hiding and Redisplaying SubCharts

In some instances displaying a SubChart may not be necessary. A SubChart can be hidden by hiding all of the objects it contains. Hidden objects retain their full functionality.

Hiding Subcharts

A SubChart can be hidden by hiding all of the objects it contains.

Objects can be hidden by using the **Format Instruments** window:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;

- Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Settings** tab.

3. In the **Display** section, in the **SubChart** scrolling list box, select **Hide**.

An object can also be hidden by one of the following methods:

- Click the **Hide Object** icon on the **Control** toolbar; or:
- Select **Format** in the main menu and click **Hide Object**.

To hide a SubChart you may have to repeat the procedure for any additional objects that the SubChart may contain.

Redisplaying Hidden SubCharts

A hidden object or a data series can be redisplayed in a SubChart.

To redisplay a data series:

1. Open the **Format Instruments** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the object to be redisplayed and click the **Format** button to display the **Format Instruments** window.
3. Select the **Settings** tab.
4. In the **Display** section, in the **SubChart** scrolling list box, select **Show On Top**, **Show On Bottom**, or **SubChart #n**, to redisplay the data series in a new SubChart at the top, a new SubChart at the bottom, or in an existing SubChart, respectively, in the Chart Window.

Chart Window

Background

Chart Background consists of Background Color, Grid, and Session Break lines.

Setting Background Color

Background Color is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Background** tab.
3. In the **Background Color** section select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.

Tip: To use these background settings for all new charts, check **Use as Default** check box.

Setting Grid

Grid aids in the visual assessment of price levels and time increments. Grid Type and Color can be selected, or the Grid can be hidden. The available Grid Types are: **Point**, **Solid**, **Horizontal**, **Dotted**, and **Detailed Dotted**.

Grid is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Background** tab.
3. In **Show Grid** section check the **Show Grid** check box to display the Grid on the chart; uncheck the box to hide the Grid.
4. Select Grid type in the **Type** drop-down list box.
5. Select Grid color in the **Color** drop-down palette box.

Tip: To use these background settings for all new charts, check **Use as Default** check box.

Setting Session Breaks

Session Breaks are indicated on the chart by vertical lines. The lines' Color, Style, and Weight can be selected, or Session Break lines can be hidden.

Session Breaks are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Background** tab.

3. In **Show Session Breaks** section check **Show Session Breaks** check box to display the lines on the chart; uncheck the box to hide the Session Break lines.

4. Select line color in the **Color** drop-down palette box.

5. Select line style in the **Style** drop-down list box.

6. Select line weight in the **Weight** drop-down list box; line weight can only be selected for the solid line style.

Tip: To use these background settings for all new charts, check **Use as Default** check box.

Chart Appearance

The appearance of the following Chart Window elements can be customized from the **Format Appearance** Window:

Background

Background Color

Grid

Session Brakes

Chart Window

Setting SubChart Dividers

Title Bar

Setting Scroll Bar

Price Scale

TimeScale

Status Line

Volume Profile

Note: Changes to Chart Appearance settings will be applied to the Chart Window in real time.

Chart Window

The appearance of **SubChart Dividers** and of the Chart Window's **Title Bar** and **Scroll Bar** are set from the **Format Window** window.

Setting SubChart Dividers

SubChart Dividers separate the SubCharts in the Chart Window. The Dividers' Style and Color can be selected, or Dividers can be hidden.

Hiding and Redisplaying Dividers

SubChart Dividers are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Chart Window** tab.

3. In **Show SubChart Dividers** section, check **Show SubChart Dividers** check box to display the dividers; uncheck the box to hide the dividers.

Tip: To use these settings for all new charts, check **Use as Default** check box.

Setting Line Divider

Line SubChart Divider consists of a flat line. The Color and Style of the line can be selected. SubChart Dividers are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Chart Window** tab.

3. In **Show SubChart Dividers** section, check **Show SubChart Dividers** check box to display the Dividers.

4. Click the **Line** radio button.

5. Select line color in the **Color** drop-down palette box.

6. Select line style in the **Style** drop-down list box.

Tip: To use these settings for all new charts, check **Use as Default** check box.

Setting 3D Divider

3D SubChart Divider color and style are determined by the operating system appearance settings.

SubChart Dividers are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Chart Window** tab.
3. In **Show SubChart Dividers** section, check **Show SubChart Dividers** check box to display the Dividers.
4. Click the **3D** radio button.

Tip: To use these settings for all new charts, check **Use as Default** check box.

Setting Title Bar

A Title Bar is a horizontal bar, located at the top of a window and containing title text and maximize, minimize, and close buttons. A window is moved by dragging its title bar with the mouse. Chart Window **Title Bar** displays the name, resolution, and data source of the first data series that was added to the chart. The Title Bar can be set to be hidden, displayed, or displayed only when the Chart Window is active (Auto-Hide).

Title Bar is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Chart Window** tab.
3. In the **Title Bar** section:
 - Click the **Off** radio button to hide the Title Bar.
 - Click the **On** radio button to display the Title Bar.
 - Click the **Auto-Hide** radio button to auto-hide the Title Bar.

Tip: To use these settings for all new charts, check **Use as Default** check box.

Setting Scroll Bar

The Scroll Bar offers a fast and convenient method for viewing the parts of a data series that extend outside the visible range of the Chart Window. The chart is scrolled through by positioning the mouse pointer over the “bar” of the Scroll Bar, holding the left mouse button, and dragging the “bar” to the left or to the right, or by clicking move left or move right buttons on the Scroll Bar.

The Scroll Bar can be set to be hidden, displayed, or displayed only when the Chart Window is active (Auto-Hide). Please note that the Scroll Bar will only appear if the series actually extends beyond the visible range of the Chart Window. Scroll Bar is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Chart Window** tab.
3. In the **Scroll Bar** section:
 - Click the **Off** radio button to hide the Scroll Bar.
 - Click the **On** radio button to display the Scroll Bar.
 - Click the **Auto-Hide** radio button to auto-hide the Scroll Bar.

Tip: To use these settings for all new charts, check **Use as Default** check box.

Data Window

The Data Window displays information about a specific bar on the chart.

When the user points the mouse pointer at a bar on the chart, the Data Window will automatically show data series information, strategy information, and indicator information.

The data series information will show the date and time stamp, price level of the mouse pointer, symbol name, open, high, low, close, up volume, down volume, and bar number.

The strategy information will show the direction of the signal, quantity, and the entry/exit price.

The indicator information will show the indicator names and values.

Displaying Data Window

To display the Data Window:

1. Select **View** from the main menu, then select **Show Data Window**, or
2. Press CTRL+SHIFT+D, or
3. Click the **Data Window**  toolbar icon.

Price Scale

The **Price Scale** is located on the left or/and on the right side of the chart and consists of a vertical **Line** with marks, indicating values, and identified by **Labels**. The values on the scale are specific to the symbol or indicator plotted on the chart. The scale represents the value range, within which the chart is plotted. To determine the value of a point on a chart, the vertical position of the point is referenced to a value on the Price Scale.

Price Scale Line and Label styles can be set, or Price Scale and Labels can be hidden completely.

Price Scale Position

Price scale position can be set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Y - Price Scale** tab.

3. In the **Settings** section, check **Left** or/and **Right** check boxes to display the scale on the left or/and on the right side of the chart, respectively; uncheck both boxes to hide the Price Scale and Labels.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Price scale position can also be set by right-clicking on the price scale and then checking **Left Price Scale** or/and **Right Price Scale**, to display the scale on the left or/and on the right side of the chart, respectively; uncheck both options to hide the Price Scale and Labels.

Price Scale Style

Price scale style is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Y - Price Scale** tab.

3. In the **Style** section, select scale line color in the **Line Color** drop-down palette box.

4. Select scale line style in the **Line Style** drop-down list box.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Price Scale Labels

Price Scale Labels are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line

- Right-click on an empty area of the chart and then click **Format Window**

- Select **Format** in the main menu and click **Window**.

2. Select the **Y - Price Scale** tab.

3. In the **Settings** section, the Label Width is set for the Right or/and the Left scales individually:

- to determine label width automatically, click the **Automatic** radio button.

- to determine label width manually, click the **Manual** radio button and enter the desired width, in characters, into the **Characters** textbox.

4. In the **Style** section, select label color in the **Label Color** drop-down palette box.

5. In the **Font** section, select label font in the **Font** drop-down list box.

6. In the **Size** section, select label font size in the **Size** drop-down list box.
7. In the **Font Style** section, check **Bold**, **Italic**, and/or **Underline** check boxes to select bold, italic, and/or underline label font style.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Marker Style

In the **Format Window** window:

Check **Precise Marker** check box to indicate the current price on the price scale in a precise way.

Check **Countdown** check box to display the countdown box below the **Price Marker** showing the time remained until the end of the current bar.

Status Line

Status Line is located at the top of the chart and displays symbol information and market snapshots for the data series and studies being plotted. Status Line Fields, Color, Font, and Style can be configured, or the Status Line can be hidden.

In **Tracking Mode**, Status Line tracks the position of the mouse pointer. The information is displayed for each series for only the single bar, corresponding to the pointer's current horizontal position along the time scale. If the mouse pointer is not positioned over the chart, or if the Tracking Mode is not enabled, information displayed is for the series' entire current trading sessions.

In **MultiLine Mode**, a separate Status Line for each of the plotted series or studies is displayed at the top of the chart. If the MultiLine Mode is not enabled, all information is displayed in a single Status Line.

Data series and studies can be Linked, Moved, and Deleted by using the Status Line **Management Controls**.

Status Line Mode

Status Line Mode is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Status Line** tab.
3. In the **Enable Status Line** section:
 - To enable the status line, check the **Enable Status Line** check box; uncheck the box to hide the status line.
 - To enable the Tracking Mode, check the **Enable Tracking Mode** check box; uncheck the box to disable the Tracking Mode.
 - To enable the MultiLine Mode, check the **Enable MultiLine Mode** check box; uncheck the box to disable the MultiLine Mode.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Status Line Fields

Status Line Fields are configured from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Status Line** tab.

3. In the **Enable Status Line** section, select a field in the Status Line Fields scrolling list box.

- To display a field in the status line, check the check box next to the field's name, or select the field and click the **Show** button.

- To hide a field, uncheck the check box next to the field's name, or select the field and click the **Hide** button.

- To change the order in which fields are displayed in the status line, select a field and use the **Move Up** or **Move Down** buttons.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Status Line Style

Status Line Style is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **Status Line** tab.

3. In the **Status Line Colors** section, select a color for each text or value type in the **Color** drop-down palette box.

4. In the **Font** section, select status line font in the **Font** drop-down list box.

5. In the **Size** section, select status line font size in the **Size** drop-down list box.

6. In the **Font Style** section, check **Bold**, **Italic**, and/or **Underline** check boxes to select bold, italic, and/or underline status line font style.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Status Line Management Controls

It is possible to **Delete**, **Move** between SubCharts, and **Link** series and studies by using the Status Line.

Deleting Series or Study

Series or study can be deleted by using the Status Line:

To delete a series or indicator:

- Click the **Remove**  button on the series status line; note that the Remove button will not appear if it is hidden in the Status Line settings.

Important: Any series can be deleted, except for the data series that was added first (Data #1).

Moving Series or Study

A series or a study can be moved to another existing or new SubChart within the same Chart Window.

- To move a series to an existing SubChart, position the mouse pointer over the Status Line of the series to be moved; once the **Pointer**  changes into a **Hand** , hold the left mouse button and drag the pointer to another SubChart. Release the mouse button to complete moving the series.
- To move a series to a new SubChart, position the mouse pointer over the Status Line of the series to be moved; once the **Pointer**  changes into a **Hand** , hold the left mouse button and drag the pointer to the upper or lower border of the Chart Window, or of another SubChart. Once the pointer changes into the **Create New SubChart**  symbol, release the mouse button to create a new SubChart.

Symbol and Resolution Linking

It is possible to **Link** charts in groups based on the symbol name or resolution.

Each group is identified by one of 14 different colors. When any one chart of the linked group is changed, the changes will automatically be applied to the rest of the linked charts. Different Chart Windows as well as SubCharts within the same window can be linked.

Linking can save a considerable amount of time when working with complex workspaces.

Linking Charts by Instrument

When the symbol for any one chart of the linked group is changed, the changes will automatically be applied to the rest of the linked charts:

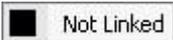
- To link a chart by symbol, click the **Instrument Link**  button on the Status Line of the series to be linked; please note that the Symbol Link button will not appear if it is hidden in the Status Line settings.
- To assign the series to a Link Group, select the Link Group Color Code from the drop-down list.
- To un-link the series, select **Not Linked**  **Not Linked**
- To link the series to all charts in all open Workspaces, select **Linked to All**  **Linked to All**

Note: The resolution of the linked charts will not be affected. All studies or signals previously applied to the chart will be recalculated for the new symbol. All manually placed drawing objects will remain in their original location. Objects based on formula calculations (such as signal arrows, etc.) may disappear if the new data series does not match the calculation criteria.

Linking Charts by Resolution

When the resolution of any one chart of the linked group is changed, the changes will automatically be applied to the rest of the linked charts:

- To link a chart by resolution, click the **Resolution Link**  button on the Status Line of the series to be linked; please note that the Resolution Link button will not appear if it is hidden in the Status Line settings.
- To assign the series to a Link Group, select the Link Group Color Code from the drop-down list.

- To un-link the series, select  **Not Linked**
- To link the series to all charts in all open Workspaces, select  **Linked to All**

Note: The symbols of the linked charts will not be affected. All studies or signals previously applied to the chart will be recalculated for the new resolution. All manually placed drawing objects will remain in their original location. Objects based on formula calculations (such as signal arrows, etc.) may disappear if the new data series does not match the calculation criteria.

Instrument Dropdown

This feature allows fast switching between recently used instruments. As this feature is data source based, it indicates recently used instruments provided by the same data source that provides the data for the current instrument on the chart. No recent instruments will be shown in the list if a chart from a particular data source is plotted for the first time or one and the same instrument is always used. To see the list of recently used instruments, click the **Recent Instruments** button  near the instrument name in status line.

Resolution Dropdown

This feature allows fast switching between ten recently used resolutions. As this feature is not data source based, it will indicate resolutions previously used on any chart from any data source. To see the list of recently used instruments, click the **Recent Resolutions** button  near the current resolution in the status line.

Time Scale

The Time Scale is located at the bottom of the chart and consists of a horizontal Line with time stamp marks identified by Labels.

The increment (step size) between the labels is optimized dynamically to aid in the visual assessment of time stamp data.

The values on the scale are specific to the resolution of the chart. The scale represents the data range, within which the chart is plotted. To determine the time value of a point on a chart, the horizontal position of the point is referenced to a value on the Time Scale. Chart's Bar Spacing, Chart Shift, and Empty Periods settings affect the span of the scale displayed.

Bar Spacing and Chart Shift can be set, and Empty Periods displayed or hidden. Time scale Line and Label styles can be selected, or Time Scale and Labels can be hidden completely.

Setting Bar Spacing

Bar Spacing can be set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line
- Right-click on an empty area of the chart and then click **Format Window**
- Select **Format** in the main menu and click **Window**.

2. Select the **X - Time Scale** tab.
3. In the **Settings** section, in the **Bar Spacing** text box, enter the bar spacing, in pixels.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

The chart's bar spacing can also be changed by one of the following methods:

- Click the **Increase Bar Spacing**  or the **Decrease Bar Spacing**  icon on the **Control** toolbar; or:
- Use **Ctrl + Plus** and **Ctrl + Minus** hotkey combinations; the numeric pad keys as well as the regular keyboard keys can be used; or:
- Select **Format** in the main menu and click **Increase Bar Spacing** or **Decrease Bar Spacing**.

Setting Chart Shift

Studies that visualize the predicted price movement require a Chart Shift on the chart.

Chart Shift is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **X - Time Scale** tab.
3. In the **Settings** section, in the **Chart Shift** text box, enter the Chart Shift, in bars or percentage.

Click the **Bars / %** button to switch between bars and percentage.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Display of Empty Periods

Empty Periods occur when there is no market activity or a period of no data.

Empty Periods display is turned on or off from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **X - Time Scale** tab.
3. In the **Settings** section, check **Show Empty Periods** check box to display the empty periods on the chart; uncheck the box to hide the empty periods.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Time Scale Line

Time Scale Line is set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **X - Time Scale** tab.

3. In the **Settings** section, check **Show Scale** check box to display the scale; uncheck the box to hide the Time Scale and Labels.

4. In the **Style** section, select scale line color in the **Line Color** drop-down palette box.

5. In the **Style** section, select scale line style in the **Line Style** drop-down list box.

Tip: To use these appearance settings for all new charts, check **Use as Default** check box.

Time Scale Labels

Time Scale Labels are set from the **Format Window** window:

1. Open the **Format Window** window. To open the **Format Window** window, click the **Format Window**  icon on the **Chart Analysis** toolbar.

The **Format Window** window can also be opened by one of the following methods:

- Double-click on an empty area of the chart, or on the chart's Status Line -

Right-click on an empty area of the chart and then click **Format Window** -

Select **Format** in the main menu and click **Window**.

2. Select the **X - Time Scale** tab.

3. In the **Style** section, select label text color in the **Label Color** drop-down palette box.

4. In the **Font** section, select label font in the **Font** drop-down list box.

5. In the **Size** section, select label font size in the **Size** drop-down list box.

6. In the **Font Style** section, check **Bold**, **Italic**, and/or **Underline** check boxes to select bold, italic, and/or underline label font style.

Drawing Tools

Andrews' Pitchfork

This tool was developed by Alan Andrews. Andrews' Pitchfork consists of three parallel lines usually drawn from three consecutive major peaks or troughs. The three parallel lines formed by Andrews' Pitchfork can help predict channels of support and resistance in a trending market.

The three trend lines are drawn as follows:

1. The first centerline at the left-most point that you selected and it passes right between the right-most points. This centerline is known as the handle of the pitchfork.
2. The second and the third trend lines begin at the right-most points and are drawn parallel to the centerline. These trend lines are known as the tines of the pitchfork.

Inserting Andrews' Pitchfork

1. Select one of three ways to insert Andrews' Pitchfork:
 - In the menu select **Insert**, point to **Drawing** and click **Andrews' Pitchfork**.
 - Click the **Andrews' Pitchfork**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Andrews' Pitchfork** from the menu.
2. The cursor will change to the **Andrews' Pitchfork** .
3. In the Chart Area click where the pitchfork's handle is to begin.
4. In the Chart Area click where the first tine is to begin.
5. In the Chart Area click where the second tine is to begin.

Moving Andrews' Pitchfork

To move Andrews' Pitchfork without changing its shape:

1. Drag the cursor to Andrews' Pitchfork that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Andrews' Pitchfork

To reshape Andrews' Pitchfork (change its direction or the distance between its tines):

1. Drag the cursor to Andrews' Pitchfork that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .

3. Left-click Andrews' Pitchfork and 3 small squares will appear at the handle and the tines of the pitchfork.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Andrews' Pitchfork

In MultiCharts one can change the settings of Andrews' Pitchfork. All the changes are performed in the **Format Andrews' Pitchfork** window.

Each instance of an Andrews' pitchfork has its own **Format** window. The number (if there are 2 or more Andrews' pitchforks in the same Chart Window) are shown in the titlebar of each **Format Andrews' Pitchfork** window.

One can change the settings of Andrews' Pitchfork: the color, style and weight of the handle, base and the tines. One can choose any element of the pitchfork to be displayed or hidden. It is also possible to change the time and price coordinates of Andrews' Pitchfork.

Setting Style

1. Access the **Format Andrews' Pitchfork** window.

To access the **Format Andrews' Pitchfork** window:

1. Drag the cursor to the Andrews' pitchfork that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Andrews' pitchfork that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Andrews' Pitchfork'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Andrews' pitchfork that is to be formatted and press the **Format...** button.

2. Select the **Data** tab.
3. To display or hide any elements of the pitchfork check or uncheck the **Handle**, **Base**, **Tine 1** or **Tine 2** check boxes.
4. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the handle, base and tines or click the **Others...** button to select the custom colors.
5. In the **Style** column, using the drop-down lists, select the desired styles for the handle, base and tines.
6. In the **Weight** column, using the drop-down lists, select the desired weights for the handle, base and tines.
7. Check the **Use as Default** check box to use these settings as the default settings when creating other Andrews' Pitchforks. 8. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Andrews' Pitchfork** window.

To access the **Format Andrews' Pitchfork** window:

1. Drag the cursor to the Andrews' pitchfork that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Andrews' pitchfork that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Andrews' Pitchfork'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Andrews' pitchfork that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.

3. In the **Coordinates** section enter the desired time coordinates in the **Handle Date**, **Tine 1 Date** and **Tine 2 Date** fields or use the drop-down calendars.

4. In the **Coordinates** section enter the desired price coordinates in the **Handle Value**, **Tine 1 Value** and **Tine 2 Value** fields.

5. Click **OK**.

Cloning Andrews' Pitchfork

To clone an Andrews' Pitchfork:

1. Drag the cursor to the Andrews' pitchfork that is to be cloned.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Clone Drawing** from the shortcut menu.

Arc

An Arc is a non-analytical drawing tool represented as an arched line and drawn for the purpose of highlighting the desired segment of a chart. For instance, Arcs can highlight a top, bottom, or a group of bars. Arcs can be of any formations that is has any inclination angle.

Inserting Arc

1. Select one of three ways to insert an Arc:

- In the menu select **Insert**, point to **Drawing** and click **Arc**.
- Click the **Arc**  icon on the **Drawing** toolbar.
- Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Arc** from the menu.

2. The cursor will change to the **Arc**  .

3. In the Chart Area click where the Arc is to begin.

4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the arc.

5. Release the button.

Moving Arc

To move an Arc without changing its angle:

1. Point the cursor at the Arc that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Arc

To reshape an Arc (change its angle or length):

1. Point the cursor at the Arc that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Arc and 2 small squares will appear on the Arc.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Arc

In MultiCharts one can change the settings of an Arc. All the changes are performed in the **Format Arc** window.

Each instance of an Arc has its own **Format** window. The number (if there are 2 or more Arcs in the same Chart Window) are shown in the titlebar of each **Format Arc** window.

One can change the settings of an arc: the color, style and weight of the arc and the trend line upon which the arc is based. One can choose any element of the arc to be displayed or hidden. A full arc can be also displayed. It is possible to change the time and price coordinates of the arc.

Setting Style

1. Access the **Format Arc** window.

To access the **Format Arc** window:

1. Drag the cursor to the Arc that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Arc that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Arc'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Arc that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Arc check or uncheck the corresponding check boxes.
4. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the trend line and the arc or click the **Others...** button to select the custom colors.

5. In the **Style** column, using the drop-down lists, select the desired styles for the trend line and the arc.
6. In the **Weight** column, using the drop-down lists, select the desired weights for the trend line and the arc.
7. Check the **Display Full Arc** check box to extend the arcs to the shape of an ellipse or circle (depending on the **Divide Time/Price separately** setting).
8. Check the **Use as Default** check box to use these settings as the default settings when creating other Arcs.
9. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Arc** window.

To access the **Format Arc** window:

1. Drag the cursor to the Arc that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Arc that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Arc'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Arc that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
2. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
3. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
4. Click **OK**.

Cloning Arc

To clone an Arc:

1. Drag the cursor to the Arc that is to be cloned.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Arrow Down

Arrow Down

Up and Down Arrows are non-analytical drawing tools drawn for the purpose of highlighting the desired segment of a chart. For instance, Arrows can highlight a specific bar, top or bottom.

Inserting Arrow Down

1. In the menu select **Insert**, point to **Drawing** and click **Arrow Down**.
2. The cursor will change to the **Arrow Down**  .
3. In the Chart Area left click where the Arrow is to be placed.

Moving Arrow Down

To move an Arrow:

1. Point the cursor at the Arrow that is to be moved.
2. The cursor **Pointer**  will change into **Hand**  .
3. Then keeping the left mouse button pressed drag the arrow to the desired position.
4. Release the button.

Formatting Arrow Down

In MultiCharts one can change the settings of the Arrow Down. All the changes are performed in the **Format Arrow Down** window.

Each instance of the Arrow Down has its own Format window. The numbers (if there are 2 or more Arrows in the same Chart Window) are shown in the titlebar of each **Format Arrow Down** window.

One can change the settings of the Arrow: its color, style and weight. It is also possible to change the time and price coordinates of the Arrow.

Setting Style

1. Access the **Format Arrow Down** window.

To access the **Format Arrow Down** window:

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Arrow Down'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Arrow that is to be formatted and click the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Other...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other arrows.
7. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Arrow Down** window.

To access the **Format Arrow Down** window:

1. Drag the cursor to the Arrow that is to be formatted.

2. The cursor **Pointer**  will change into **Hand** 

Or

1. Drag the cursor to the Arrow that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Arrow Down'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Arrow that is to be formatted and click the **Format...** button.

2. Select the **Properties** tab.

3. In the **Coordinates** section enter the desired time and date coordinate in the **Date** field.

4. In the **Coordinates** section enter the desired price coordinate in the **Value** field.

5. Click **OK**.

Cloning Arrow Down

To clone Arrow Down:

1. Drag the cursor to the Arrow Down that is to be cloned.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Clone Drawing** from the shortcut menu.

Arrow Up

Arrow Up

Up and Down Arrows are non-analytical drawing tools drawn for the purpose of highlighting the desired segment of a chart. For instance, Arrows can highlight a specific bar, top or bottom.

Inserting Arrow Up

1. In the menu select **Insert**, point to **Drawing** and click **Arrow Up**.

2. The cursor will change to the **Arrow Up**  .

3. In the Chart Area left click where the Arrow is to be placed.

Moving Arrow Up

To move an Arrow:

1. Point the cursor at the Arrow that is to be moved.

2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the arrow to the desired position.
4. Release the button.

Formatting Arrow Up

In MultiCharts one can change the settings of the Arrow Up. All the changes are performed in the **Format Arrow Up** window.

Each instance of the Arrow Up has its own Format window. The numbers (if there are 2 or more Arrows in the same Chart Window) are shown in the titlebar of each **Format Arrow Up** window.

One can change the settings of the Arrow: its color, style and weight. It is also possible to change the time and price coordinates of the Arrow.

Setting Style

1. Access the **Format Arrow Up** window.

To access the **Format Arrow Up** window:

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Arrow Up'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Arrow that is to be formatted and click the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Other...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other arrows.
7. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Arrow Up** window.

To access the **Format Arrow Up** window:

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** 

Or

1. Drag the cursor to the Arrow that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.

3. Select **Format 'Arrow Up'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Arrow that is to be formatted and click the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time and date coordinate in the **Date** field.
4. In the **Coordinates** section enter the desired price coordinate in the **Value** field.
5. Click **OK**.

Cloning Arrow Up

To clone Arrow Up:

1. Drag the cursor to the Arrow Up that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Drawing Tools

Ellipse

An Ellipse is a non-analytical drawing tool drawn for the purpose of highlighting the desired segment of a chart. For instance, Ellipses can highlight a top, bottom, or a group of bars.

Inserting Ellipse

1. Select one of three ways to insert an Ellipse:

- In the menu select **Insert**, point to **Drawing** and click **Ellipse**.
- Click the **Ellipse**  icon on the **Drawing** toolbar.
- Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Ellipse** from the menu.



2. The cursor will change to the **Ellipse**
3. In the Chart Area click where the Ellipse is to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Ellipse.
5. Release the button.

Moving Ellipse

To move an Ellipse without changing its size:

1. Drag the cursor the Ellipse that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Ellipse

To reshape Ellipse (change its size or proportions):

1. Drag the cursor the Ellipse that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Ellipse and 4 small squares will appear on the Ellipse.
4. Drag one of these till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Ellipse

In MultiCharts one can change the settings of the Ellipse. All the changes are performed in the **Format Ellipse** window.

Each instance of an Ellipse has its own **Format** window. The number (if there are 2 or more Ellipses in the same Chart Window) are shown in the titlebar of each **Format Ellipse** window.

One can change the settings of an ellipse: the color, style and weight of the border line as well as the color and pattern of the fill. One can also change the time and price coordinates of the ellipse.

Setting Style

1. Access the **Format Ellipse** window.

To access the **Format Ellipse** window:

1. Drag the cursor to the Ellipse that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click. Or
 1. Drag the cursor to the Ellipse that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand** , then right-click.
 3. Select **Format 'Ellipse'...** from the shortcut menu. Or
 1. In the **Format Objects** window select the **Drawings** tab.
 2. Select the Ellipse that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Line** section, using the **Color** drop-down list, select any of the preset 40 colors for the line or click the **Others...** button to select the custom color.
4. In the **Line** section, using the **Style** drop-down list, select the desired style for the line.
5. In the **Line** section, using the **Weight** drop-down list, select the desired weight for the line (available only for the solid line).
6. In the **Fill** section, using the **Color** drop-down list, select any of the preset 40 colors for the fill or click the **Others...** button to select the custom color.
7. In the **Fill** section, using the **Pattern** drop-down list, select the desired pattern for the fill.
8. Check the **Use as Default** check box to use these settings as the default settings when creating other Ellipses.
9. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Ellipse** window.

To access the **Format Ellipse** window:

1. Drag the cursor to the Ellipse that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Ellipse that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Ellipse'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Ellipse that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
5. Click **OK**.

Cloning Ellipse

To clone an Ellipse:

1. Drag the cursor to the Ellipse that is to be cloned.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Equidistant Channel

The Equidistant Channel is an analytical drawing tool used to indicate the support and resistance levels for the price ranges contained in it. The narrower the Equidistant Channel is, the less volatile is the market. The Equidistant Channel is represented by parallel equidistant lines and may be of several variations:

- **Parallel Lines** - are trend lines used to delineate the Equidistant Channel in which the market trades. The upper horizontal line is the resistance line. The lower horizontal line is the support line. If either of these lines is penetrated there may occur a price breakout.
- **Extended Parallel Lines** - are the parallel trend lines extended to the left and to the right. They delineate the Equidistant Channel in which the market trades and show the past and future direction of the price movement.
- **Ray Parallel Lines** - are the parallel trend lines extended to the right only. They delineate the Equidistant Channel in which the market trades and show the possible future direction of the price movement.
- **Horizontal Parallel Lines** - are parallel lines used to delineate the Equidistant Channel in which the market trades, especially when it is a sideways market and there is no significant price movements. The upper horizontal

line is the resistance line. The lower horizontal line is the support line. If either of these lines is penetrated there may occur a price breakout.

Inserting Equidistant Channel

1. Select one of three ways to insert the Equidistant Channel:

- In the menu select **Insert**, point to **Drawing** and click **Equidistant Channel**.
- Click the **Equidistant Channel**  icon on the **Drawing** toolbar.
- Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Equidistant Channel** from the menu.

2. The cursor will change to the **Equidistant channel** .

3. In the Chart Area click where the Equidistant Channel is to begin.

4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Equidistant Channel.

5. Release the button.

Moving Equidistant Channel

To move an Equidistant Channel without changing the distance between the equidistant lines or their slope:

1. Point the cursor at the Equidistant Channel that is to be moved.

2. The cursor **Pointer**  will change into **Hand** .

3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.

4. Release the button.

Reshaping Equidistant Channel

To reshape an Equidistant Channel (change the distance between the equidistant lines or the slope of the Equidistant Channel):

1. Point the cursor at the Equidistant Channel that is to be reshaped.

2. The cursor **Pointer**  will change into **Hand** .

3. Left-click the Equidistant Channel and 3 small squares will appear on the equidistant lines.

4. To change the distance between the equidistant lines, drag the square located on the upper line and release the button.

5. To change the slope of the Equidistant Channel, drag one of 2 squares located on the lower line and release the button.

Formatting Equidistant Channel

In MultiCharts one can change the settings of the Equidistant Channel. All the changes are performed in the **Format Equidistant Channel** window.

Each instance of a Equidistant channel has its own **Format** window. The number (if there are 2 or more Equidistant channels in the same Chart Window) are shown in the titlebar of each **Format Equidistant Channel** window.

One can change the settings of the Equidistant Channel: its color, style and weight. It is possible to extend the equidistant lines to the left or/and to the right. One can also change the distance between the lines and their

direction. Moreover, more than 2 lines can be reflected. It is also possible to change the time and price coordinates of the Equidistant Channel.

Setting Style

1. Access the **Format Equidistant Channel** window.

To access the **Format Equidistant Channel** window:

1. Drag the cursor to the Equidistant channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click. Or
 1. Drag the cursor to the Equidistant channel that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand**  , then right-click.
 3. Select **Format 'Equidistant Channel'...** from the shortcut menu. Or
 1. In the **Format Objects** window select the **Drawings** tab.
 2. Select the Equidistant channel that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Others...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other Equidistant Channels.
7. Click **OK**.

Extending Equidistant Channel to Left or Right

1. Access the **Format Equidistant Channel** window.

To access the **Format Equidistant Channel** window:

1. Drag the cursor to the Equidistant channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click. Or
 1. Drag the cursor to the Equidistant channel that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand**  , then right-click.
 3. Select **Format 'Equidistant Channel'...** from the shortcut menu. Or
 1. In the **Format Objects** window select the **Drawings** tab.
 2. Select the Equidistant channel that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Extend** section check the **Left** or/and **Right** check boxes to extend the equidistant lines to the left or/and right.
4. Check the **Use as Default** check box to use these settings as the default settings when creating other Equidistant Channels.
5. Click **OK**.

Setting Calculation Properties

1. Access the **Format Equidistant Channel** window.

To access the **Format Equidistant Channel** window:

1. Drag the cursor to the Equidistant channel that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click. Or

1. Drag the cursor to the Equidistant channel that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Equidistant Channel'...** from the shortcut menu. Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Equidistant channel that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.

3. In the **Channel** section enter the desired distance between the lines in the **Distance** field.

4. In the **Channel** section select the desired direction from the **Direction** drop-down list.

5. In the **Channel** section enter the desired number of reflections in the **Reflection** field or select it.

6. Check the **Use as Default** check box to use these settings as the default settings when creating other Equidistant Channels.

7. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Equidistant Channel** window.

To access the **Format Equidistant Channel** window:

1. Drag the cursor to the Equidistant channel that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Equidistant channel that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Equidistant Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Equidistant channel that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.

3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.

4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.

5. Check the **Use as Default** check box to use these settings as the default settings when creating other Equidistant Channels.

6. Click **OK**.

Cloning Equidistant Channel

To clone an Equidistant channel:

1. Drag the cursor to the Equidistant channel that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Fibonacci Retracement Price Lines

Fibonacci Retracement Price Lines are an analytical drawing tool used to examine the support and resistance levels as well as price breakouts. First, a trend line between two extreme points - a trough and opposing peak - is drawn. Then a series of horizontal lines is drawn. These lines intersect the trend line at the Fibonacci levels or at the selected distance percentages between the beginning and the end of this trend line. Some of the lines might not be visible, because of the scale limitations of the chart window.

Inserting Fibonacci Retracement Price Lines

1. Select one of three ways to insert the Fibonacci Retracement Price Lines:
 - In the menu select **Insert**, point to **Drawing** and then to **Fibonacci Tools** and click **Retracement Price Lines**.
 - Click the **Fibonacci Retracement Price Lines**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to **Fibonacci Tools** and select **Retracement Price Lines**.
2. The cursor will change to the **Fibonacci retracement price lines** .
3. In the Chart Area click where the Fibonacci Retracement Price Lines are to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Fibonacci Retracement Price Lines.
5. Release the button.

Moving Fibonacci Retracement Price Lines

To move the Fibonacci Retracement Price Lines without changing the shape of the drawing tool:

1. Point the cursor at the Fibonacci Retracement Price Lines to move the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Fibonacci Retracement Price Lines

To reshape the Fibonacci Retracement Price Lines (change the trend line slope, the distance between the Retracement Price Lines, or their length):

1. Point the cursor at the Fibonacci Retracement Price Lines to reshape the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .

3. Left-click the Fibonacci Retracement Price Lines and 2 small squares will appear at both ends of the trend line.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Fibonacci Retracement Price Lines

In MultiCharts one can change the settings of the Fibonacci Retracement Price Lines. All the changes are performed in the **Format Fibonacci Retracement Price Lines** window.

Each instance of a Fibonacci retracement price lines has its own **Format** window. The number (if there are 2 or more Fibonacci retracement price lines instances in the same Chart Window) are shown in the titlebar of each **Format Fibonacci Retracement Price Lines** window.

One can change the settings of the Fibonacci Retracement Price Lines: the color, style and weight of the trend line and the Retracement Price lines (up to 12 lines are available). It is possible to specify the desired distance percentages on which the Retracement Price lines are based or the Fibonacci percentages can be used. One can extend the Retracement Price lines to the left or to the right. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikethrough or underline effects to the labels. If shown the labels can be displayed to the left, right or in the middle of the Fibonacci Retracement Price Lines. It is possible to specify the time and price coordinates.

Setting Style

1. Access the **Format Fibonacci Retracement Price Lines** window.

To access the **Format Fibonacci Retracement Price Lines** window:

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Fibonacci Retracement Price Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci retracement price lines instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Fibonacci Retracement Price Lines check or uncheck the corresponding check boxes.
4. In the **Price** column select the corresponding cells and enter the desired values. These values determine at what points the parallel price lines intersect the trend line.
5. In the **Color** column using the drop-down lists select any of the preset 40 colors for the lines or click the **Others...** button to select the custom colors.
6. In the **Style** column using the drop-down lists select the desired styles for the lines.
7. In the **Weight** column using the drop-down lists select the desired weights for the lines.

8. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Retracement Price Lines.
9. Click **OK**.

Extending Fibonacci Retracement Price Lines to Left or Right

1. Access the **Format Fibonacci Retracement Price Lines** window.

To access the **Format Fibonacci Retracement Price Lines** window:

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Fibonacci Retracement Price Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci retracement price lines instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. In the **Extend** section check the **Left** or/and **Right** check boxes to extend the Retracement Price lines to the left or/and right.
4. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Retracement Price Lines.
5. Click **OK**.

Setting Labels

1. Access the **Format Fibonacci Retracement Price Lines** window.

To access the **Format Fibonacci Retracement Price Lines** window:

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand** , then double-click. Or

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand** , then right-click.

3. Select **Format 'Fibonacci Retracement Price Lines'...** from the shortcut menu. Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci retracement price lines instance that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.

7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Align** drop-down list select the desired type of the labels' alignment.
10. Check the **Show Price** or/and **Show Percent Value** check boxes to show price or/and percent labels.
11. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Retracement Price Lines.
12. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Fibonacci Retracement Price Lines** window.

To access the **Format Fibonacci Retracement Price Lines** window:

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Retracement Price Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci retracement price lines instance that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.

3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.

4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.

5. Click **OK**.

Cloning Fibonacci Retracement Price Lines

To clone a Fibonacci retracement price lines:

1. Drag the cursor to the Fibonacci retracement price lines instance that is to be cloned.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Clone Drawing** from the shortcut menu.

Fibonacci Speed/Resistance Arcs

Fibonacci Speed/Resistance Arcs are an analytical drawing tool used to determine the direction and speed of the trend reversal and indicate the support/resistance levels. First, a trend line between two extreme points - a trough and opposing peak - is drawn. Then arcs are created and intersect the speed line at the selected distance percentages between the beginning and the end of this trend line. The most common percentages are 1/3 and 2/3, but you can

draw up to 11 arcs based on any selected distance percentages as well as on the Fibonacci percentages. Some of the arcs might not be visible, because of the scale limitations of the chart window.

The Fibonacci Speed/Resistance Arcs can indicate the support and resistance levels. Usually the price remains above the higher arc. If the higher arc is penetrated, prices generally fall to the lower arc, which, in many cases, becomes the support level. If prices break below the higher arc, fall to the lower arc, and then begin to rise, the lower arc becomes the resistance level.

Inserting Fibonacci Speed/Resistance Arcs

1. Select one of three ways to insert the Fibonacci Speed/Resistance Arcs:
 - In the menu select **Insert**, point to **Drawing** and then to **Fibonacci Tools** and click **Speed/Resistance Arcs**.
 - Click the **Fibonacci Speed/Resistance Arcs**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to **Fibonacci Tools** and select **Speed/Resistance Arcs**.
2. The cursor will change to the Fibonacci speed/resistance arcs .
3. In the Chart Area click where the Fibonacci Speed/Resistance Arcs are to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Fibonacci Speed/Resistance Arcs.
5. Release the button.

Moving Fibonacci Speed/Resistance Arcs

To move the Fibonacci Speed/Resistance Arcs without changing their shape:

1. Point the cursor at the Fibonacci Speed/Resistance Arcs to move the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Fibonacci Speed/Resistance Arcs

To reshape the Fibonacci Speed/Resistance Arcs (change the slope of the trend line or the arcs' radius):

1. Point the cursor at the Fibonacci Speed/Resistance Arcs to reshape the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Fibonacci Speed/Resistance Arcs and 2 small squares will appear at both ends of the trend line.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Fibonacci Speed/Resistance Arcs

In MultiCharts one can change the settings of the Fibonacci Speed/Resistance Arcs. All the changes are performed in the **Format Fibonacci Speed/Resistance Arcs** window.

Each instance of a Fibonacci speed/resistance arcs has its own **Format** window. The number (if there are 2 or more Fibonacci speed/resistance arcs instances in the same Chart Window) are shown in the titlebar of each **Format Fibonacci Speed/Resistance Arcs** window.

One can change the settings of the Speed/Resistance Arcs: the color, style and weight of the trend line and the arcs (up to 12 arcs are available). It is possible to specify the desired distance percentages on which the arcs are based or the Fibonacci percentages can be used. The Speed/Resistance Arcs can be extended to the shape of an ellipse or circle. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikeout or underline effects to the labels.

Setting Style

1. Access the **Format Fibonacci Speed/Resistance Arcs** window.

To access the **Format Fibonacci Speed/Resistance Arcs** window:

1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Speed/Resistance Arcs'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci speed/resistance arcs instance that is to be formatted and press

the **Format...** button.

2. Select the **Data** tab.

3. To display or hide any elements of the Fibonacci Speed/Resistance Arcs check or uncheck the corresponding check boxes.

4. In the **Price** column select the corresponding cells and enter the desired values. These values determine at what points the arcs intersect the trend line.

5. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the arcs or click the **Others...** button to select the custom colors.

6. In the **Style** column, using the drop-down lists, select the desired styles for the arcs.

7. In the **Weight** column, using the drop-down lists, select the desired weights for the arcs.

8. Check the **Display Full Arc** check box to extend the arcs to the shape of an ellipse or circle (depending on the **Divide Time/Price separately** setting).

9. Check the **Divide Time/Price Separately** check box to draw the arcs where time and price are independent (uncheck to create constant radius arcs).

10. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Speed/Resistance Arcs.

11. Click **OK**.

Setting Labels

1. Access the **Format Fibonacci Speed/Resistance Arcs** window.

To access the **Format Fibonacci Speed/Resistance Arcs** window:

1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click. Or
1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Fibonacci Speed/Resistance Arcs'...** from the shortcut menu. Or
1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci speed/resistance arcs instance that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Align** drop-down list select the desired type of the labels' alignment.
10. Check the **Show Price** or/and **Show Percent Value** check boxes to show price or/and percent labels.
11. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Speed/Resistance Arcs.
12. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Fibonacci Speed/Resistance Arcs** window.
To access the **Format Fibonacci Speed/Resistance Arcs** window:
 1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand**  , then double-click. Or
 1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand**  , then right-click.
 3. Select **Format 'Fibonacci Speed/Resistance Arcs'...** from the shortcut menu. Or
 1. In the **Format Objects** window select the **Drawings** tab.
 2. Select the Fibonacci speed/resistance arcs instance that is to be formatted and press the **Format...** button.
 2. Select the **Properties** tab.
 3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
 4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
 5. Click **OK**.

Cloning Fibonacci Speed/Resistance Arcs

- To clone a Fibonacci speed/resistance arcs instance:
1. Drag the cursor to the Fibonacci speed/resistance arcs instance that is to be cloned.
 2. The cursor **Pointer**  will change into **Hand**  , then right-click.
 3. Select **Clone Drawing** from the shortcut menu.

Fibonacci Speed/Resistance Fan

Fibonacci Speed/Resistance Fan is an analytical drawing tool used to indicate the support and resistance levels of an existing trend and the price level at which possible changes (rise or fall) in the trend may occur. First, a trend line between two extreme points - a trough and opposing peak - is drawn. Then an invisible vertical line is drawn through the second extreme point. Lines are drawn from the first extreme point and intersect the invisible vertical line at the selected time/price percentages of the distance between the beginning and the end of this line. The most common percentages are 1/3 and 2/3, but you can draw up to 11 lines based on any selected distance percentages as well as on the Fibonacci percentages. Some of the lines might not be visible, because of the scale limitations of the chart window.

These lines can indicate the support and resistance levels of an existing trend. Usually the price remains above the higher speed line. If the higher line is penetrated, prices generally fall to the lower speed line, which, in many cases, becomes the support level. If prices break below the higher speed line, fall to the lower line, and then begin to rise, the lower speed line becomes the resistance level.

Note. Fibonacci Arcs and Fibonacci Fan lines are sometimes used together to anticipate support and resistance as the Fibonacci studies may intersect.

Inserting Fibonacci Speed/Resistance Fan

1. Select one of three ways to insert the Fibonacci Speed/Resistance Fan:
 - In the menu select **Insert**, point to **Drawing** and then to **Fibonacci Tools** and click **Speed/Resistance Fan**.
 - Click the **Fibonacci Speed/Resistance Fan**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to **Fibonacci Tools** and select **Speed/Resistance Fan**.

2. The cursor will change to the **Fibonacci speed/resistance fan** .
3. In the Chart Area click where the Fibonacci Speed/Resistance Fan is to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Fibonacci Speed/Resistance Fan.
5. Release the button.

Moving Fibonacci Speed/Resistance Fan

To move a Fibonacci Speed/Resistance Fan without changing its shape:

1. Point the cursor at the Fibonacci Speed/Resistance Fan that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Fibonacci Speed/Resistance Fan

To reshape a Fibonacci Speed/Resistance Fan (change its size or slope of the lines):

1. Point the cursor at the Fibonacci Speed/Resistance Fan that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .

3. Left-click the Fibonacci Speed/Resistance Fan and 2 small squares will appear on the trend line.
4. Drag one of these squares located on the trend line till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Fibonacci Speed/Resistance Fan

In MultiCharts one can change the settings of the Fibonacci Speed/Resistance Fan. All the changes are performed in the **Format Fibonacci Speed/Resistance Fan** window.

Each instance of a Fibonacci speed/resistance fan has its own **Format** window. The number (if there are 2 or more Fibonacci speed/resistance fan instances in the same Chart Window) are shown in the titlebar of each **Format Fibonacci Speed/Resistance Fan** window.

One can change the settings of the Fibonacci Speed/Resistance Fan: the color, style and weight of the trend line, squares and the fan lines (up to 8 fan lines are available). It is possible to specify the desired distance percentages on which the fan lines are based or the Fibonacci percentages can be used. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikethrough or underline effects to the labels. It is possible to specify the time and price coordinates.

Setting Style

1. Access the **Format Fibonacci Speed/Resistance Fan** window.

To access the **Format Fibonacci Speed/Resistance Fan** window:

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click. Or
 1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
 2. The cursor **Pointer**  will change into **Hand** , then right-click.
 3. Select **Format 'Fibonacci Speed/Resistance Fan'...** from the shortcut menu. Or
 1. In the **Format Objects** window select the **Drawings** tab.
 2. Select the Fibonacci speed/resistance fan instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Fibonacci Speed/Resistance Fan check or uncheck the corresponding check boxes.
4. In the **Price** column select the corresponding cells and enter the desired values. These values determine at what points the fan lines intersect the trend line.
5. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the fan lines or click the **Others...** button to select the custom colors.
6. In the **Style** column, using the drop-down lists, select the desired styles for the fan lines.
7. In the **Weight** column, using the drop-down lists, select the desired weights for the fan lines.
8. Check the **Divide Time** check box to draw fan lines based on the height of the trend line. 9. Check the **Divide Price** check box to draw fan lines based on the length of the trend line.
10. Check the **Hide Time** check box to hide Divide Time lines.
11. Check the **Hide Price** check box to hide Divide Price lines.
12. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Speed/Resistance Fans.

13. Click **OK**.

Setting Labels

1. Access the **Format Fibonacci Speed/Resistance Fan** window.

To access the **Format Fibonacci Speed/Resistance Fan** window:

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Fibonacci Speed/Resistance Fan'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci speed/resistance fan instance that is to be formatted and press the **Format...**

button.

2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Speed/Resistance Fans.
10. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Fibonacci Speed/Resistance Fan** window.

To access the **Format Fibonacci Speed/Resistance Fan** window:

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Fibonacci Speed/Resistance Fan'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci speed/resistance fan instance that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
5. Click **OK**.

Cloning Fibonacci Speed/Resistance Fan

To clone a Fibonacci Speed/Resistance Fan:

1. Drag the cursor to the Fibonacci speed/resistance fan instance that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Fibonacci Time Zones

Fibonacci Time Zones are an analytical drawing tool represented by a series of vertical lines, which are used to indicate significant price movement near them.

These vertical lines are spaced according to the Fibonacci number sequence (1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89).

Inserting Fibonacci Time Zones

1. Select one of three ways to insert the Fibonacci Time Zones:
 - In the menu select **Insert**, point to **Drawing** and then to **Fibonacci Tools** and click **Time Zones**.
 - Click the **Fibonacci Time Zones**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to **Fibonacci Tools** and select **Time Zones**.

2. The cursor will change to the **Fibonacci time zones** .
3. In the Chart Area click where the Fibonacci Time Zones are to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Fibonacci Time Zones.
5. Release the button.

Moving Fibonacci Time Zones

To move the Fibonacci Time Zones:

1. Point the cursor at the Fibonacci Time Zones to move the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Formatting Fibonacci Time Zones

In MultiCharts one can change the settings of the Fibonacci Time Zones. All the changes are performed in the **Format Fibonacci Time Zones** window.

Each instance of a Fibonacci time zones has its own **Format** window. The number (if there are 2 or more Fibonacci time zones instances in the same Chart Window) are shown in the titlebar of each **Format Fibonacci Time Zones** window.

One can change the settings of the Fibonacci Time Zones: the color, style and weight of the base line and the time lines. One can also choose to show or not the labels, select their font, style, size and the character set. It is possible to apply the strikeout or underline effects to the labels. If shown the labels can be displayed at the top, bottom or in the middle of the time lines. It is possible to specify the time coordinates of the base line.

Setting Style

1. Access the **Format Fibonacci Time Zones** window.

To access the **Format Fibonacci Time Zones** window:

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Time Zones'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci time zones instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Fibonacci Time Zones check or uncheck the corresponding check boxes.
4. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the BaseLine and time lines or click the **Others...** button to select the custom colors.
5. In the **Style** column, using the drop-down lists, select the desired styles for the lines.
6. In the **Weight** column, using the drop-down lists, select the desired weights for the lines.

Note. One can not change the weight of the BaseLine.

7. Check the **Use as Default** check box to use these settings as the default settings when creating the Fibonacci Time Zones in future.
8. Click **OK**.

Setting Labels

1. Access the **Format Fibonacci Time Zones** window.

To access the **Format Fibonacci Time Zones** window:

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Fibonacci Time Zones'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci time zones instance that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Align** drop-down list select the desired type of the labels' alignment.
10. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Time Zones.
11. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Fibonacci Time Zones** window.

To access the **Format Fibonacci Time Zones** window:

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci time zones instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Fibonacci Time Zones'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Fibonacci time zones instance that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinate in the **Base Line Date** field or use the drop-down calendar.
4. Click **OK**.

Fibonacci Trend-Based Time Lines

Fibonacci Trend-Based Time Lines is an analytical drawing tool used to predict the future price movements and examine the support and resistance levels as well as price breakouts. It is represented by a series of vertical lines at date/time levels that shows probable price corrections in an existing trend. First, a trend line is drawn. Depending on its length and direction, vertical lines are drawn based on the selected distance percentages or on the Fibonacci percentages.

Support indicates a low or series of troughs where price activity has not penetrated. Resistance indicates a high or series of peaks where price activity has not penetrated.

Inserting Fibonacci Trend-Based Time Lines

1. Select one of three ways to insert the Fibonacci Trend-Based Time Lines:
 - In the menu select **Insert**, point to **Drawing** and then to **Fibonacci Tools** and click **Trend-Based Time Lines**.
 - Click the **Fibonacci Trend-Based Time Lines**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to **Fibonacci Tools** and select **Trend-Based Time Lines**.

2. The cursor will change to the **Fibonacci trend-based time lines** .
3. In the Chart Area click where the Fibonacci Trend-Based Time Lines are to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Fibonacci Trend-Based Time Lines.
5. Release the button.

Moving Fibonacci Trend-Based Time Lines

To move the Fibonacci Trend-Based Time Lines without changing the shape of the drawing tool:

1. Point the cursor at the Fibonacci Trend-Based Time Lines to move the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Fibonacci Trend-Based Time Lines

To reshape the Fibonacci Trend-Based Time Lines (change the slope of the trend line or the distance between the Trend-Based Time lines):

1. Point the cursor at the Fibonacci Trend-Based Time Lines to reshape the drawing tool.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Fibonacci Trend-Based Time Lines and 2 small square will appear at both ends of the trend line.
4. Drag one of these till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Fibonacci Trend-Based Time Lines

In MultiCharts one can change the settings of the Fibonacci Trend-Based Time Lines. All the changes are performed in the **Format Fibonacci Trend-Based Time Lines** window.

Each instance of a Fibonacci trend-based time lines has its own **Format** window. The number (if there are 2 or more Fibonacci trend-based time lines instances in the same Chart Window) are shown in the titlebar of each **Format Fibonacci Trend-Based Time Lines** window.

One can change the settings of the Fibonacci Trend-Based Time Lines: the color, style and weight of the trend line and time lines (up to 11 lines are available). It is possible to specify the desired distance percentages on which the Trend-Based Time lines are based or the Fibonacci percentages can be used. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikethrough or underline effects to the labels. Labels can be oriented vertically or horizontally. If shown the labels can be displayed at the top, bottom or in the middle of the Trend-Based Time lines, horizontally or vertically. It is possible to specify the time and price coordinates.

Setting Style

1. Access the **Format Fibonacci Trend-Based Time Lines** window.

To access the **Format Fibonacci Trend-Based Time Lines** window:

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Trend-Based Time Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci trend-based time lines instance that is to be formatted and press the **Format...** button.

2. Select the **Data** tab.

3. To display or hide any elements of the Fibonacci Trend-Based Time Lines check or uncheck the corresponding check boxes.

4. In the **Price** column select the corresponding cells and enter the desired values. These values determine the distance between the Trend-Based Time lines.

5. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the lines or click the **Others...** button to select the custom colors.

6. In the **Style** column, using the drop-down lists, select the desired styles for the lines.

7. In the **Weight** column, using the drop-down lists, select the desired weights for the lines.

8. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Trend-Based Time Lines.

9. Click **OK**.

Setting Labels

1. Access the **Format Fibonacci Trend-Based Time Lines** window.

To access the **Format Fibonacci Trend-Based Time Lines** window:

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Trend-Based Time Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci trend-based time lines instance that is to be formatted and press the **Format...** button.

2. Select the **Labels** tab.

3. Check or uncheck the **Show Labels** check box to display or hide the labels.

4. Enter the desired font in the **Font** field or select it from the **Font** list.

5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.

6. Enter the desired font size in the **Size** field or select it from the **Size** list.

7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.

8. From the **Character Set** drop-down list select the desired character set.

9. From the **Align** drop-down list select the desired type of the labels' alignment.

10. From the **Orientation** drop-down list select the desired orientation to display labels horizontally or vertically.

11. Check the **Use as Default** check box to use these settings as the default settings when creating other Fibonacci Trend-Based Time Lines.

12. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Fibonacci Trend-Based Time Lines** window.

To access the **Format Fibonacci Trend-Based Time Lines** window:

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Fibonacci trend-based time lines instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.

3. Select **Format 'Fibonacci Trend-Based Time Lines'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Fibonacci trend-based time lines instance that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
5. Click **OK**.

Gann Fan

The Gann Fan was developed by the famous trader W. D. Gann who applied a combination of mathematical and geometric principles to trading. He presupposed that there is a specific relationship between price and time that is some unit of price equals some unit of time.

A Gann Fan is an analytical drawing tool used to indicate time and price movements from important highs and lows and identify price breakouts.

To create a Gann Fan the middle line of time relative to price is drawn through two selected points. The first point is the one from which a series of angled lines extends. And the second point is drawn to the right of the first and determines the rate of equivalence between time and price. The middle line can be of any angle. The middle line which has a 45-degree angle is known as the 1x1 price/time line. That is the price unit equals the time unit, so price and time are in perfect balance.

The angled lines drawn from the first point indicate a price to time relationship that may be relatively fast or relatively slow, depending on the size of the Gann angle.

These angled lines, relative to an assumed horizontal line and the middle line, subdivide this horizontal line into eighths (or thirds).

The direction of a Gann Fan should depend on the current trend. To evaluate an upward trend, the Gann Fan should be drawn upward to the right, starting at a market low. To evaluate a downward trend, the Gann Fan should be drawn down from the right, starting at a market high.

Inserting Gann Fan

1. Select one of three ways to insert the Gann Fan:
 - In the menu select **Insert**, point to **Drawing** and then to **Gann Tools** and click **Gann Fan**.
 - Click the **Gann Fan**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar, point to Gann Tools and select **Gann Fan**.
2. The cursor will change to the **Gann fan** .
3. In the Chart Area click where the Gann Fan is to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Gann Fan.
5. Release the button.

Moving Gann Fan

To move a Gann Fan without changing its shape:

1. Point the cursor at the Gann Fan that is to be moved.

2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Gann Fan

To reshape a Gann Fan (change its middle line slope or distance between the fan lines):

1. Point the cursor at the Gann Fan that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Gann Fan and 2 small squares will appear on the middle line.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Gann Fan

In MultiCharts one can change the settings of the Gann Fan. All the changes are performed in the **Format Gann Fan** window.

Each instance of a Gann Fan has its own **Format** window. The number (if there are 2 or more Gann fan instances in the same Chart Window) are shown in the titlebar of each **Format Gann Fan** window.

One can change the settings of the Gann Fan: the color, style and weight of the fan lines. One can select the time/price relationship on which the fan lines are based. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikeout or underline effects to the labels. It is possible to specify the time and price coordinates.

Setting Style

1. Access the **Format Gann Fan** window.

To access the **Format Gann Fan** window:

1. Drag the cursor to the Gann fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Gann fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Gann Fan'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Gann fan instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Gann Fan check or uncheck the corresponding check boxes.
4. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the fan lines or click the **Others...** button to select the custom colors.
5. In the **Style** column, using the drop-down lists, select the desired styles for the fan lines.

6. In the **Weight** column, using the drop-down lists, select the desired weights for the fan lines.
7. Check the **Use as Default** check box to use these settings as the default settings when creating other Gann Fans.
8. Click **OK**.

Setting Labels

1. Access the **Format Gann Fan** window.

To access the **Format Gann Fan** window:

1. Drag the cursor to the Gann fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Gann fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Gann Fan'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Gann fan instance that is to be formatted and press the **Format...** button.

2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. Check the **Use as Default** check box to use these settings as the default settings when creating other Gann Fans.
10. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Gann Fan** window.

To access the **Format Gann Fan** window:

1. Drag the cursor to the Gann fan instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click. Or

1. Drag the cursor to the Gann fan instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Gann Fan'...** from the shortcut menu. Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Gann fan instance that is to be formatted and press the **Format...** button.

2. Select the **Properties** tab.

3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
 4. In the **Coordinates** section enter the desired price coordinate of the origin point of the Gann Fan in the **Start Value** field.
 5. In the **Coordinates** section enter the desired points number in the **Points per Bar** field.
- Note. The price points per bar multiplied by the price is used to calculate the Price/Time Gann Lines as it determines how much the lines increase for each bar.
6. Click **OK**.

Cloning Gann Fan

To clone a Gann Fan:

1. Drag the cursor to the Gann Fan that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Gann Square

The Gann Square is created by drawing a Gann Fan from each corner of a square. It is drawn to the right or left from the selected point on a chart which is generally an important high or low.

Inserting Gann Square

1. Select one of three ways to insert the Gann Square:
 - In the menu select **Insert**, point to **Drawing** and then to **Gann Tools** and click **Gann Square**.
 - Click the **Gann Square**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing**  **Tools** icon on the **Main** toolbar, point to **Gann Tools** and select **Gann Square**.
2. The cursor will change to the **Gann**  **square** .
3. In the Chart Area click where the Gann Square is to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Gann Square.
5. Release the button.

Moving Gann Square

To move a Gann Square without changing its shape:

1. Point the cursor at the Gann Square that is to be moved.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Gann Square

To reshape a Gann Square (change its size):

1. Point the cursor at the Gann Square that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Left-click the Gann Square and 2 small squares will appear in the corners.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Gann Square

In MultiCharts one can change the settings of the Gann Square. All the changes are performed in the **Format Gann Square** window.

Each instance of a Gann square has its own **Format** window. The number (if there are 2 or more Gann square instances in the same Chart Window) are shown in the titlebar of each **Format Gann Square** window.

One can change the settings of the Gann Square: the color, style and weight of the price/time lines. One can choose the price/time relationship on which the Gann lines are based. One can also choose to show or not the labels (price or/and value), select their font, style, size and the character set. It is possible to apply the strikeout or underline effects to the labels. It is possible to specify the time and price coordinates.

Setting Style

1. Access the **Format Gann Square** window.

To access the **Format Gann Square** window:

1. Drag the cursor to the Gann square instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.
- Or

1. Drag the cursor to the Gann square instance that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Gann Square'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Gann square instance that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Gann Square check or uncheck the corresponding check boxes.
4. In the **Price** column select the corresponding cells and enter the desired values. These percentages determine the price/time relationships on which the Gann lines are based.
5. In the **Color** column, using the drop-down lists, select any of the preset 40 colors for the Gann lines or click the **Others...** button to select the custom colors.
6. In the **Style** column, using the drop-down lists, select the desired styles for the Gann lines.
7. In the **Weight** column, using the drop-down lists, select the desired weights for the Gann lines.
8. Check the **Use as Default** check box to use these settings as the default settings when creating other Gann Squares.
9. Click **OK**.

Setting Labels

1. Access the **Format Gann Square** window.

To access the **Format Gann Square** window:

1. Drag the cursor to the Gann square instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.

Or

1. Drag the cursor to the Gann square instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Gann Square'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Gann square instance that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. Check the **Use as Default** check box to use these settings as the default settings when creating other Gann Squares.
10. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Gann Square** window.

To access the **Format Gann Square** window:

1. Drag the cursor to the Gann square instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.

Or

1. Drag the cursor to the Gann square instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Gann Square'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Gann square instance that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.

5. Click **OK**.

Cloning Gann Square

To clone a Gann square:

1. Drag the cursor to the Gann square instance that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Horizontal Line

A Horizontal Line is an analytical drawing tool used to indicate price levels as well as the support and resistance levels. However, you should apply other analysis techniques to confirm price breakouts and make more precise decisions.

Inserting Horizontal Line

1. Select one of three ways to insert a Horizontal line:
 - In the menu select **Insert**, point to **Drawing** and click **Horizontal Line**.
 - Click the **Horizontal Line**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing tools**  icon on the **Main** toolbar and select **Horizontal Line** from the menu.
2. The cursor will change to the **Horizontal**  **line** .
3. In the Chart Area click where the Horizontal line to begin.
4. Release the button.

Moving Horizontal Line

To move a Horizontal Line:

1. Point the cursor at the Horizontal line that is to be moved.
2. The cursor **Pointer**  will change into **Hand**  .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Formatting Horizontal Line

In MultiCharts one can change the settings of the Horizontal line. All the changes are performed in the **Format Horizontal Line** window.

Each instance of a Horizontal line has its own **Format** window. The number (if there are 2 or more Horizontal lines in the same Chart Window) are shown in the titlebar of each **Format Horizontal Line** window.

One can change the settings of the Horizontal line: its color, style and weight. One can also choose to show or not the labels, select their font, style, size and the character set. It is possible to apply the strikethrough or underline effects

to the labels. If shown the labels can be displayed to the left, to the right, or in the middle of the Horizontal line. It is also possible to change the price coordinate of the Horizontal line.

Setting Style

1. Access the **Format Horizontal Line** window.

To access the **Format Horizontal Line** window:

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Horizontal Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Horizontal line that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Others...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other Horizontal lines.
7. Click **OK**.

Setting Labels

1. Access the **Format Horizontal Line** window.

To access the **Format Horizontal Line** window:

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Horizontal Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Horizontal line that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.

7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Align** drop-down list select the desired type of the labels' alignment.
10. Check the **Use as Default** check box to use these settings as the default settings when creating other Horizontal lines.
11. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Horizontal Line** window.

To access the **Format Horizontal Line** window:

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Horizontal line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Horizontal Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Horizontal line that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired price coordinate in the **Value** field.
4. Click **OK**.

Cloning Horizontal Line

To clone a Horizontal line:

1. Drag the cursor to the Horizontal line that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Rectangle

A Rectangle is a non-analytical drawing tool drawn for the purpose of highlighting the desired segment of a chart. For instance, Rectangles can highlight a top, bottom, or a group of bars.

Inserting Rectangle

1. Select one of three ways to insert a Rectangle:
 - In the menu select **Insert**, point to **Drawing** and click **Rectangle**.
 - Click the **Rectangle**  icon on the **Drawing** toolbar.

- Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Rectangle** from the menu.
2. The cursor will change to the **Rectangle**  .
 3. In the Chart Area click where the Rectangle is to begin.
 4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Rectangle.
 5. Release the button.

Moving Rectangle

To move a Rectangle without changing its size:

1. Point the cursor at the Rectangle that is to be moved.
2. The cursor **Pointer**  will change into **Hand**  .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Reshaping Rectangle

To reshape Rectangle (change its size):

1. Point the cursor at the Rectangle that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand**  .
3. Left-click the Rectangle and 4 small squares will appear in the corners.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Rectangle

In MultiCharts one can change the settings of the Rectangle. All the changes are performed in the **Format Rectangle** window.

Each instance of a Rectangle has its own **Format** window. The number (if there are 2 or more Rectangles in the same Chart Window) are shown in the titlebar of each **Format Rectangle** window.

One can change the settings of a rectangle: the color, style and weight of the border line as well as the color and pattern of the fill. One can also change the time and price coordinates of the rectangle.

Setting Style

1. Access the **Format Rectangle** window.

To access the **Format Rectangle** window:

1. Drag the cursor to the Rectangle that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Rectangle that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Rectangle'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Rectangle that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Line** section, using the **Color** drop-down list, select any of the preset 40 colors for the line or click the **Others...** button to select the custom color.
4. In the **Line** section, using the **Style** drop-down list, select the desired style for the line.
5. In the **Line** section, using the **Weight** drop-down list, select the desired weight for the line (available only for the solid line).
6. In the **Fill** section, using the **Color** drop-down list, select any of the preset 40 colors for the fill or click the **Others...** button to select the custom colors.

Rectangle

7. In the **Fill** section, using the **Pattern** drop-down list, select the desired pattern for the fill.
8. Check the **Use as Default** check box to use these settings as the default settings when creating other Rectangles.
9. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Rectangle** window.

To access the **Format Rectangle** window:

1. Drag the cursor to the Rectangle that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Rectangle that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Rectangle'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Rectangle that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
5. Click **OK**.

Cloning Rectangle

To clone a Rectangle:

1. Drag the cursor to the Rectangle that is to be cloned.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Regression Channel

The Regression Channel is an analytical drawing tool used to precisely define a price trend and its boundaries with regard to the support and resistance levels. To create the Regression Channel two parallel equidistant lines are drawn above and below a linear regression regression channel that is based on a user specified price (High, Low, Open, Close). The bottom line is the support level, and the top line - the resistance level. All these channels are based on the linear regression regression channel.

Prices may extend outside the channel for a short period of time. But if prices stay outside the Regression Channel for a long period of time, a reversal trend may occur.

The distance of the channel lines from the median regression line is based on either:

1. The highest point among the peaks and lowest point among the troughs between the points upon which the median regression line is drawn.
2. A user specified number of standard deviations above/below the median regression line.
3. The maximal upward or downward oscillation.
4. A user specified number of standard errors above/below the median regression line.

Markets tend to have a "balancing point" that is a point towards which prices tend to move. The Regression analysis allows you to determine this "balancing point". On the other hand, the Standard Error analysis helps determine the "extreme points".

In MultiCharts there are 4 types of regression channels:

1. Segment High-Low.
2. Standard Deviation.
3. Raff Regression.
4. Standard Error.

Inserting Regression Channel

1. Select one of three ways to insert the Regression Channel:
 - In the menu select **Insert**, point to **Drawing** and click **Regression Channel**.
 - Click the **Regression channel**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing tools**  icon on the **Main** toolbar and select **Regression Channel** from the menu.
2. The cursor will change to the **Regression channel** .
3. In the Chart Area click where the Regression Channel is to begin.
4. Then keeping the left mouse button pressed move the pointer left or right to position the Regression Channel.
5. Release the button.

Moving Regression Channel

To move a Regression Channel without changing its period length:

1. Point the cursor at the Regression Channel that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.

4. Release the button.

Reshaping Regression Channel

To reshape a Regression Channel (change its length):

1. Point the cursor at the Regression Channel that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .
3. Left-click the Regression Channel and 2 small squares will appear at both ends of the regression line.
4. Drag one of these squares till the drawing tool becomes of the desired shape. Keep in mind that the Regression Channel will dynamically calculate the regression.
5. Release the button.

Formatting Regression Channel

In MultiCharts one can change the settings of the Regression Channel. All the changes are performed in the **Format Regression Channel** window.

Each instance of a Regression channel has its own **Format** window. The number (if there are 2 or more Regression channels in the same Chart Window) are shown in the titlebar of each **Format Regression Channel** window.

One can change the settings of a Regression Channel: the color, style and weight of the Regression, Upper Channel and Lower Channel lines. It is possible to extend the Regression Channel to the left or/and to the right. One can choose to show or not the labels and select their font, its style and size, and the character set. It is possible to apply the strikethrough or underline effects. If shown the labels can be displayed to the left or to the right of the Upper Channel and Lower Channel lines. One can also select one of 4 calculation types available to compute the Regression Channel and the price types to compute the regression line. It is also possible to change the time coordinates of the Regression Channel.

Setting Style

1. Access the **Format Regression Channel** window.

To access the **Format Regression Channel** window:

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Regression Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Regression channel that is to be formatted and press the **Format...** button.
2. Select the **Data** tab.
3. To display or hide any elements of the Regression channel check or uncheck the **Regression**, **Upper Channel** or **Lower Channel** check boxes.

4. In the **Color** column, using the drop-down lists, select the desired colors of the preset 40 colors for the Regression, Upper Channel or Lower Channel lines or click the **Others...** button to select the custom colors.
5. In the **Style** column, using the drop-down lists, select the desired styles for the Regression, Upper Channel or Lower Channel lines.
6. In the **Weight** column, using the drop-down lists, select the desired weights for the Regression, Upper Channel or Lower Channel lines.
7. Check the **Use as Default** check box to use these settings as the default settings when creating other Regression Channels.
8. Click **OK**.

Extending Regression Channel to Left or Right

1. Access the **Format Regression Channel** window.

To access the **Format Regression Channel** window:

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Regression Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Regression channel that is to be formatted and press the **Format...** button. 2. Select the **Data** tab.
2. In the **Extend** section check the **Left** or/and **Right** check boxes to extend the Regression channel to the left or/and right.
3. Check the **Use as Default** check box to use these settings as the default settings when creating other Regression Channels.
4. Click **OK**.

Setting Labels

1. Access the **Format Regression Channel** window.

To access the **Format Regression Channel** window:

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Regression Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Regression channel that is to be formatted and press the **Format...** button. 2. Select the **Labels** tab.
2. Check or uncheck the **Show Labels** check box to display or hide the labels.
3. Enter the desired font in the **Font** field or select it from the **Font** list.
4. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
5. Enter the desired font size in the **Size** field or select it from the **Size** list.
6. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
7. From the **Character Set** drop-down list select the desired character set.
8. From the **Align** drop-down list select the desired type of the labels' alignment.
9. Check the **Use as Default** check box to use these settings as the default settings when creating other Regression Channels.
10. Click **OK**.

Setting Calculation Type

1. Access the **Format Regression Channel** window.

To access the **Format Regression Channel** window:

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Regression Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Regression channel that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Regression Line** section, using the **Based on** drop-down list, select the price on which the regression line is based.
4. In the **Calculation** section select the desired calculation type. There are 4 calculation types:
 - **Segment High/Low**
 - **Raff Regression**
 - **Standard Deviation**

Note. Using this type one should specify the number of standard deviations to plot the Upper and Lower Channel lines.

- **Standard Error**

Note. Using this type one should specify the number of standard errors to plot the Upper and Lower Channel lines.

5. Check the **Use as Default** check box to use these settings as the default settings when creating other Regression Channels.

6. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Regression Channel** window.

To access the **Format Regression Channel** window:

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Regression channel that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Regression Channel'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Regression channel that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendar.
4. Check the **Use as Default** check box to use these settings as the default settings when creating other Regression Channels.
5. Click **OK**.

Remain in Drawing Mode

Remain in Drawing Mode allows to create several drawings in a row without the need to click on the drawing icon on the toolbar every time.

To enable/disable Remain in Drawing Mode in the main menu Select **View** and click **Remain in Drawing Mode**
Retracement Calculator

Retracement Calculator

The Retracement Calculator computes the price retracement in percents in order to anticipate future trading opportunities.

To calculate Percent Retracement three points are selected on a chart: a significant high or low, the opposite to the first point high or low and an intermediate point between the first two for which the calculations will be performed. The price range between the first two points is considered to be 100%.

Performing Retracement Calculation

To perform Retracement Calculation:

1. Select one of three ways to insert the Retracement Calculator:
 - In the menu select **Insert**, point to **Drawing** and click **Retracement Calculator**.
 - Click the **Retracement Calculator**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Retracement Calculator** from the menu.
2. The cursor will change to the **Retracement calculator**  .
3. In the Chart Area click a significant high or low, which will be the **Price 1**.
4. Click the opposite to the first point high or low, which will be the **Price 2**.
5. Click the intermediate point for which the percent retracement should be calculated. This will be the **Price 3**.
6. After clicking the third point the **Retracement Calculator** window will appear with the Retracement calculations.
7. Click **OK** to close the window.

Snap Mode

When Snap Mode is enabled drawings are snapped to the closest open, high, low and close values of the data series as well as closest plot values.

To enable Snap Mode in the main menu select **View** and click **Snap Mode**.

Text (Drawing Tool)

Text is a non-analytical drawing tool used to display text, the user's remarks and so on directly on a chart.

Inserting Text

1. Select one of three ways to insert the Text:
 - In the menu select **Insert**, point to **Drawing** and click **Text**.
 - Click the **Text T**  icon on the **Drawing** toolbar.
 - Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Text** from the menu.
2. The cursor will change to the Text  .
3. In the Chart Area click where the Text is to begin.
4. The **Format Text** window will appear.
5. Type in the desired text.
6. Click **OK**.

Moving Text

To move a Text:

1. Point the cursor at the text that is to be moved.
2. The cursor **Pointer**  will change into **Hand**  .

3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Formatting Text

In MultiCharts one can change the settings of the Text. All the changes are performed in the **Format Text** window.

Each instance of a Text has its own **Format** window. The number (if there are 2 or more Text instances in the same Chart Window) are shown in the titlebar of each **Format Text** window.

One can select the font, its style, size and color of the text that should be entered as well as the character set and the font back color. It is possible to apply the Strikeout, Underline, Transparent and Framed effects to the text. One can place the text to the left, right or in the middle of the initial point at which the text is entered that is move the text along the time axis. One can also move the text along the price axis and place it at the top, bottom or in the center.

Setting Style

1. Access the **Format Text** window.

To access the **Format Text** window:

1. Drag the cursor to the Text instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Text instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Text'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Text that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Text** field enter the needed text.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout**, **Underline**, **Transparent** or/and **Framed** check boxes to display the text struck out, underlined transparent or/and framed.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Font Back Color** drop-down list select any of the preset 40 colors or click the **Other...** button to select the custom colors.

Note. The Font Back Color drop-down list is not available if the Transparent effect is applied.

10. From the **Font Color** drop-down list select any of the preset 40 colors or click the **Other...** button to select the custom colors.
11. From the **Horizontal Alignment** drop-down list select the location of the text along the time axis from the initial point.

12. From the **Vertical Alignment** drop-down list select the location of the text along the price axis from the initial point.
13. Check the **Use as Default** check box to use these settings as the default settings when using the text as a drawing tool in future.
14. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Text** window.

To access the **Format Text** window:

1. Drag the cursor to the Text instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Text instance that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Text'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Text that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinate in the **Date** field or use the drop-down calendar.
4. In the **Coordinates** section enter the desired price coordinate in the **Value** field.
5. Click **OK**.

Cloning Text

To clone a Text:

1. Drag the cursor to the Text that is to be cloned.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Time Line

A Time Line is a non-analytical drawing tool used to show on the time axis the desired moment of time, the beginning or the end of the needed period of time.

Inserting Time Line

1. Select one of three ways to insert a Time line:
 - In the menu select **Insert**, point to **Drawing** and click **Time Line**.
 - Click the **Time line**  icon on the **Drawing** toolbar.

- Click the arrow next to the **Drawing Tools**  icon on the **Main** toolbar and select **Time Line** from the menu.
2. The cursor will change to the **Time line**
 3. In the Chart Area click where the Time line to begin.
 4. Release the button.

Moving Time Line

To move a Time line:

1. Point the cursor at the Time line that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the drawing tool to the desired position.
4. Release the button.

Formatting Time Line

In MultiCharts one can change the settings of the Time Line. All the changes are performed in the **Format Time Line** window.

Each instance of a Time line has its own **Format** window. The number (if there are 2 or more Time lines in the same Chart Window) are shown in the titlebar of each **Format Time Line** window.

One can change the settings of the Time line: its color, style and weight. One can also choose to show or not the labels, select their font, style, size and the character set. It is possible to apply the strikethrough or underline effects to the labels. If shown the labels can be displayed horizontally or vertically and placed at the top, center or bottom of the Time line. One can also change the time coordinate of the Time line.

Setting Style

1. Access the **Format Time Line** window.

To access the **Format Time Line** window:

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Time Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Time line that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Others...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other Time lines.

7. Click **OK**.

Setting Labels

1. Access the **Format Time Line** window.

To access the **Format Time Line** window:

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Time Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Time line that is to be formatted and press the **Format...** button.
2. Select the **Labels** tab.
3. Check or uncheck the **Show Labels** check box to display or hide the labels.
4. Enter the desired font in the **Font** field or select it from the **Font** list.
5. Enter the desired font style in the **Font Style** field or select it from the **Font Style** list.
6. Enter the desired font size in the **Size** field or select it from the **Size** list.
7. In the **Effects** group check or uncheck the **Strikeout** or/and **Underline** check boxes to display the labels struck out or/and underlined.
8. From the **Character Set** drop-down list select the desired character set.
9. From the **Align** drop-down list select the desired type of the labels' alignment.
10. From the **Orientation** drop-down list select the desired orientation to display labels horizontally or vertically.
11. Check the **Use as Default** check box to use these settings as the default settings when creating other Time lines.
12. Click **OK**.

Time Line

Setting Coordinates Precisely

1. Access the **Format Time Line** window.

To access the **Format Time Line** window:

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then double-click.

Or

1. Drag the cursor to the Time line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand** , then right-click.
3. Select **Format 'Time Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.

2. Select the Time line that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinate in the **Date** field or use the drop-down calendar.
4. Click **OK**.

Trend Line

A Trend Line is an analytical drawing tool used to indicate the direction of price movement. The upward trend line is called bullish, the downward trend line is called bearish. A trend reversal may take place if a market moves away from its current trend. The Trend Line can be represented as a Ray Line or as an Extended Line.

Ray Line - is a trend line that can be extended to the right only. It is an analytical drawing tool used to indicate the possible future direction of the price movement.

Extended Line - is a trend line that is extended to the left and to the right. It is an analytical drawing tool used to indicate the past and future direction of the price movement.

Inserting Trend Line

1. Select one of three ways to insert a Trend line:
 - In the menu select **Insert**, point to **Drawing** and click **Trend Line**.
 - Click the Trend line  icon on the Drawing toolbar.
 - Click the arrow next to the **Drawing tools**  icon on the **Main** toolbar and select **Trend Line** from the menu.
2. The cursor will change to the **Trend line** .
3. In the Chart Area click where the Trend line is to begin.
4. Then keeping the left mouse button pressed move the pointer up, down, left, or right to position the Trend line.
5. Release the button.

Note: To create a horizontal or vertical Trend Line hold **Ctrl** while inserting the Trend Line.

Moving Trend Line

To move a Trend line without changing its slope or length:

1. Point the cursor at the Trend line that is to be moved.
2. The cursor **Pointer**  will change into **Hand** .
3. Then keeping the left mouse button pressed drag the Trend line to the desired position.
4. Release the button.

Reshaping Trend Line

To reshape a Trend line (change its slope or length):

1. Point the cursor at the Trend line that is to be reshaped.
2. The cursor **Pointer**  will change into **Hand** .

3. Left-click the Trend line and 2 small squares will appear at both ends of the Trend line.
4. Drag one of these squares till the drawing tool becomes of the desired shape.
5. Release the button.

Formatting Trend Line

In MultiCharts one can change the settings of the Trend Line. All the changes are performed in the **Format Trend Line** window.

Each instance of a Trend line has its own **Format** window. The number (if there are 2 or more Trend lines in the same Chart Window) are shown in the titlebar of each **Format Trend Line** window.

One can change the style of the Trend line: its color, style and weight. One can choose any element of the Trend line to be displayed or hidden. It is possible to extend the Trend line to the left or/and to the right. One can also select one of 4 calculation types available to compute a Trend line. It is also possible to change the time and price coordinates of the Trend line.

Setting Style

1. Access the **Format Trend Line** window.

To access the **Format Trend Line** window:

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Trend Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Trend line that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Color** section select any of the preset 40 colors or click the **Others...** button to select the custom color.
4. From the **Style** drop-down list select the desired style.
5. From the **Weight** drop-down list select the desired weight.
6. Check the **Use as Default** check box to use these settings as the default settings when creating other Trend lines.
7. Click **OK**.

Extending Trend Line to Left or Right

1. Access the **Format Trend Line** window.

To access the **Format Trend Line** window:

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Trend line that is to be formatted.

2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Trend Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Trend line that is to be formatted and press the **Format...** button.
2. Select the **Style** tab.
3. In the **Extend** section check the **Left** or/and **Right** check boxes to extend the Trend line to the left or/and right.
4. Check the **Use as Default** check box to use these settings as the default settings when creating other Trend lines.
5. Click **OK**.

Setting Calculation Type

1. Access the **Format Trend Line** window.

To access the **Format Trend Line** window:

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Trend line that is to be formatted.

The cursor **Pointer**  will change into **Hand**  , then right-click.

2. Select **Format 'Trend Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Trend line that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Calculation type** section select desired calculation type:
 - **Freestyle** - allows drawing a trend line in any angle and in any position. Using this calculation type one can select the desired time and price coordinates.

Note. Both time and price coordinates are available for this calculation type.

- **Extreme** - allows drawing a trend line attached to the extreme values of the beginning and ending bars included in the trend line.

Note. Only time coordinates are available for this calculation type.

- **Fixed Point** - allows drawing a trend line attached to a defined price (Open, High, Low or Close) of the beginning and ending bars included in the trend line. One should select the desired bar price type from the **Fixed point** drop-down list.

Note. Only time coordinates are available for this calculation type.

- **Regression** - allows drawing a trend line as a linear regression line based on the bar price selected for all bars included in the trend line. One should select the desired bar price type from the **Regression** drop-down list to calculate the linear regression line.

Note. Only time coordinates are available for this calculation type.

4. Click **OK**.

Setting Coordinates Precisely

1. Access the **Format Trend Line** window.

To access the **Format Trend Line** window:

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then double-click.

Or

1. Drag the cursor to the Trend line that is to be formatted.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Format 'Trend Line'...** from the shortcut menu.

Or

1. In the **Format Objects** window select the **Drawings** tab.
2. Select the Trend line that is to be formatted and press the **Format...** button.
2. Select the **Properties** tab.
3. In the **Coordinates** section enter the desired time coordinates in the **Start Date** and **End Date** fields or use the drop-down calendars.
4. In the **Coordinates** section enter the desired price coordinates in the **Start Value** and **End Value** fields.
5. Click **OK**.

Cloning Trend Line

To clone a Trend line:

1. Drag the cursor to the Trend line that is to be cloned.
2. The cursor **Pointer**  will change into **Hand**  , then right-click.
3. Select **Clone Drawing** from the shortcut menu.

Improve Visual Appearance of Drawing Tools

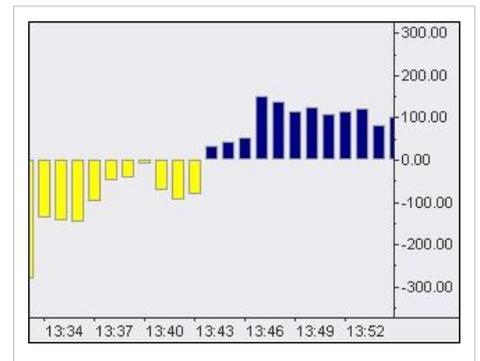
To improve visual appearance of drawing tools in the main menu select **File**, click **Preferences...**, select the **Appearance** tab and check the **Improve visual appearance of drawing tools (no bluriness, but higher CPU usage)** check box.

Non-Standard Chart Types

Cumulative Delta

Understanding Cumulative Delta Chart Type

Cumulative Delta is the algebraic sum of the single delta volume values. In comparison to Volume Delta, Cumulative Delta is not based on regular bars. When the Cumulative Delta chart type is used, the price scale of the chart is transformed into volume scale and the formed bars represent not volume within regular price bars, but accumulated delta (buy - sell) of the volume per specified resolution. It can be used for analysis only. Trading directly from this chart type is not supported.



Selecting Cumulative Delta Chart Type

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or
 - Use the **Insert** key on the keyboard; or
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** list.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select **Cumulative Delta** from the **Chart Type** list.
7. Select **Resolution** for your chart to be based on. It allows you to choose which type of data (for more details see Tick, Minute and Daily Data) and what detailed resolution will be used for building the bars.
8. Select **Breakdown by**:
 - **Up Ticks vs Down Ticks** method:
 - If the current tick price is higher than the previous tick price, the volume of the current tick goes to BUY volume.
 - If the current tick price is lower than the previous tick price, the volume of the current tick goes to SELL volume.
 - If the current tick price is the same as the previous tick price, the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume. **Example:** If a new tick comes with higher than previous price and volume is recorded as BUY volume, and then another tick comes with the same as previous price, the volume is recorded also to BUY volume.
 - If a tick is first one in the series, its volume goes to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick trade** data from your data source for the specified in chart settings data range, if **Up Ticks vs Down Ticks** is selected.

- **Ask Traded vs Bid Traded** method:
- If the current tick price is higher or equals current ASK tick price, the volume of the current tick goes to BUY volume.
- If the current tick price is lower or equals current BID tick price, the volume of the current tick goes to SELL volume.
- If the current tick price is between ASK and BID prices, then the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume. **Example:** If a new tick comes with a price higher or equals current ASK tick price and its volume is recorded as BUY volume, and then another tick comes with a price that is between ASK and BID prices, the volume is recorded also to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick ask** and **bid** data from your data source for the specified in chart settings data range, if **Ask Traded vs Bid Traded** is selected.

9. Check **Break on Session** if you want to see the session breaks (not available for daily-based resolutions).
10. Double-click the symbol, or click **OK**, to create a chart.

Note: Custom Futures are not supported on Cumulative Delta chart type.

Settings Cumulative Delta Chart Style (Open, High/Low, Close, Up, Wick, Down)

1. Open the **Format Instrument** window by one of the following methods:
 - Click the Format Instrument icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ; or:
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  , right-click and then click **Format** 'Symbol Name'; or:
 - Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. Select one of the 2 available chart types:
 - **OHLC Bar**
 - **Candlestick**
 - **Histogram**
4. In the **Chart Style** section click on the component element to be changed.
5. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
6. From the **Width** list select a width of the body border and the wick.

7. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
8. To display the Last Price Marker select the **Last Price Marker** check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
9. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto Trading Orders on Cumulative Delta Chart Type

Intra-Bar Order Generation is supported on Cumulative Delta chart type. Bar magnifier is not supported. To learn how Intra-Bar Order Generation on Cumulative Delta Chart Type, see this page

Backtesting

There is no difference in order generation between Regular and Cumulative Delta chart types with regards to backtesting. The basis of Cumulative Delta chart is volume, not price, so the orders are executed based on volume, not on price.

Order Generation in Data Playback

There is no difference between order generation on Regular and Cumulative Delta chart types with regards to data playback. Only As Is type of Data Playback is available] for Cumulative delta chart type.

Real-Time Simulation

There is no difference between order generation on Regular and Cumulative Delta chart types with regards to real-time order simulation.

Auto Trading

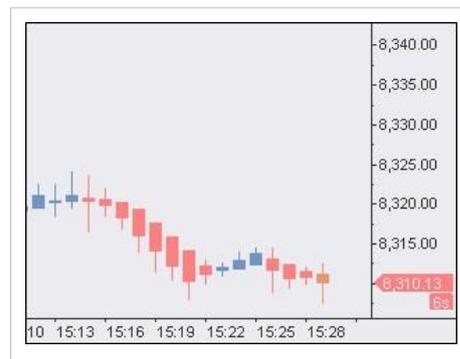
Auto trading is not allowed for this chart type.

Heikin-Ashi

Understanding Heikin-Ashi Chart Type

The Heikin-Ashi chart type is constructed like a regular candlestick chart (except with the new values above). The time series is defined by the user depending on the type of chart desired (daily, hourly, etc.). Instead of using the open-high-low-close (OHLC) bars like standard candlestick charts, the Heikin-Ashi technique uses a modified formula:

Close = (Open+High+Low+Close)/4
 Open = [Open (previous bar) + Close (previous bar)]/2
 High = Max (High,Open,Close)
 Low = Min (Low,Open, Close)



Selecting Heikin-Ashi Chart Type

To create a new chart:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or
 - Use the **Insert** key on the keyboard; or
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** list.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select **Heikin-Ashi** from the **Chart Type** list.
7. Enter the **Resolution** in the corresponding boxes.
8. Select **Break on Session** if you want to see the session breaks.
9. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Selecting Heikin-Ashi Chart Style

Chart style can be selected from the **Format Instrument** window:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **Format Instrument** icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ; or
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  , right-click and then click **Format** 'Symbol Name'; or
 - Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.
4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
5. From the **Width** list select a width of the body border and the wick.
6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
7. To display the **Last Price Marker** select the Last Price Marker check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto trading orders on Heikin-Ashi Chart Type

There are some differences between Regular and Heikin-Ashi chart types with regards to order generation in real time and backtesting.

Backtesting and Data Playback

There is no difference between order generation on Regular and Heikin-Ashi chart types with regards to Backtesting and Data Playback.

Real-Time simulation

Heikin-Ashi

Type of the strategy	Regular Chart Type	Heikin-Ashi Chart Type
Buy next bar at market	Order is placed on the first tick of the new bar, i.e. on Open of next bar.	Order is placed on Open of Heikin Ashi bar, when the new tick of this bar is received. Open of the Heikin Ashi bar is not equal to the price of the received tick. $HA\ Open = (HA\ Open[1] + HA\ Close[1])/2$.
Buy this bar at close	Order is placed on the last tick of a bar, i.e. on the Close of the current bar.	Order is placed on the Close of the current Heikin Ashi bar. Close of the Heikin Ashi bar is not equal to the price of the tick that closes this bar. $HA\ Close = (Open + High + Low + Close)/4$.
Price orders	Order is placed at the price of the first tick that satisfies Stop or Limit conditions.	Order is placed at the price of the first tick that satisfies Stop or Limit conditions.

Auto Trading

There is no difference between order generation on Regular and Heikin-Ashi chart types with regards to Auto Trading.

To learn how Intra-Bar Order Generation and Bar Magnifier work on Point and Figure Chart Type, see this page

Kagi

Understanding Kagi Chart Type

It uses a series of vertical lines to illustrate general levels of supply and demand for certain assets. Thick lines are drawn when the price of the underlying asset breaks above the previous high price and is interpreted as an increase in demand for the asset. Thin lines are used to represent increased supply when the price falls below the previous low.



Selecting Kagi Chart Type

To create a new chart:

1. Open the **Format Instrument** window by one of the following methods:

- Click the **New Chart Window**  icon on the Main toolbar; or:
 - Use the **Insert** key on the keyboard; or:
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
 3. Select a data feed from the **Data Source** drop-down list box.
 4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
 5. Select the **Settings** tab.
 6. Select Kagi from the Chart Type list.
 7. Enter the **Reversal** and **Resolution** in the corresponding boxes.
 8. Select **Break on Session** if you want to see the session breaks.
 9. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Selecting Kagi Chart Style

Chart style can be selected from the Format Instrument window:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the Format Instrument icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ; or:
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  , right-click and then click **Format 'Symbol Name'**; or:
 - Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.
4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
5. From the **Width** list select a width of the body border and the wick.
6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
7. To display the **Last Price Marker** select the Last Price Marker check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto trading orders on Kagi Chart Type

There are some differences between Regular and Kagi chart types with regards to order generation in real time and backtesting.

Backtesting and Data Playback

There is no difference between order generation on Regular and Kagi chart types with regards to Backtesting and Data Playback.

Real-Time simulation

Type of the strategy	Regular Chart Type	Kagi Chart Type
Buy next bar at market	Order is placed on the first tick of the new bar, i.e. on the Open of next bar.	Order is placed on Open of next column, not on the first tick but only when column's status turns from in-progress into fixed*.
Buy this bar at close	Order is placed on the last tick of the bar, i.e. on the Close of the current bar.	When a column's status turns from in-progress into fixed*, the order is placed at the Close price of the previous column.
Price orders	Order is placed at the price of the first tick that satisfies Stop and Limit conditions.	Order is placed either on the last, closing tick of a column or on the Open of the bar after the column has been closed (if it is guaranteed to be filled) taking into account Stop or Limit conditions.

* After the resolution time frame has passed.

Auto Trading

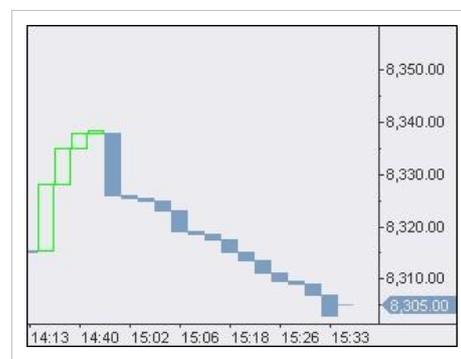
Type of the strategy	Regular Chart Type	Kagi Chart Type
Buy next bar at market	When the first tick of a new bar comes, the market order is sent to the broker.	When the next column's status turns from in-progress into fixed*, a market order is sent to the broker.
Buy this bar at close	When the last, closing tick comes, the market order is sent to the broker.	When the next column's status turns from in-progress into fixed*, a market order is sent to the broker.
Price orders	When the auto trading is on, a price order is sent to the broker.	When the auto trading is on a price order is sent to the broker.

* After the resolution time frame has passed.

Line Break

Understanding Line Break Chart Type

The concept of the Line Break chart is similar to Point and Figure charts. It is made up of a series of vertical blocks called lines that use close prices to indicate market direction. The Line Break chart looks like a series of rising and falling lines of varying heights. Each new line, like the X's and O's of a point and figure chart, constitutes a new column. Using close prices (or highs and lows), a new rising line is drawn if the previous high is exceeded. A new falling line is drawn if the price hits a new low.



Selecting Line Break Chart Type

To create a new chart:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or
 - Use the **Insert** key on the keyboard; or
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** drop-down list box.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select Line Break from the Chart Type list.
7. Enter the **Line Breaks** and **Resolution** in the corresponding boxes.
8. Select **Break on Session** if you want to see the session breaks.
9. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Selecting Line Break Chart Style

Chart style can be selected from the Format Instrument window:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the Format Instrument icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand** ; or
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand** , right-click and then click **Format** 'Symbol Name'; or
 - Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Style** tab.
3. In the **Chart Style** section click on the component element to be changed.
4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
5. From the **Width** list select a width of the body border and the wick.
6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
7. To display the **Last Price Marker** select the Last Price Marker check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto trading orders on Line Break Chart Type

There are some differences between Regular and Line Break chart types with regards to order generation in real time and backtesting.

Backtesting and Data Playback

There is no difference between order generation on Regular and Line Break chart types with regards to Backtesting and Data Playback.

Real-Time simulation

Type of the strategy	Regular Chart Type	Line Break Chart Type
Buy next bar at market	Order is placed on the first tick of the new bar, i.e. on the Open of the next bar.	Order is placed at the price of the first received tick, this tick may not be a part of a box, in this case the order is displayed not on OHLC of the box but on the price level of the first received tick.
Buy this bar at close	Order is placed on the last tick of a bar, i.e. on the Close of the current bar.	Order is placed on the close of current bar, i.e. when the bar is closed then the order is placed.
Price orders	Order is placed at the price of the first tick that satisfies Stop and Limit conditions.	Order is placed at the price of the first tick that satisfies Stop and Limit conditions.

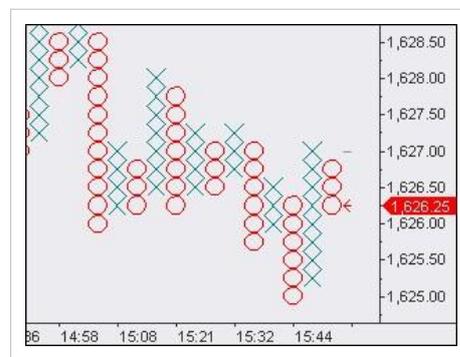
Auto Trading

There is no difference between order generation on Regular and Line Break chart types with regards to Auto Trading.

Point and Figure

Understanding Point and Figure Chart Type

Point and Figure chart type is a chart that plots price movements without taking into consideration the time period. Point and figure charts are composed of a number of columns that consist of a series of stacked Xs or Os. A column of Xs is used to indicate a rising price, while Os represent a falling price. New Xs or Os are added to the chart once the price changes by more than a predefined amount. Once the price moves to the opposite direction by more than a predefined amount, a new column is plotted.



Selecting Point and Figure Chart Type

To create a new chart:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or:
 - Use the **Insert** key on the keyboard; or:
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** list.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select **Point and Figure** from the **Chart Type** list.
7. Enter the **Box Size**, **Reversal** and **Resolution** in the corresponding boxes.
8. Select **High/Low Range** or **Close** input from the **Input** list.
9. Select **Break on Session** if you want to see the session breaks.
10. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Selecting Point&Figure Chart Style

Chart style can be selected from the Format Instrument window:

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **Format Instrument** icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ; or:
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  f, right-click and then click **Format 'Symbol Name'**; or:

- Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Style** tab.
 3. In the **Chart Style** section click on the component element to be changed.
 4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.
 5. From the **Width** list select a width of the body border and the wick.
 6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.
 7. To display the **Last Price Marker** select the Last Price Marker check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.
 8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto trading orders on Point and Figure Chart Type

There are some differences between Regular and Point and Figure chart types with regards to order generation in real time and backtesting.

Backtesting and Data Playback

Type of the strategy	Regular Chart Type	Point and Figure Chart Type
Buy next bar at market	Order is placed on the Open of the next bar.	Order is placed on the Open of the next column.
Buy this bar at close	Order is placed on the Close of the current bar.	Order is placed on the Close of the current column.
Price orders	Order is placed either on the Open of the next bar (if it is guaranteed to be filled) or intra bar at Stop or Limit prices.	Order is placed either on the Open of the next bar (if it is guaranteed to be filled) or intra bar at Stop or Limit prices.

Real-Time simulation

Buy next bar at market	Regular Chart Type	Point and Figure Chart Type
Buy next bar at market	Order is placed on the first tick of the new bar, i.e. on the Open of the next bar.	Order is placed on the Open of the next column, not on the first tick but only when column's status turns from in-progress into fixed*.
Buy this bar at close	Order is placed on the last tick of the bar, i.e. on the Close of the current bar.	When the status of the column turns from in-progress into fixed*, the order is placed at the Close price of the previous column.
Price orders	Order is placed at the price of the first tick that satisfies the Stop and Limit conditions.	Order is placed either on the last closing tick of the column or on the Open of the next bar after the column has been closed (if it is guaranteed to be filled) taking into account Stop or Limit conditions.

* After the resolution time frame has passed.

Auto Trading

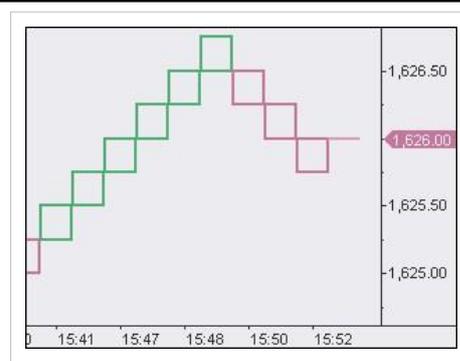
Type of the strategy	Regular Chart Type	Point and Figure Chart Type
Buy next bar at market	When the first tick of a new bar comes, the market order is sent to the broker.	When the next column's status turns from in-progress into fixed*, a market order is sent to the broker
Buy this bar at close	When the last, closing tick comes, the market order is sent to the broker.	When a column's status turns from in-progress into fixed*, an order is placed at Close price of the previous column.
Price orders	When the auto trading is on, a price order is sent to the broker.	When the auto trading is on a price order is sent to the broker.

* After the resolution time frame has passed.

Renko

Understanding Renko Chart Type

A renko chart is constructed by placing a brick in the next column once the price surpasses the top or bottom of the previous brick by a predefined amount. Up boxes are used when the direction of the trend is up, while down boxes are used when the trend is down.



Selecting Renko Chart Type

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or
 - Use the **Insert** key on the keyboard; or
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** list.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select **Renko** from the **Chart Type** list.
7. Enter the **Box Size** in the corresponding boxes.
8. Select whether you want the box size based on **Fixed Price** or **Percents** from last box open/close. **Example:** If the previous box is green and current price is moving upwards, then the fixed price/percent is calculated based on previous box close (from the right top corner of the box).

If the previous box is red and current price is moving upwards, then the fixed price/percent is calculated based on previous box open (from the right top corner of the box).

If the previous box is green and current price is moving downwards, then the fixed price/percent is calculated based on previous box open (from the right bottom corner of the box).

If the previous box is red and current price is moving upwards, then the fixed price/percent is calculated based on previous box close (from the right bottom corner of the box).

9. Select **Resolution** for your chart to be based on. It allows you to choose which type of data (for more details see Tick, Minute and Daily Data) and what detailed resolution will be used for building the boxes.

Note: MultiCharts 8.0 implementation: in real-time no matter what resolution is specified, each next box of the specified size will be plotted once previous box is finished.

MultiCharts 8.1 and any further version implementation: depending on the selected resolution the current box may be huge in real-time and not match your box size, but when the selected resolution bar (1 day for instance) is closed, you'll see a lot of boxes of the specified box size instead of that huge one.

10. Uncheck **Break on Session** if you don't want to see the session breaks (not available for daily-based resolutions).

11. Uncheck **Show 'Phantom' Bars** to see gaps between the bars if there was no such price.

12. Check **Show Wick** box to see wicks of each bar, demonstrating how the price was moving before the bar close.

Note: Wicks will not be shown on chart until the style is changed to **Candlesticks**.

13. Check **Show Real Open** to see real open price of the box (in this case the box will trigger not from an angle of the previous box).

14. Double-click the symbol, or click **OK**, to create a chart with the default settings.

Selecting Renko Chart Style (Up Box, Down Box, Current Up Box, Current Down Box)

1. Open the **Format Instrument** window by one of the following methods:

- Click the **Format Instrument** icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand** ; or:

- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand** , right-click and then click **Format 'Symbol Name'**; or:

- Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Style** tab.

3. In the **Chart Style** section click on the component element to be changed.

4. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.

5. From the **Width** list select a width of the body border and the wick.

6. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.

7. To display the Last Price Marker select the **Last Price Marker** check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.

8. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto trading orders on Renko Chart Type

There are some differences between Regular and Renko chart types with regards to order generation in real time and backtesting.

Backtesting and Data Playback

There is no difference between order generation on Regular and Renko chart types with regards to Backtesting and Data Playback.

Real-Time simulation

Type of the strategy	Regular Chart Type	Renko Chart Type
Buy next bar at market	Order is placed on the first tick of the new bar, i.e. on the Open of the next bar.	Order is placed at the price of the first received tick, this tick may not be a part of the box, in this case the order is displayed not on OHLC of the box but on the price level of the first received tick.
Buy this bar at close	Order is placed on the last tick of the bar, i.e. on the Close of the current bar.	Order is placed on the Close price of the current box. When the box is closed the order is placed at the Close of the box. Last tick of the box may be not included in the box itself, in this case the order is displayed not on in this case price level of the tick but on in this case Close of the box.
Price orders	Order is placed at the price of the first tick that satisfies Stop or Limit conditions.	Order is placed at the price of the first tick that satisfies Stop or Limit conditions.

Auto Trading

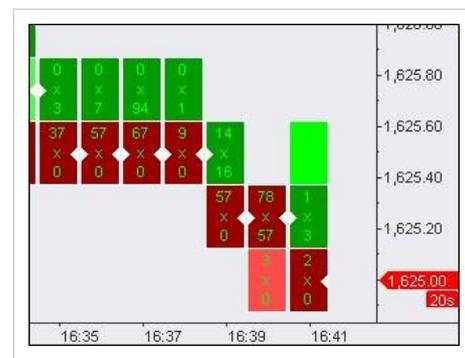
There is no difference between order generation on Regular and Renko chart types with regards to Auto Trading.

To learn how Intra-Bar Order Generation and Bar Magnifier work on Renko Chart Type, see this page

Volume Delta

Understanding Volume Delta Chart Type

Volume Delta chart type provides price and volume activity together on one data point over a specified time frame. It allows traders to see "within" the price bar to provide more transparency over a traditional chart. A bar is divided to equal parts based on minimum price increments for the symbol. Each box shows ask and bid volume in one of the three ways: ask x bid values, ask and bid sum or their delta. There are 2 base colors: red and green. A box is green if delta of ask and bid volume is positive. A box is red if delta of ask and bid is negative. All boxes within 1 bar are not the same in terms of color. The darker a red box is, the lower is its delta value. The darker a green box is, the higher is its delta value. All boxes between these extremes are colored respectively.



Selecting Volume Delta Chart Type

1. Open the **Format Instrument** window by one of the following methods:
 - Click the **New Chart Window**  icon on the Main toolbar; or:
 - Use the **Insert** key on the keyboard; or:
 - In the main menu select **File**, then point to **New** and click **New Chart Window**.
2. Select the **Instrument** tab.
3. Select a data feed from the **Data Source** list.
4. Select a symbol from the list of available symbols in **All Symbols** tab, or use the **Category** tabs to show only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. If you can't find a symbol, see Adding Symbol(s) to Symbol List section.
5. Select the **Settings** tab.
6. Select **Volume Delta** from the **Chart Type** list.
7. Select the **Resolution** your chart will be based on. It allows you to choose which type of data (for more details see Tick, Minute and Daily Data) and what detailed resolution will be used for building the bars.
8. Select **Breakdown by**:
 - **Up Ticks vs Down Ticks** method:
 - If the current tick price is higher than the previous tick price, the volume of the current tick goes to BUY volume.
 - If the current tick price is lower than the previous tick price, the volume of the current tick goes to SELL volume.
 - If the current tick price is the same as the previous tick price, the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume. **Example:** If a new tick comes with higher than previous price and volume is recorded as BUY volume, and then another tick comes with the same as previous price, the volume is recorded also to BUY volume.
 - If a tick is first one in the series, its volume goes to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick trade** data from your data source for the specified in chart settings data range, if **Up Ticks vs Down Ticks** is selected.

 - **Ask Traded vs Bid Traded** method:
 - If the current tick price is higher or equals current ASK tick price, the volume of the current tick goes to BUY volume.
 - If the current tick price is lower or equals current BID tick price, the volume of the current tick goes to SELL volume.
 - If the current tick price is between ASK and BID prices, than the volume is recorded either to BUY or to SELL volume depending on what was the last recorded volume. **Example:** If a new tick comes with a price higher or equals current ASK tick price and its volume is recorded as BUY volume, and then another tick comes with a price that is between ASK and BID prices, the volume is recorded also to BUY volume.

Note: When you plot Volume Delta chart, take into account that it doesn't matter what resolution is selected, additionally MultiCharts will request **historical tick ask** and **bid** data from your data source for the specified in chart settings data range, if **Ask Traded vs Bid Traded** is selected.

9. Select **Show Volume as**:
 - **Bid x Ask Volume** **Example:** **0x56**, where **0** is SELL volume and **56** is BUY volume.
 - **Total Volume** **Example:** **56** is the sum of BUY + SELL volume.
 - **Delta (Ask – Bid Volume)** **Example:** **56** is the difference between **56** and **0**.

10. Check **Displayed as a percentage** to see BUY and SELL volume in %. Available only for **Total Volume** and **Delta (Ask – Bid Volume)**.

- If **Total Volume** is selected and **Displayed as a percentage**, the whole bar represents 100% of used volume, each part of the bar represents a particular % of used volume respectively.
- If **Delta (Ask – Bid Volume)** is selected and **Displayed as a percentage** is checked, then a higher value between BUY and SELL volume of a particular box is taken, then it is multiplied by 100 and divided by total volume of this box. **Example:** BUY volume = 180, SELL volume = 30. The percentage of the box is calculated this way: $(180 \times 100) / (180 + 30) = 85,71\%$.

Note that for **Delta (Ask – Bid Volume)** the percentage is shown for each box individually, not for the whole bar.

11. Double-click the symbol, or click **OK**, to create a chart.

Note: Custom Futures are not supported on Volume Delta chart type.

Settings Volume Delta Chart Style (Up, Wick, Down, Buy Volume, Sell Volume)

1. Open the **Format Instrument** window by one of the following methods:

- Click the **Format Instrument** icon on the Chart Analysis toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ; or:

- Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  , right-click and then click **Format** 'Symbol Name'; or:

- Right-click on an empty area of the chart and then click **Format Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button; or:

- Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.

2. Select the **Style** tab.

3. Select one of the 2 available chart types:

- **Volume Delta**
- **Profile**

4. In the **Chart Style** section click on the component element to be changed.

5. In the **Color** column select one of the standard 40 colors from the palette box, or click the **Other** button to create custom colors.

6. From the **Width** list select a width of the body border and the wick.

7. To apply the most recently selected component's style to all components, click the **Apply to All Components** button.

8. To hide BUY and SELL volume values check the **Color Only** box (unchecked by default).

9. To display the Last Price Marker select the **Last Price Marker** check box, or clear the box to hide the marker; the color of the marker is the same as the color of the Down component.

10. To use these style settings for all new charts of this type, select **Use as Default** check box.

Auto Trading Orders on Volume Delta Chart Type

Intra-Bar Order Generation is supported on Volume Delta chart type. Bar magnifier is not supported. To learn how Intra-Bar Order Generation on Volume Delta Chart Type, see this page

Backtesting

There is no difference in order generation between Regular and Volume Delta chart types with regards to backtesting. Though visually a regular chart and volume delta charts are completely different, technically they consist of the same OHLC bars.

Order Generation in Data Playback

There is no difference between order generation on Regular and Volume Delta chart types with regards to data playback. Only As Is type of Data Playback is available] for volume delta chart type.

Real-Time Simulation

There is no difference between order generation on Regular and Volume Delta chart types with regards to real-time order simulation.

Auto Trading

There is no difference between order generation on Regular and Volume Delta chart types with regards to Auto Trading.

Intra-Bar Order Generation, Bar Magnifier on Non-Standard Chart Types

Intra-Bar Order Generation in Backtesting

Intra-Bar Order Generation mode allows generating orders within a bar. In backtesting Intra-Bar Order Generation is limited by four calculations per bar: **Open, High, Low, Close**. Historical Intra-Bar calculation of the strategy is divided into 4 segments:

1. (Open),
2. (Open-High),
3. (High-Low),
4. (Low-Close).

Calculation of the “**Buy next bar at market**” strategy is done as follows:

1. calculation on the **first** bar segment (*Open*) and generation of a market order on Open = Low of the next bar segment.
2. calculation on the **second** bar segment (*Open-High*) and generation of a market order on Open = High of the next bar segment.
3. calculation on the **third** bar segment (*High-Low*) and generation of a market order on Open = Low of the next bar segment.
4. calculation on the **fourth** bar segment (*Low-Close*) and generation of a market order on Open of the next bar.

Calculation of the “**Buy this bar at Close**” strategy is done the same way as with Intra-Bar Order Generation off, i.e. the orders will be generated on the Close of the current bar.

Calculation of the strategy that generates **price orders** will be performed the same way, but the generation of price orders will be limited by *Stop* or *Limit* conditions.

Bar Magnifier is essential for more detailed calculation of the strategy on historical data.

Bar Magnifier with **Intra-Bar Order Generation** ON allows a strategy to be calculated not only four times per bar (using OHLC data as with only Intra-Bar Order Generation ON), but as many times as there is detailed data.

Intra-Bar Order Generation in Real-Time Calculation

Intra-Bar Order Generation mode allows the strategy to generate orders within the bar. In this case the calculation of the strategy is made on every tick of the bar.

	BackTesting + IOG	BackTest + Bar Magnifier + IOG	Real-Time + IOG
Regular	As described above	As described above	Strategy calculation is done on every tick of a bar.
Volume Delta	As described above	As described above	Strategy calculation is done on every tick of a bar.
Point & Figure	X column is specified as: (Open), (Open-Low), (Low-High), (High-Close). O column is specified as: (Open), (Open-High), (High-Low), (Low-Close).	Bar Magnifier is not available	Strategy calculation is done on every tick of a bar.
Kagi	Up-going bar is specified as: (Open), (Open-Low), (Low-High), (High-Close). Down-going bar is specified as: (Open), (Open-High), (High-Low), (Low-Close).	Bar Magnifier is not available	Strategy calculation is done on every tick of a bar.
Renko	Up-going bar is specified as: (Open), (Open-Low), (Low-High), (High-Close). Down-going bar is specified as: (Open), (Open-High), (High-Low), (Low-Close).	Bar Magnifier is not available	Strategy calculation is done on every tick of a bar.
Line Break	Up-going bar is specified as: (Open), (Open-Low), (Low-High), (High-Close). Down-going bar is specified as: (Open), (Open-High), (High-Low), (Low-Close).	Bar Magnifier is not available	Strategy calculation is done on every tick of a bar.
Heikin Ashi	Same as on Regular Chart Type.	Bar Magnifier is not available	Strategy calculation is done on every tick of a bar.

Using Charts

Adjusting Chart

It is possible to scroll through charts horizontally, move the data series up or down vertically, adjust horizontal and vertical scales, and zoom in and out.

Scrolling Horizontally through a Chart

Scrolling horizontally through a chart allows viewing the parts of a data series that extend outside the visible range of the Chart Window. Make sure that the Chart Window, containing the chart to be scrolled through, is selected as the active window. A chart can be scrolled through only if the data series extends beyond the visible range.

To scroll through a chart use the scroll bar at the bottom of the Chart Window: position the mouse pointer over the "bar" of the scroll bar, click and hold the left mouse button, and drag the "bar" to the left or to the right, or click the left or the right button on the scroll bar; please note that the scroll bar will not appear if it is hidden in the Appearance settings.

A chart can also be scrolled through horizontally by one of the following methods:

- Use the mouse wheel to scroll through the chart; or:
- Click the **Scroll Left**  or the **Scroll Right**  icon on the **Control** toolbar; or:
- Position the mouse pointer over a data series; once the **Pointer**  changes into a **Hand** , hold the left mouse button and drag the chart to the right or to the left; or:
- Position the mouse pointer over the chart area and press and hold the space bar; once the **Pointer**  changes into a **Horizontal Double-Headed Arrow** , hold the left mouse button and drag the chart to the right or to the left; or:
- Use the **Arrow Left** and **Arrow Right** keys on the keyboard; or:
- Select **Format** in the main menu and click **Scroll Left** or **Scroll Right**.

Moving a Data Series Vertically

Make sure that the data series to be moved vertically is selected as the active series.

To move a series vertically in the chart click the **Move Up**  or the **Move Down**  icon on the **Control** toolbar.

A data series can also be moved vertically by one of the following methods:

- Position the mouse pointer over the price scale and press and hold the space bar; once the **Pointer**  changes into a **Vertical Double-Headed Arrow** , hold the left mouse button and drag the series up or down; or:
- Use the **Arrow Up** or the **Arrow Down** key on the keyboard; or:
- Select **Format** in the main menu and click **Move Up** or **Move Down**.

Adjusting Chart Scales

Horizontal chart scale can be adjusted by changing the bar spacing, and vertical scale by changing the price scale compression.

Changing Bar Spacing

Make sure that the Chart Window containing the chart, the bar spacing of which is to be changed, is selected as the active window.

To change the chart's bar spacing click the **Decrease Bar Spacing**  or the **Increase Bar Spacing**  icon on the **Control** toolbar.

The chart's bar spacing can also be changed by one of the following methods:

- Position the mouse pointer over the time scale; hold the left mouse button and drag the pointer to the right or to the left (the pointer will change into an **Increase Spacing**  or **Decrease Spacing**  symbol); or:
- Use **Ctrl + Plus** and **Ctrl + Minus** hotkey combinations; the numeric pad keys as well as the regular keyboard keys can be used; or:
- Select **Format** in the main menu and click **Increase Bar Spacing** or **Decrease Bar Spacing**; or:
- Set Bar Spacing, in pixels, in the **X - Time Scale** tab of the **Format Appearance** window.

Displaying Entire Series

To display the entire data series select **Format** in the main menu and click **Display Entire Series**.

Changing Price Scale Compression

Make sure that the data series, the price scale compression of which is to be changed, is selected as the active series.

To change the compression of a series' price scale click the **Compress Price Scale**  or the **Expand Price Scale**  icon on the **Control** toolbar.

The series' price scale compression can also be changed by one of the following methods:

- Position the mouse pointer over the price scale; hold the left mouse button and drag the pointer up or down (the pointer will change into an **Expand**  or **Compress**  symbol); or:
- Select **Format** in the main menu and click **Compress Price Scale** or **Expand Price Scale**.

Resetting Scales

Chart scales can be reset, canceling any changes made to the time scale (bar spacing) or the price scale (compression and series vertical position).

Scales can be reset individually or both at once.

Resetting Both Scales

Make sure that the Chart Window containing the chart, the scales of which are to be reset, is selected as the active window.

To reset both scales of a Chart Window click the **Reset Scales**  icon on the **Control** toolbar.

Tip: Both scales can also be reset by selecting **Format** in the main menu and clicking **Reset Scales**.

Resetting Time Scale (Bar Spacing)

Make sure that the Chart Window containing the chart, the time scale of which is to be reset, is selected as the active window.

To reset the time scale (bar spacing) of a Chart Window click the **Reset Time Scale**  icon on the **Control** toolbar.

The time scale (bar spacing) can also be reset by one of the following methods:

- Double-click on the time scale; or:
- Right-click on the time scale and then click **Reset Scale**; or:
- Select **Format** in the main menu and click **Reset Time Scale**.

Resetting Price Scale

Make sure that the Chart Window containing the chart, the price scale of which is to be reset, is selected as the active window.

Resetting cancels the price scale compression as well as any vertical displacement of the data series.

To reset a Chart Window's price scale click the **Reset Price Scale**  icon on the **Control** toolbar.

The compression of a chart's price scale can also be reset by one of the following methods:

- Double-click on the price scale; or:
- Right-click on the price scale and then click **Reset Scale**; or:
- Select **Format** in the main menu and click **Reset Price Scale**.

Zooming In

To zoom in on a section of a chart:

1. Click the **Zoom In**  icon on the **Control** toolbar, or select **Format** in the main menu and click **Zoom In**; the **Pointer**  will change into a **Magnifying Glass** .
2. Use the mouse pointer to define a rectangular zoom-in area on the chart: position the pointer in one corner of the rectangle, hold the left mouse button, and drag the pointer diagonally across to the opposite corner; the zoom-in area borders will be indicated during the selection.
3. Release the mouse button; the chart will zoom in on the defined rectangle.

There is no limit to the number of times a zoom-in can be performed within the same chart: to zoom in further, repeat steps 2 and 3; each zoom-in constitutes a "Zoom Step".

Zooming Out

To zoom out one "Zoom Step" click the **Zoom Out**  icon on the **Control** toolbar, or select **Format** in the main menu and click **Zoom Out**.

Each zoom-out reverses a single zoom-in step; to zoom out a step further, repeat the zoom-out again.

Note: The **Zoom Out** icon is enabled only if the chart is zoomed in.

Background Dragging

Background Dragging feature is an easy way to scroll the chart horizontally and vertically using the mouse.

1. Enable Background Dragging by one of the following methods:

- Click the **Background Dragging** icon  on the **Main** toolbar, or:
- In the main menu select and click the **Background Dragging**.

1. Drag the chart using the mouse.

Note: When **Background Dragging** is enabled it is active on all charts in all workspaces.

Note: If 2 or more workspaces are loaded and Background Dragging is enabled, when one of the workspaces is closed, **Background Dragging** turns off automatically. The same happens if all charts in a workspace are closed. When MultiCharts is restarted, the Background Dragging is off by default.

Changing Visual Order

When a number of objects are displayed in a single SubChart, the objects are displayed in "layers" – one object is in the "front", the next is "behind" it, and so on. The order of the layers constitutes the **Visual Order** of the objects. The Visual Order can be changed to prevent a thick line in the "front" layer from obscuring a thin line in the "back" layer.

The Visual order can be changed by two different methods:

- Right-click on the chart area and then click **Visual Order**; in the Visual Order window that appears, select an object and use the order buttons to change its visual order; or:
- Position the mouse pointer over an object; once the **Pointer**  changes into a **Hand** , right-click, then point to **Visual Order** and use the shortcut menu order commands to change the visual order of the object. Visual Order commands/buttons:

Bring to Front – the object will be placed in the front of all other objects

Send to Back – the object will be placed behind all other objects **Bring**

Forward – the object will be moved one layer to the front

Send Backward – the object will be moved one layer back

Making Screenshot

An image of the active Chart Window can be copied to the clipboard for use in another application, saved as a file, or sent via e-mail.

An image of the entire application window can also be saved as a file.

Copying Image to Clipboard

To copy an image of the active Chart Window to the clipboard:

Select **File** in the main menu and click **Copy Image to Clipboard**.

Tip: The clipboard image can now be pasted in another application.

Saving Image as File

To save an image of the active Chart Window or the entire application window as a file:

1. Select **File** in the main menu and click **Save as Image**.
2. In the **Save as Image** window that appears, choose the **Active Window** or the **Application Window** radio button.
3. In the **Reduce Image to** drop-down list box select the size of the image to be saved, in percent; reducing the image lowers the resolution and decreases the image file size.
4. Check the **Show Image** check box to display the image file once it has been saved.
5. Click **OK**.
6. In the **Save As** dialog box that appears, choose the file name and the image format type, and click the **Save** button.
7. If the **Show Image** check box has been checked, the saved image will be displayed.

Sending Image via E-mail

To send an image of the active Chart Window via e-mail:

Select **File** in the main menu and click **Send Image via E-mail**; the computer's e-mail client will be started and a new e-mail created with the image file already attached.

Printing Charts

Prining Charts

For a print preview:

Select **File** in the main menu and click **Print Preview**; page setup can be accessed, and the chart printed, directly from the print preview window.

To print the chart in the active Chart Window:

Select **File** in the main menu and click **Print**, or use the **Ctrl + P** hotkey combination.

For the page setup:

Select **File** in the main menu and click **Page Setup**.

Reloading Charts

Occasionally a bad tick, an error, or a gap in the price data causes a chart to plot improperly.

Reloading will redraw the chart based on a fresh set of data from the data source. In the process of reloading, a new set of data is downloaded from the data feed.

It is possible to reload the entire length of the data series or to reload only a certain number of days back. Any existing data, for which no replacement data is available from the data source, is retained.

Reloading Charts

Reloading the Entire Data Series

- Select **View** in the main menu, select **Reload**, and select **Reload All Data**, or
- Press **CTRL+R** using the keyboard.

Tip: A chart can also be reloaded by typing **.rld** into the **Command Line** toolbar.

Reloading Only a Number of Days Back

1. Select **View** in the main menu and select **Reload**.
2. Select the number of days back.

Global Reload

In addition to reloading the data for a single chart, all of the data, for some or all of the charts, can be reloaded by entering a **Global Reload** command into the **Command Line** toolbar.

Usage

```
.rld glob[, res = Resolution]
```

Parameters inside the square brackets are optional

Where:

.rld – reload command

glob – an optional parameter; specifies a global reload

res – an optional parameter, limits the global reload to charts with the specified resolution only; must be preceded by a comma

Resolution – an optional parameter, used in combination with the res parameter; specifies the resolution of the charts that the global reload will be limited to.

Examples

.rld will reload the chart in the active window

.rld glob will reload all charts

.rld glob, res=1minute will reload all charts with a resolution of 1 minute

Note: After reloading charts with 1-Tick resolutions, it is necessary to exit and re-start the application. Make sure to wait at least 30 seconds before restarting the application in order to make sure that all of its processes have ended. You can also end the processes manually by using the Task Manager.

Note: In some instances it may be necessary to completely restart the computer in order to complete the process of reloading a chart with a 1-Tick resolution.

Using Pointers

A pointer is a movable marker that indicates a position on the screen and follows the movement of the mouse. Commands and options can be selected by positioning the pointer over the desired choice and clicking a mouse button.

Two kinds of markers can be chosen: Conventional (Arrow) **Pointer** and **Cross Pointer**.

The pointers can be used in three modes: **Hint**, **Cross**, and **Tracking**.

Pointer

To choose the conventional mouse pointer, click the **Pointer**  icon on the **Chart Analysis** toolbar.

The conventional mouse pointer can also be chosen by selecting **View** in the main menu and clicking **Pointer**.

Cross Pointer

Cross Pointer looks like the crosshairs of a target sight and is preferred by some users.

To choose the Cross Pointer, click the **Cross Pointer**  icon on the **Chart Analysis** toolbar.

The Cross Pointer can also be chosen by selecting **View** in the main menu and clicking **Cross Pointer**.

Understanding Hint Modes

Chart Hint

A Chart Hint window displays the time, price, and other data specific to the pointer's position on a chart.

To show the Chart Hint window temporarily, click and hold the left mouse button while the mouse pointer is positioned or dragged over a chart; once the mouse button is let go, the hint window will disappear.

To toggle the Chart Hint window on and off, click the **Show Chart Hint**  icon on the **Chart Analysis** toolbar.

The Chart Hint window can also be toggled on and off by selecting **View** in the main menu and clicking **Show Chart Hint**.

To toggle Hint windows between transparent and opaque modes select **View** in the main menu and click **Transparent Hint**.

Drawing Hint

A Drawing Hint window appears next to the mouse pointer during the drawing operations, and displays the drawing tool data specific to the pointer's position on a chart.

To toggle the Drawing Hint window on and off select **View** in the main menu and click **Show Drawing Hint**.

To toggle Hint windows between transparent and opaque modes select **View** in the main menu and click **Transparent Hint**.

Cross Mode

The Cross mode aids in determining the pointer's position. The perpendicular lines of the "cross" reference the pointer's exact location in respect to the axes, with the corresponding values displayed in the **Labels** on each axis.

To toggle the Cross mode on and off click the **Show Cross**  icon on the **Chart Analysis** toolbar.

The Cross mode can also be toggled on and off by selecting **View** in the main menu and clicking **Show Cross**.

To toggle the Cross mode Labels between transparent and opaque modes select **View** in the main menu and click **Solid Labels**.

Understanding Tracking Modes

Tracking modes can only be used in combination with the Cross mode. Tracking modes replicate the Cross mode lines in all of the Workspace's Chart Windows in which the lines fall within the range of the chart.

The **Labels** are displayed in the original window only. A Tracking mode is also known as the Global Cursor.

The **Tracking Time and Price** mode replicates both Time and Price lines, and the **Tracking Time** mode replicates only the Time line.

Tracking Time and Price

In order to use a Tracking mode the Cross mode must first be enabled.

To toggle the Tracking Time and Price mode on and off click the **Tracking Time and Price** icon on the **Chart Analysis** toolbar.

The Tracking Time and Price mode can also be toggled on and off by selecting **View** in the main menu, then pointing to **Tracking Settings** and clicking **Tracking Time and Price**.

Note: The Tracking Time and Price icon is enabled only if the Cross mode is on.

Tracking Time

In order to use a Tracking mode the Cross mode must first be enabled.

To toggle the Tracking Time mode on and off select **View** in the main menu, then point to **Tracking Settings** and click **Tracking Time**.

Note: Enabling the Tracking Time mode while the Tracking Time and Price mode is on will switch the mode from Tracking Time and Price to Tracking Time.

Studies

Expert Commentary

Expert Commentary window is a tool allowing to display a dynamically generated commentary from PowerLanguage script by clicking on any bar.

Open the **Expert Commentary** window by one of the following methods:

- Click the **Expert Commentary** icon  on the **Main** toolbar, or:
- In the main menu select **View** tab and click **Expert Commentary**

Click on any bar of the chart with a study using **Expert Commentary** keywords applied to display the commentary in the **Expert Commentary** window.

Indicator Scaling

The Scale is located on the left or/and on the right side of the chart, and consists of a vertical line with marks, indicating values, and identified by Labels. The values on the scale are specific to the indicator plotted on the chart. The scale represents the value range, within which the indicator is plotted. To determine the value of a point on a chart, the vertical position of the point is referenced to a value on the scale.

The Range of the scale and the top and bottom Margins can be set. The Labels, identifying scale's marks, can be customized. A Linear or a Semi-Log (percent-of-change) type of scaling can be chosen.

Setting Scale Range

Four types of the Indicator Scale Range can be selected: **Screen**, **Entire Series**, **User Defined**, or **Same as Symbol**.

Screen Scale Range

The range of the Screen scale is equal to the range of the plot segment that is actually visible in the Chart Window. Scrolling the chart along the time axis, so that another plot segment, with a different range, becomes visible, will cause the range of the Screen scale to be adjusted accordingly.

Scale range can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Scale Range** section, click the **Screen** radio button.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Entire Series Scale Range

The range of the Entire Series scale is equal to the range of the indicator's entire plot, including any part of the plot that extends beyond the segment actually visible in the Chart Window. Scrolling the chart along the time axis will not cause the range of the Entire Series scale to be adjusted. Scale range can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Scale Range** section, click the **Entire Series** radio button.

Note: Entire Series scale range can not be used as a default.

User Defined Scale Range

The range of the User Defined scale is set by the user. A part of the plot that falls outside of the defined range will not be displayed in the Chart Window.

Scale range can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Scale Range** section, click the **User Defined** radio button.
4. In the **Maximum** text box enter the maximum value for the range.
5. In the **Minimum** text box enter the minimum value for the range.

Scale increments will be determined automatically. The maximum and minimum values may be rounded off.

Note: User Defined scale range can not be used as a default.

Same as Symbol

The range of the Same as Symbol scale is equal to the range of the base symbol's data series price scale:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Scale Range** section, click the **Same as Symbol** radio button.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Setting Margins

Margins are the extra spaces between the visual representation of an indicator and the chart's upper and lower borders, and are set as a percentage of the range of the plot's scale. Margins can not be set for a chart with a User Defined scale.

Margins are set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In **Use Margins** section, check the **Use Margins** check box to add margins; uncheck the box to not add margins.

4. In the **Top Margin** text box enter the top margin as a percentage of the series price range.
5. In the **Bottom Margin** text box enter the bottom margin as a percentage of the series price range.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Setting Scaling Type

Two types of Scaling can be selected: **Linear** or **Semi-Log**.

A Linear scale is the conventional, absolute scale. A \$10 change in price will always be represented by the same displacement along the vertical axis, regardless of the base price from which the change took place.

A Semi-Log (percent-of-change) price scale is a percentage-based scale. A 10% change in price will always be represented by the same displacement along the vertical axis, regardless of the absolute price change. A \$5 price change from a \$50 base price (10%) will be represented by the exact same vertical displacement as a \$10 price change from a \$100 base price (10%), even though the absolute values of \$5 and \$10 are not equal.

Important: Margins should not be used with a Semi-Log price scale.

Scaling Type is set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Scaling Type** section, click the **Linear** or the **Semi-Log** radio button, to select Linear or Semi-Log scale type, respectively.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Scale Labels

Scale Labels are the numbers that appear next to the marks on the scale that indicate what value the marks represent.

If a chart contains multiple objects, the object, for which the label values are displayed, can be selected. The object is selected separately for the right and for the left scales, making it possible to display different label values on the right than on the left scale of the chart.

The numbers displayed on the labels can be abbreviated, and either the increment (step size) between the labels or the total number of labels can be set.

Selecting Object for Label Values

The object, for which the label values on the scale are displayed, can be selected by right-clicking on the scale and then clicking the **#) Object Name**, where **#** is the number, indicating the order in which the object has been added to the chart.

Dividing Scale Label Values

The values of some indicators, for example volume, can be rather large, such as 25,000,000,000.

The numbers displayed on the labels can be abbreviated by dividing the values they represent by a set factor. For example, a label for the value of 25,000,000,000, divided by a factor of 1,000,000,000, will read "25.00". Characters can also be added to the end of the label, for example a "b", resulting in a label that reads "25.00 b" instead of the "25,000,000,000".

You can elect to set the division factor automatically or manually.

Dividing Label Values Automatically

The division factor with the corresponding characters is selected automatically. To change the characters, see Dividing Label Values Manually.

Automatic selection of the division factor can be chosen from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Divide Scale Labels** section, check **Divide Scale Labels** check box.
4. Click the **Auto** radio button.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Dividing Label Values Manually

The division factor can be set manually, and the corresponding characters assigned, from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**

- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Divide Scale Labels** section, check **Divide Scale Labels** check box.
4. Click the **Manual** radio button.
5. In the drop-down list box select the division factor.
6. In the **Displayed as** text box enter the characters to be added to the end of the label for the selected division factor; these characters will also be used when Dividing Label Values Automatically.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Canceling Label Value Division

Label value division is canceled from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Divide Scale Labels** section, uncheck **Divide Scale Labels** check box.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

You can choose from three different settings that determine the increment (step size) between labels:

- **Automatic** - the increment is optimized dynamically to aid the visual assessment of price levels
- **Set Step Size** - the increment between labels is set manually
- **Set Number of Labels** - a set number of labels is always displayed

Setting Label Step

In MultiCharts three label increment types are available for studies: Automatic, Fixed Step Size and Fixed number of Labels:

- **Automatic** - displays axis labels with default settings;
- **Fixed step size** - displays axis labels with fixed step between labels;
- **Fixed number of labels** - displays limited numbers of axis labels.

Automatic

Increment between the labels is set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See *Opening Format Objects Window*.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Set Labels Manually** section, uncheck **Set Labels Manually** check box.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Set Step Size

Increment between the labels is set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See *Opening Format Objects Window*.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Set Labels Manually** section, check **Set Labels Manually** check box.
4. Click the **Set Step Size** radio button.
5. In the **Set Step Size** text box enter the increment value (step size), in units displayed on the scale.

Note: A label at each step will only be displayed if there is enough room on the scale.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Set Number of Labels

A fixed total number of labels can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**

- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Scaling** tab.
3. In the **Set Labels Manually** section, check **Set Labels Manually** check box.
4. Click the **Set Number of Labels** radio button.
5. In the **Set Number of Labels** text box enter the fixed number of labels desired.

Note: The set number of labels will only be displayed if there is enough room on the scale.

Tip: To use these scaling settings as the default for the selected indicator, check **Use as Default** check box.

Configuring Fractional Price Scale Format for Studies

To display the price scale of studies in fractional format,

1. Make sure the price scale of the data series in which the study is based is in fractional format.
2. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over

the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

3. Select the **Scaling** tab.
4. In the **Scaling Range** section, select **Same as Symbol**.
5. Click **OK**.

Indicator Settings

An Indicator is a visual technical analysis tool, used to analyze market conditions and identify and forecast trends and market patterns. An indicator is a visualization of a mathematical formula, and consists of one or more Plots – lines, histograms, series of points or crosses, highs and lows, left and right ticks, or a combination of the above. Indicators are computed using the price, volume, and (occasionally) open interest data.

Each indicator, applied to a chart, is set individually and has its own Format Indicator window. Indicator Title is displayed in the title bar of the Format Indicator window. Multiple instances of the same indicator can be applied to the same chart; each instance will have its own Format Indicator window, allowing different settings to be used for each of the instances.

Basic adjustments to the indicator's logic can be made by changing the Input Values. Indicator Style, Maximum Bars Back value, and Base Data Series can be set, and the recalculation frequency selected.

Setting Input Values

An Input is a constant used in the indicator calculations. Indicators can have one or more inputs, or none at all.

Each input is assigned a name. There are three types of inputs: Numeric, True/False, and String.

Indicators can be modified by changing the input Values.

One of the main advantages of using the inputs is that basic adjustments to the study's logic can be made by simply changing the input values, without the need to edit the studies' actual code.

Most, but not all, indicators use input values; to learn more see Default Studies Inputs. The inputs can be modified before as well as after the indicator has been inserted. Indicator Inputs can be set from the Format Indicator window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **General** tab.
3. In the **Inputs** section, in the **Value** column, click on the value of the input that you want to change and enter the desired value.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Setting Style

The **Type**, **Color**, **Style**, and **Weight** of the indicator's plot can be customized; if an indicator consists of multiple plots, each plot can be set individually.

Changes to indicator style settings will be applied to the Chart Window in real time.

Indicator style can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **General** tab.
3. In the **Style** section, in the **Type** column, select the plot type from the drop-down list box.
4. In the **Color** column select the plot color from the drop-down palette box.
5. In the **Style** column select the plot style from the drop-down list box.

6. In the **Weight** column select the plot weight from the drop-down list box; the weight can only be selected for the solid line style.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Setting Maximum Bars Back

All indicators based on past data use a certain number of bars for their calculations. The number of bars is called **Maximum number of bars a study will reference**, or **Maximum Bars Back**. You can elect to set this value manually, or to have it set automatically (Auto-Detect).

Auto-Detect Maximum Bars Back

Automatic detection of the Maximum Bars Back value can be chosen from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **Maximum Bars Back** section click the **Auto-Detect** radio button.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Set Maximum Bars Back Manually

Please note that in order for the indicator to be displayed, the number of bars in the data series on which the indicator is based must be greater than the indicator's Maximum Bars Back setting.

Maximum Bars Back value can be set manually from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **Maximum Bars Back** section click the **User Specified** radio button.

4. In the **User Specified** text box enter a Maximum Bars Back value.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Selecting Base Data Series

An indicator can be based on any one of the data series in a multi-symbol chart. When applied to a multi-symbol chart, an indicator is based on the data series with the Data # 1 by default. Indicator's base data series is selected from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **Base Study On** section, select the data series that the indicator is to be based on from the drop-down list box.

Selecting SubChart

An indicator can be placed into a new or an existing SubChart in a chart window. To learn more, see SubCharts. The SubChart to place the indicator into can be selected from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **SubChart** section, in the scrolling list box, select **Show On Top** or **Show On Bottom** to place the indicator into a new SubChart at the top or at the bottom of the Chart Window, respectively, or select a **SubChart#** to place the indicator into an existing SubChart.

Update on Every Tick

You can elect whether to recalculate an indicator every time a new tick is received, or only at the close of each bar. One or the other may be more appropriate, depending on the indicator's algorithm. Update on Every Tick option is enabled by default. Updating a large number of complex indicators on every tick will require substantial system resources.

Indicator's update rate is set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. Check **Update on Every Tick** check box to recalculate the indicator on every tick; uncheck the box to recalculate the indicator on bar close only.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Setting Last Price Marker

Last Price Marker is a special label displayed on the price scale that indicates the latest value of indicators' plots.

If an indicator (study) has multiple plots then the markers can be displayed for each plot.

The color of each marker is the same as of the corresponding plot.

To turn on/off Last Price Marker for an indicator (study):

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **General** tab.
3. In the **Style** section, select or deselect the **Marker** checkboxes.

Tip: To use these general settings as the default for the selected indicator, check **Use as Default** check box.

Tip: The **Last Price Marker** can also be used to control how a study is displayed in the Scanner.

For example, the RSI study contains three plots, each with its own marker checkbox.

To display the data for only one of the three plots in the Scanner:

1. Uncheck the other two markers.
2. Check **Use as default**.
3. Click **OK**.

The next time this study is added to the Scanner, only the plot that was checked will be displayed in the Scanner.

Signal Settings

Signal is a mechanical technical analysis tool, used to systematically specify market entry or exit points according to a set of trading rules implemented in the signal's algorithm. The trade points are indicated on a chart by ticks and arrows.

Signals can be viewed as the basic building blocks of strategies. Strategies can easily be constructed by simply applying a set of signals to a chart window, without the need to combine signal code manually.

Market entry or exit points, specified by the signals, can be used to send orders electronically directly to a broker, fully automating the trading process. To learn more, see Automated Trade Execution.

Each signal applied to a chart is set individually, and has its own **Format Signal** window. Signal Title is displayed in the title bar of the Format Signal window. Multiple instances of the same signal can be applied to the same chart; each instance will have its own Format Signal window, allowing different settings to be used for each of the instances. Signal settings are specific to the particular signal, while **Strategy Properties** settings affect all the signals applied to a chart. To learn more, see Strategy Properties.

In a multi-symbol chart, signals can only be applied to the series with the Data #1. Signals' execution priority is assigned according to the order in which they were applied, with signals that were added first having higher priority.

Market entry or exit (buy or sell) points, specified by a signal, are visually indicated on the chart by **Arrows** Ç or È and **Ticks** | or }. Arrows identify the time, and ticks identify the price value of each trade point. **Labels**, located above the sell arrows and below the buy arrows, display the signal's name and the number of contracts traded at each trade point.

Basic adjustments to the signal's logic can be made by simply changing the **Input Values**. Signal's Arrow, Tick, and Label **Style** can be set.

Setting Input Values

An **Input** is a constant used in the signal's calculations. Signals can have one or more inputs, or none at all. Each input is assigned a name. There are three types of inputs: Numeric, True/False, and String.

Signals can be modified by changing the input **Values**.

Most, but not all, signals use input values; to learn more see Default Studies Inputs.

One of the main advantages of using the inputs is that basic adjustments to the study's logic can be made by simply changing the input values, without the need to edit the studies' actual code.

Inputs are also used for Trading Strategy Optimization. The inputs can be modified before as well as after the signal has been inserted.

Signal's Inputs can be set from the **Format Signal** window:

1. Open the **Format Signal** window. To open the **Format Signal** window, position the mouse pointer over one of the signal's Arrows, Ticks, or Labels; double-click once the **Pointer**  changes into a **Hand** ; in the **Format Objects** window that appears, select a signal and click the **Format** button.

The **Format Signal** window can also be opened by one of the following methods: -

Position the mouse pointer over one of the signal's Arrows, Ticks, or Labels;

once the **Pointer**  changes into a **Hand** , right-click and then click **Format Signals**; in the **Format Objects** window that appears, select a signal and click the **Format** button

- Open the **Format Objects** window; in the **Signals** tab, select a signal and click the **Format** button.

Note: The **Format Signal** window for the signal being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Inputs** tab.

3. In the **Value** column, click on the value of the input that you want to change and enter the desired value.

Tip: To use these inputs settings as the default for the selected signal, check **Use as Default** check box.

Setting Style

The market entry or/and exit (buy or/and sell) points are visually indicated on the chart by **Arrows** ζ or ξ and **Ticks** $|$ or $\}$. Arrows identify the time, and ticks identify the price values of each trade point. Two **Labels**, located above the sell arrows and below the buy arrows, display the signal's name and the number of contracts for each trade point.

Color, **Style**, and **Size** of arrows and ticks can be selected. **Color** of labels can be selected, or labels can be hidden.

The style of each of the elements for each type of an entry or an exit point can be set individually.

Changes to signal style settings will be applied to the Chart Window in real time.

Signal's style can be set from the **Format Signal** window:

1. Open the **Format Signal** window. To open the **Format Signal** window, position the mouse pointer over one of the signal's Arrows, Ticks, or Labels; double-click once the **Pointer**  changes into a **Hand** ; in the **Format Objects** window that appears, select a signal and click the **Format** button.

The **Format Signal** window can also be opened by one of the following methods: -

Position the mouse pointer over one of the signal's Arrows, Ticks, or Labels;

once the **Pointer**  changes into a **Hand** , right-click and then click **Format Signals**; in the **Format Objects** window that appears, select a signal and click the **Format** button

- Open the **Format Objects** window; in the **Signals** tab, select a signal and click the **Format** button.

Note: The **Format Signal** window for the signal being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Entries** or the **Exits** tab, for entry or exit points, respectively.

3. In each section, in the **Color** column, select a color for each of the components from the drop-down palette box.

4. In the **Style** column select the component style from the drop-down list box.

5. In the **Size** column select the component size from the drop-down list box; only the size of arrows and ticks can be set.

Tip: To use these style settings as the default for the selected signal, check **Use as Default** check box.

Intra-Bar Order Generation

You can elect whether to allow the signal to generate orders within a bar, or only at the close of each bar.

A signal contains one or more Order Commands that generate entry or exit orders. A limit to the number of orders that can be generated within a single bar by each order command or by all of the signal's order commands can be set.

Intra-Bar Order Generation is set from the **Format Signal** window:

1. Open the **Format Signal** window. To open the **Format Signal** window, position the mouse pointer over one of the signal's Arrows, Ticks, or Labels; double-click once the **Pointer**  changes into a **Hand** ; in the **Format Objects** window that appears, select a signal and click the **Format** button.

The **Format Signal** window can also be opened by one of the following methods: -

Position the mouse pointer over one of the signal's Arrows, Ticks, or Labels;

once the **Pointer**  changes into a **Hand** , right-click and then click **Format Signals**; in the **Format Objects** window that appears, select a signal and click the **Format** button

- Open the **Format Objects** window; in the **Signals** tab, select a signal and click the **Format** button.

Note: The **Format Signal** window for the signal being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Intra-Bar Order Generation** tab.

3. Check **Enable Intra-Bar Order Generation** check box to allow the signal to generate orders within a bar; uncheck the box to allow the signal to generate orders only at the close of each bar.

4. Select required mode:

- To limit each order command in this signal to one entry and one exit per bar, click **Limit each order command in this signal to one entry and one exit per bar** radio button.
- To limit the signal to only one entry in total and only one exit in total per bar, click **Limit this signal to one entry and one exit per bar** radio button.
- To allow the signal multiple entries and exits per bar, click **Allow unlimited entries and exits per bar** radio button.

Note: Allowing multiple same-direction entry orders in the **Position Limits** section of **Strategy Properties** window will not override the above settings.

Skip Identical Ticks

Understanding Skip Identical Ticks option

Skip Identical Ticks option allows MultiCharts to skip calculations on ticks with identical price in real-time. It significantly lowers CPU usage and increases processing speed in real-time calculation.

Many ticks per second may have the same price. If an indicator uses only price data it only makes sense to recalculate it when the price changes. However, if an indicator uses volume and tick count data, it should be recalculated on

every tick and ticks with the same price become vital. The majority of the indicators use only price data therefore Skip Identical Ticks option is enabled by default.

Note: Skip Identical Ticks option is available for indicators only. "If BarStatus = 0 then..." condition may not be detected when Skip Identical Ticks option is enabled.

Enabling/disabling the Skip Identical Ticks option

To enable/disable the Skip Identical Ticks option:

1. Insert an Indicator.

To learn more see Inserting Studies section

2. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer** changes into a **Hand**  , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

3. Click the **Format button**.
4. Select the **Properties** tab.
5. In the **Advanced section**, check/uncheck the **Skip Identical Ticks** checkbox.

Note: Skip Identical Ticks option is enabled by default.

Realtime-History Matching

Understanding Realtime-history matching option

Realtime-history matching option allows MultiCharts to synchronize the calculation of studies based on several data series. When using several data series calculation on historical data may differ from real-time calculation Realtime-history matching option makes historical calculation results closer to real-time. When Realtime-history matching option is enabled the signal/indicator is calculated on the latest bar of the main data series and on the currently completed bar of the auxiliary data series. If the auxiliary data series stops updating, the final calculation will be made on the main data series bar that was received immediately after the latest bar of the auxiliary data series. In this case no further calculation will be performed.

Note: If more than one auxiliary data series is used, the latest bar for the calculation will be the one that was completed earlier.

When Realtime-history matching option is disabled the signal/indicator is calculated on the basis of the main data series latest bar and current (completed or not) bar of the auxiliary data series. If the auxiliary data series stops updating, the calculation will continue on the basis of the latest bar of the main data series and the open bar of the auxiliary data series.

Enabling/disabling the Realtime-History Matching option

Enabling/disabling the Realtime-History Matching option for indicators

To enable/disable the Realtime-History Matching option:

1. Insert an Indicator.

To learn more see Inserting Studies section.

2. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand**  .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand**  , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

3. Click the **Format** button.
4. Select the **Properties** tab.
5. In the **Advanced** section, check/uncheck the **Realtime-History Matching** checkbox.

Enabling/disabling the Realtime-History Matching option for signals

To enable/disable the Realtime-History Matching option for indicators:

1. Insert a signal.

To learn more see Inserting Studies section.

2. Open the **Format Signals** window. To open the **Format Signal** window, position the mouse pointer over one of the signal's Arrows, Ticks, or Labels; double-click once the **Pointer**  changes into a **Hand**  ; in the **Format Objects** window that appears, select a signal and click the **Format** button.

The **Format Signal** window can also be opened by one of the following methods: -

Position the mouse pointer over one of the signal's Arrows, Ticks, or Labels;

once the **Pointer**  changes into a **Hand**  , right-click and then click **Format Signals**; in the **Format Objects** window that appears, select a signal and click the **Format** button

- Open the **Format Objects** window; in the **Signals** tab, select a signal and click the **Format** button.

Note: The **Format Signal** window for the signal being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

3. Click the **Format** button.
4. Select the **Properties** tab.
5. In the **Advanced** section, check/uncheck the **Realtime-History Matching** checkbox.

Note: The Realtime-History Matching option is enabled by default.

Study Templates

Studies can be assembled into sets to create study templates. Once a template is created, an entire set of studies can be applied to any chart, at any time, with just one click. It is possible to switch between different templates and to apply several templates at once. Study templates can include indicators as well as signals.

Templates can be Created, Applied, Renamed, and Deleted, set to be Auto-Applied to all new charts, as well as Exported to or Imported from a file.

Creating Templates

A template is created by saving a set of studies applied to a chart; to learn more see Applying Studies.

A template is saved using the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Click the **Save** button.
3. In the **Save Template** dialog box that appears, enter a name for the template and click the **OK** button.

Applying Templates

A template is applied from the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Select a template by clicking the template's name.
3. Click the **Apply** button.

Renaming Templates

A template is renamed in the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Select a template by clicking the template's name.
3. Click the **Rename** button.
4. In the **Rename Template** dialog box that appears, enter a new name for the template and click the **OK** button.

Study Templates

Deleting Templates

A template is deleted in the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Select a template by clicking the template's name.
3. Click the **Delete** button.
4. In the **Remove Study Template** confirmation dialog box that appears, click **Yes** to delete the template.

Auto-Apply Templates

One or more templates can be set to be automatically applied to all new charts.

Auto-Apply is set from the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Check the check box next to the name of each template to be automatically applied.
3. Click the **Close** button; checked templates will be automatically applied to all new charts.

Exporting Templates

A template can be exported to a file with a .tml extension by using the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Select a template to be exported by clicking the template's name.
3. Click the **Export** button.
4. In the **Save As** dialog box that appears, choose the name for the template file and click the **Save** button.

Importing Templates

A template can be imported from a file by using the **Format Study Templates** window:

1. Open the **Format Study Templates** window. To open the **Format Study Templates** window, right-click on an empty area of the chart and then click **Format Study Templates**.

The **Format Study Templates** window can also be opened by selecting **Format** in the main menu and clicking **Study Templates**.

2. Click the **Import** button.
3. In the **Open** dialog box that appears, navigate to and select the template file, and click the **Open** button.

Using Alerts

Alert is a visual or/and audio notification triggered when the market conditions meet the criteria specified in the indicator. Audio and visual alerts can be enabled simultaneously.

Alerts can only be used with the indicators containing Alert Triggering Conditions code. Most, but not all, indicators contain alerts. To learn how to add alerts to indicators' code refer to the PowerLanguage manual. A check for the alert triggering conditions is performed whenever one of the following events occurs:

- Workspace is opened
- Data series (symbol) is replaced with another data series (symbol)
- A bar is closed or a new tick is received

Enabling Alerts

Alerts can be enabled from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Alerts** tab.
3. Check the **Enable Alerts** check box to enable alerts; uncheck the box to disable the alerts.

Tip: To use these alert settings as the default for all indicators, check **Use as Default** check box.

Alert Conditions Check

You can elect whether to check for Alert Triggering Conditions every time a new tick is received, or only at the close of each bar.

Alert Conditions Check can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Alerts** tab.
3. In the **Alert Conditions Check** section click the **On Bar Close, Every Tick** or the **Once Per Bar** radio button, to select the alert triggering conditions to be checked at the close of each bar only, every time a new tick is received or every time a new tick is received once per bar only, respectively.

Tip: To use these alert settings as the default for all indicators, check **Use as Default** check box.

Audio Alerts

A PC speaker beep or a sound file played by the PC's sound card can be set as the audio alert type.

Setting Beep Alert

Alerts can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Alerts** tab.
3. In the **Audio Alert** section, check the **Audio Alert** check box to enable audio alerts; uncheck the box to disable the audio alerts.
4. Click the **Beep** radio button to set the PC speaker beep as the audio alert type.

Tip: To use these alert settings as the default for all indicators, check **Use as Default** check box.

Setting Sound Alert

Alerts can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Alerts** tab.

3. In the **Audio Alert** section, check the **Audio Alert** check box to enable audio alerts; uncheck the box to disable the audio alerts.
4. Click the **Sound** radio button to select a .wav sound file as the audio alert type.
5. Enter the path and name of the wave (.wav) sound file to be used into the **File** text box, or click the ... button on the right side of the text box for **Open** dialog box, navigate to and select a sound file, and click the **Open** button.
6. Click the **Test** button to test the alert.
7. Click the **Play Once** or the **Repeat** radio button, for the alerts to be played once or repeatedly, respectively.

Tip: To use these alert settings as the default for all indicators, check **Use as Default** check box.

Visual Alert

Alerts can be set from the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Alerts** tab.
3. In the **Visual Alert** section, check the **Visual Alert** check box to enable visual alerts; uncheck the box to disable the visual alerts.
4. In the **Display Notify Window for** drop-down list box select the length of time that the alert notification window is to be displayed for.

Tip: To use these alert settings as the default for all indicators, check **Use as Default** check box.

E-mail Alert

E-mail alerts can be sent when market conditions meet your defined criteria.

This feature can be used to stay informed about market conditions while away from the computer.

To add alert to study:

1. Make sure the study's PowerLanguage code contains alert code so that alerts will be triggered.
2. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

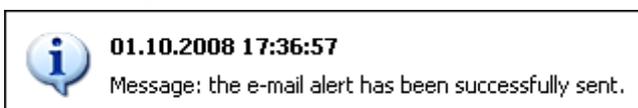
The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

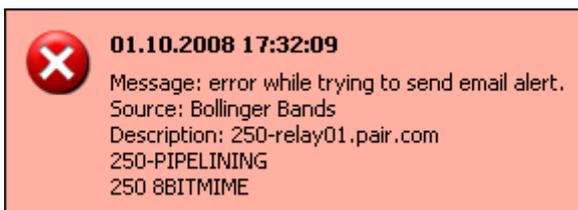
Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

3. Select the **Alerts** tab.
4. Check **Enable Alerts** checkbox to enable alerts.
5. Check the **E-mail Alert** checkbox.
6. Press the **Settings** button. The **E-mail Alert** window will appear.
7. Enter the email addresses of the sender.
8. Enter the email address of the recipient. To send the email to multiple recipients, separate each email address with a semi-colon.
9. Enter the **SMTP Server Name or IP address**, and **Port** number into the textboxes. Please get this information from your email provider.
10. Check the SMTP Server authentication data checkbox if your SMTP server requires authentication to send emails. Enter the **User name** and **Password**.
11. Press the **Test** button to send a test email.

If the sending process has been successful a message will appear in the pop-up window



If the sending process has been unsuccessful a message will appear in the pop-up window:



Press **OK** to close the **E-mail Alert** window. Example of Email Alert Message:

01.10.2008 17:48:50 (alert time and date)

Source: Bollinger Bands (study that triggered alert)

Symbol: ESZ8 (traded symbol name)

Resolution: 1 Tick Bar (resolution used)

Price: 1157,5000 (price value at the moment when defined conditions has been met)

Message: Price crossing over lower price band (message carrying information about the study condition that has been met)

Note: Not all e-mail service providers are supported. E-mail alerts configuration should be tested prior to use.

Example:

Gmail SMTP server address: smtp.gmail.com

Gmail SMTP user name: Your full Gmail address (e.g. example@gmail.com)

Gmail SMTP password: Your Gmail password

Gmail SMTP port: 465

Gmail SMTP TLS/SSL required: yes (SSL)

Note: Hotmail.com e-mail service is not supported.

Using Studies

Studies are technical analysis tools based on trading concepts and formulas, and assist in evaluating market activity and making trading decisions.

Over 270 pre-built, customizable studies, covering the most popular trading concepts and indicators, are already included with the platform, and additional studies can be imported from a variety of sources. Basic adjustments to studies' logic can be made by simply changing the **Input Values**.

Studies can be fully customized, or entirely new studies created, using PowerLanguage® scripting in **PowerLanguage Editor**.

To learn more see Creating Studies.

Studies can be divided into Indicators and Signals:

- An **Indicator** is a visual technical analysis tool, used to analyze market conditions and identify and forecast trends and market patterns. An indicator is a visualization of a mathematical formula, and consists of one or more **Plots** – lines, histograms, series of points or crosses, highs and lows, left and right ticks, or a combination of the above. Indicators are computed using only price, volume, and (occasionally) open interest data.
- A **Signal** is a mechanical technical analysis tool, used to systematically specify market entry or exit points according to a set of trading rules implemented in the signal's algorithm. The trade points are indicated on a chart by ticks and arrows. Signals can be viewed as the basic building blocks of strategies.

An indicator is applied to a particular data series, and can be displayed either in the same chart as the series or in another SubChart. A signal can only be applied to the series with the Data #1 and is displayed in the same chart as the series. If a parameter, such as symbol or resolution, of the data series on which the study is based, is changed, the study will be recalculated and redrawn. If the series, on which a study is based, is deleted, the study will be turned off. Studies can be **Inserted** (added) into, or **Removed** from a chart, and turned **off** and **on**. A list of all studies, inserted into a Chart Window, can be viewed according to type. Indicators can be **Hidden**, **Redisplayed**, and **Moved** between SubCharts. The **Visual Order** in which the indicators are displayed on the chart can be changed.

Inserting Studies

The number of studies that can be inserted into a chart is limited only by your computer's hardware configuration. Studies can be inserted from the **Insert Study** window:

1. Open the **Insert Study** window. To open the **Insert Study** window, click the **Insert Study**  icon on the **Chart Analysis** toolbar.

The **Insert Study** window can also be opened by one of the following methods:

- Click the **Insert Signal**  icon on the **Chart Analysis** toolbar; or:
- Right-click on an empty area of the chart and then click **Insert Study**; or:
- Use the F7 key; or:
- Select **Insert** in the main menu and click **Study**; or:
- Select **Insert** in the main menu and click **Signal**.

The **Insert Study** window can also be accessed from the **Format Objects** window by selecting the **Indicators** or the **Signals** tab and clicking the **Add** button.

2. Select the tab corresponding to the type of study to be added.

3. Select a study from the list of available studies; the list can be sorted by any column, in ascending or descending order, by clicking on the column header; several studies can be selected at once by holding down **Ctrl** or/and **Shift** keys on the keyboard while making the selection.

Note: Only the compiled (these with the **Ready Status** of **Yes**) studies can be inserted. To learn more see [Compiling Studies](#).

4. To format the selected studies prior to inserting them into a chart, check the **Format** check box; uncheck the box to insert studies without formatting. To learn more see [Default Studies Properties](#) and [Default Studies Inputs](#).
5. Double-click the selected study or click **OK**.

Removing Studies

A study can be removed using the **Format Objects** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
 - Double-click any one of the signal's labels on the chart.
 - Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand**  , right-click the label and then click **Format Signals**.
2. Select the tab corresponding to the type of study to be removed.
 3. Select the study to be removed and click the **Remove** button.

Studies can also be removed by one of the following methods:

- Position the mouse pointer over the study that is to be removed; once the **Pointer**  changes into a **Hand**  , right-click and then click **Remove Study**; or:
- Position the mouse pointer over the study that is to be removed; once the **Pointer**  changes into a **Hand**  , click on the study and then press the **Delete** key on the keyboard.

Study Status Switch

Since MultiCharts 8.7 beta1 all the studies applied to the chart can be toggled on and off by a single click on their names in the status line.

Removing All Studies

To remove all studies, inserted into a Chart Window, right-click on an empty area of the chart and then click **Remove All Studies**.

Inserted Indicators List

A list of all indicators, inserted into a Chart Window, can be viewed under the **Indicators** tab in the **Format Objects** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.

- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Indicators** tab.

The indicators list can be sorted by any column, in ascending or descending order, by clicking on the column header.

The columns display the following information:

Name – name of the indicator

Input String – input parameters of the indicator; to learn more see Default Studies Inputs and Setting Studies Inputs

Status – current status of the indicator: **on** – the indicator is turned on, or **off** – the indicator is turned off

SubChart – the SubChart, in which the indicator is plotted

Base Data # – the data series, to which the indicator is applied

Inserted Signals List

A list of all signals, inserted into a Chart Window, can be viewed under the **Signals** tab in the **Format Objects** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.

The signals list can be sorted by any column, in ascending or descending order, by clicking on the column header.

The columns display the following information:

Name – name of the signal

Input String – input parameters of the signal; to learn more see Default Studies Inputs and Setting Studies Inputs

Status – current status of the signal: **on** – the signal is turned on, or **off** – the signal is turned off

Moving Studies between SubCharts

An indicator in one SubChart can be moved to another existing or a new SubChart within the same Chart Window.

Each SubChart can contain a number of objects. To learn more see Using SubCharts.

The indicator's Base Data # will not be affected by moving the indicator to another SubChart.

A signal can only be applied to the SubChart containing the data series with the Data# 1, and can not be moved to another SubChart.

Moving Indicator to Existing SubChart

An indicator can be moved using the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **SubChart** section, in the **SubChart** scrolling list box, select the **SubChart#** you want to move the indicator to.

An indicator can also be moved by the following method:

1. Position the mouse pointer over the over the indicator or the Status Line of the indicator to be moved;
2. Once the **Pointer**  changes into a **Hand** , hold the left mouse button and drag the indicator to another SubChart.
3. Release the mouse button to complete moving the indicator.

Moving Indicator to New SubChart

An indicator can be moved using the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See Opening Format Objects Window.

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **SubChart** section, in the **SubChart** scrolling list box, select the **Show On Top or Show On Bottom** to move the indicator to a new SubChart at the top or at the bottom of the Chart Window, respectively.

An indicator can also be moved by the following method:

1. Position the mouse pointer over the indicator or the Status Line of the indicator to be moved;
2. Once the **Pointer**  changes into a **Hand** , hold the left mouse button and drag the pointer to the upper or lower border of the Chart Window, or of another SubChart.
3. Once the pointer changes into the **Create New SubChart**  symbol, release the mouse button to create a new SubChart.

Hiding Indicators

In some instances displaying an indicator may not be necessary. Hidden indicators retain their full functionality and continue running. Please note that a signal can not be hidden.

An indicator can be hidden using the **Format Indicator** window:

1. Open the **Format Indicator** window. To open the **Format Indicator** window, position the mouse pointer over the indicator; double-click once the **Pointer**  changes into a **Hand** .

The **Format Indicator** window can also be opened by one of the following methods:

- Position the mouse pointer over an indicator; once the **Pointer**  changes into a **Hand** , right-click and then click **Format Indicator Name**
- Open the **Format Objects** window; in the **Indicators** tab, select an indicator and click the **Format** button. See [Opening Format Objects Window](#).

Note: The **Format Indicator** window for the indicator being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Properties** tab.
3. In the **SubChart** section, in the **SubChart** scrolling list box, select the **Hide**.

An indicator can also be hidden by one of the following methods:

- Click the **Hide Object**  icon on the **Control** toolbar; or:
- Select **Format** in the main menu and click **Hide Object**.

Redisplaying Hidden Indicators

To redisplay a hidden indicator in a Chart Window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Indicators** tab.
3. Select the indicator to be redisplayed and click the **Format** button to display the **Format Indicator** window.
4. Select the **Properties** tab.
5. In the **SubChart** section, in the **SubChart** scrolling list box, select **Show On Top**, **Show On Bottom**, or **SubChart #n**, to redisplay the indicator in a new SubChart at the top, a new SubChart at the bottom, or in an existing SubChart, respectively.

Turning Studies Off and On

Studies may be turned off or on. A study that is turned off will stop running and become hidden.

When the study is turned back on, it will resume running and re-appear in the original SubChart.

An indicator, based on a data series that has been deleted, will be turned off, and can only be turned back on after it has been reassigned to another, existing data series. To learn more see Setting Base Data Series.

A study can be turned off or on from the **Format Objects** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
 - Double-click any one of the signal's labels on the chart.
 - Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.
2. Select the tab corresponding to the type of study you want to turn off or on.
 3. Select the study that you want to turn off or on, and click the **Status** button.
 4. The study's status, displayed in the **Status** column of the **Format Objects** window, will change.

Changing Visual Order

The **Visual Order** in which the indicators are displayed can be changed. When a number of objects are displayed in a single SubChart, the objects are displayed in "layers" – one object is in the "front", the next is "behind" it, and so on.

The order of the layers constitutes the **Visual Order** of the objects.

The Visual Order can be changed to prevent a thick line in the "front" layer from obscuring a thin line in the "back" layer.

The Visual Order can be changed by one of the following methods:

- Right-click on the chart area and then click **Visual Order**; in the Visual Order window that appears, select an object and use the order buttons to change its visual order; or:
- Position the mouse pointer over an object; once the **Pointer**  changes into a **Hand** , right-click, then point to **Visual Order** and use the shortcut menu order commands to change the visual order of the object. Visual Order commands/buttons:

Bring to Front – the object will be placed in the front of all other objects

Send to Back – the object will be placed behind all other objects **Bring**

Forward – the object will be moved one layer to the front

Send Backward – the object will be moved one layer back

Trading

Broker Profiles

Broker Profiles Overview

Understanding Broker Profiles

Broker Profile is a set of connection parameters that is used to configure the connection to any of supported brokers. It is important to understand that in MultiCharts data feed and broker connections are separate types of connection. Unlike a simple broker connection, Broker Profiles is a convenient way to configure the connection to different brokers and accounts. It is possible to create multiple profiles for the same broker, in case several accounts are going to be used.

Example: You have two accounts with Interactive Brokers: a simulation account and a live account. You can create two different Broker Profiles (i.e. "IB SIM" and "IB LIVE") to be able to connect to both accounts simultaneously.

It is important to understand that in MultiCharts data feed and broker connections are separate types of connection. Connection to data provider needs to be set up in QuoteManager, while the broker connection should be configured in MultiCharts itself.

All information about broker plug-in configuration is stored in a corresponding Broker Profile.

Example: If the chart has data from Interactive Brokers, IB automated trading plug-in is selected by default for this chart. Connection settings are the same as in the corresponding Broker Profile (except for Default Account settings for FXCM Broker Profile).

If the instrument on the chart is provided by a data vendor that is not a broker, then the default plug-in for automated trading will be the same as the first existing Broker Profile on the Trade Bar.

Example: If the first Broker Profile on the Trade Bar is Dukascopy and a new chart is created using eSignal data feed, then Dukascopy will be selected by default as the broker plug-in for automated trading.

Managing Broker Profiles

By default one can see only 3 Broker Profiles after the installation of MultiCharts: Interactive Brokers, Rithmic 01 and Zen-Fire.

To manage Broker Profiles:

1. In the main menu select **File**.

2. Point to **Broker Profiles**.
3. Click **Manage Broker Profiles...**

To add new Broker Profile, click **New** on the right side of the **Broker Profiles** window and select a broker from the list.

To activate or deactivate a Broker Profile, select the profile and click the **Activate** or **Deactivate** buttons on the right side of the **Broker Profiles** window.

To connect or disconnect a Broker Profile, select the profile and click the **Connect** or **Disconnect** buttons on the right side of the **Broker Profiles** window.

To remove one of the existing Broker Profiles, select the profile and click the **Remove** button on the right side of the **Broker Profiles** window.

To edit a Broker Profile, select the profile and click the **Edit** button on the right side of the **Broker Profiles** window. **Properties <Broker Profile name>** window will open.

Broker Profile settings can also be configured by right-clicking the Broker Profile tab on **Trade Bar** (see Trade Bar) , and clicking **Edit Broker Profile**.

Note: It is possible to review or edit Broker Profile settings while it is profile is connected only using the **Manage Broker Profiles...** option.

To rename a Broker Profile, select the profile and click the **Rename** button on the right side of the **Broker Profiles** window.

Connecting/Disconnecting Broker Profiles

Connecting/Disconnecting Broker Profiles using the main menu

In the main menu select **File**;

1. Point to **Broker Profiles**;
2. Click **Connect <Broker Profile Name>**.

Connecting/Disconnecting Broker Profiles Using Manage Broker Profiles... Option

1. In the main menu select **File**;
2. Point to **Broker Profiles**;
3. Click **Manage Broker Profiles...**;
4. Select the Broker Profile and click **Connect/Disconnect**.

Connecting/Disconnecting Broker Profiles on Trade Bar

1. Right-click Broker Profile tab on Trade Bar (see Trade Bar) ,
2. Click Connect/Disconnect Broker Profile.

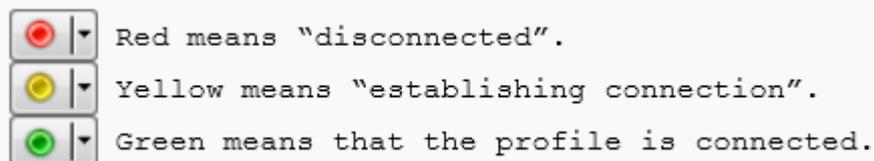
Connecting/Disconnecting Broker Profiles on Chart Trading Panel

1. Click the arrow on the **Broker Connection** button
2. Select a broker in drop-down menu.
3. Click the **Broker Connection** button to connect or disconnect Broker Profile.

Note: If you click the **Broker Connection Button** without selecting a profile in drop-down list, it will connect the first available profile (see Understanding Broker Profiles), or last used on this chart profile.

Connecting/Disconnecting Broker Profiles in DOM window

1. Click the arrow on the **Broker Connection** button;
2. Select a broker in drop-down menu;
3. Click the **Broker Connection** button to connect or disconnect Broker Profile.



Note: **Broker Connection** indicator can be colored red, yellow or green depending on the connection status.

Note: If you click the Broker Connection Button without selecting a profile in drop-down list, it will connect the first available profile(see Understanding Broker Profiles), or last used on this chart profile.

Connecting/Disconnecting Broker Profiles Using Auto Trading Execution Button

Click the **SA/AA** button <http://www.multicharts.com/img/wiki/symbolmapping/6.png> / in the left top corner of the chart to connect the Broker Profile corresponding to auto trading plug-in that is selected for the chart start and auto trading.

Sound Alerts

Enable/disable sound alerts on Broker Profile connection, order generation and execution by one of the following methods:

- Select **File** in the main menu, click **Preferences**, select the **Trading** tab and check/uncheck the **Sound Alerts** check box.
- Right-click on the Chart Trading panel and click **Sound Alerts**.

Troubleshooting

The log of establishing connection to a broker and connection issues can be viewed on the **Logs** tab of Order and Position Tracker window. If there are error lines in red that came from your broker, make all necessary settings corrections according to the indicated reason or contact your broker.

AvaTrade Broker Profile

If MultiCharts sends any price order (stop/limit) with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such price orders into market orders.

If a price order (stop/limit) is placed and its price is close to best ask for Buy or to best bid for Sell, the order is emulated in MultiCharts, but nothing is sent to broker. If the price changes to execution price (best ask for Buy or to best bid for Sell), the order is converted to market one and sent to broker. If the price moves away from execution price, the order is sent as a price order (stop/limit). The distance between execution price (order is converted and sent as a market order) and the price when order is sent as it is (stop or limit order) depends on the symbol and may vary.

Stop-Limit orders are not supported by the broker.

The only available Time-in-Force parameter for orders is **GTC**, so every order is sent with this Time-in-Force.

Modification of orders in automated trading is not supported. Old order is cancelled, a new modified one is placed.

Modification of orders in manual trading is supported (# of contracts, price). It is not possible to modify order price to a price that guaranteed immediate order execution.

For FOREX trade size should be equal to the amount of units, not trade lots.

Open position Profit/Loss is provided through AvaTrade API.

Unrealized Profit/Loss for the account is provided through AvaTrade API.

CQG does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up AvaTrade Broker Profile

In the **Properties AvaTrade** window (see Managing Broker Profiles) enter the information provided by AvaTrade :

Enter **Login** and **Password**.

Select type of connection: **Demo / Real**.

Make sure the currency of the account is specified correctly.

CQG Broker Profile

To connect MultiCharts to CQG/AMP account, it is necessary to have CQG API installed on the computer.

If there are any CQG applications installed on your PC, it is required to delete them prior to installing the supported version of CQG API:

1. **Windows Start** menu
2. **Control Panel**
3. **Uninstall a program / Programs and Features**
 - Select each of the following applications and uninstall all of them:
 - **CQG Trader**
 - **CQG Auto Upgrade Service**
 - **CQG Trader API**
 - **CQGNet**
 - **MultiCharts API** (with CQG icon)
4. Not all versions of CQG software are supported.

If you are using MultiCharts 8.5 Release or Release Candidate, install the following version of CQG API:

https://dl.dropbox.com/u/95112551/Multicharts_COMAPI_en-US_production_V4.05.101_Install.msi

If you are using MultiCharts 8.0 Release or any previous version, install the following version of CQG API: https://dl.dropbox.com/u/27918922/Multicharts_COMAPI_en-US_production_V4.04.542_Install.msi

At the moment it is not possible to use multiple CQG/AMP accounts in MultiCharts. Only one and the same account should be used for getting data and trading. If different logins and passwords are entered in CQG data source configuration and broker profile, connection to data source will work, the broker profile will not.

AMP accounts originally created for a different software will not work in MultiCharts. Customers need to contact AMP directly to setup their accounts for MultiCharts or request a demo account here: [1] Open position Profit/Loss is provided through CQG API. Unrealized Profit/Loss for the account is provided through CQG API.

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Note: If a stop order is adjusted manually or by your script to the price equal to current market price or better (guaranteed to be executed), the order won't be converted into market order. It will be rolled back.

Stop-Limit orders: if at the moment an order is sent its stop level is met, then it will be converted into market order.

Stop-Limit orders with stop and limit levels not overlapping each other are rejected by the broker.

When an order is sent from MultiCharts to CQG broker to be executed on an expired contract, the broker will automatically redirect the order to the same symbol, but currently active contract.

CQG does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up CQG Broker Profile

In the **Properties CQG** window (see Managing Broker Profiles) enter the information provided by CQG:

1. Authority section.

Enter **Login** and **Password**.

Note: By default demo mode is NOT turned on. Check the CQG demo box to turn it on. Demo mode is **required to be on** for demo accounts. If you have real account, the box is **required to be off**

2. Reconnection Settings section.

Configure timer to reconnect if connection to CQG is lost.

Note: It is recommended to launch MultiCharts by making a right-click on the icon -> Run as administrator. A popup dialogue message will appear where you need to allow CQG API to connect to the Internet (That should be done upon first connection after API installation).

You can start MultiCharts in regular mode after that)

Dukascopy Broker Profile

Dukascopy Broker Profile

FIX API is used for connection between MultiCharts and Dukascopy.

Jforex API is not supported in MultiCharts.

It is important to make sure Dukascopy knows FIX API is required when subscribe to their service.

A customer needs to provide Dukascopy with his/her IP address to register it on their servers.

To trade with Dukascopy from MultiCharts, a customer needs to open an account and, since FIX API is used, such type of account can be opened only if the balance is more than **\$ 100 000**.

Trade size should be equal to the amount of units, not trade lots.

Open position Profit/Loss is calculated in MultiCharts. The basis for the calculation is Average Entry Price sent by Dukascopy.

Unrealized Profit/Loss for the account is not available.

Stop-Limit orders are not supported by Dukascopy.

Dukascopy does not provide account information to MultiCharts and it is not available in order and Position Tracker window on Accounts tab.

Note: Dukascopy does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Dukascopy Broker Profile

In the Properties Dukascopy window (see Managing Broker Profiles) enter the information provided by Dukascopy :

1. Server IP section: **Server IP**
2. Order Connection Settings section: **Login, Password, Port** number, **SenderCompID** and **TargetCompID**
3. Price Connection Settings section: **Login, Password, Port** number, **SenderCompID** and **TargetCompID**
4. Reconnection Settings section: Configure timer to reconnect if connection to Dukascopy is lost

FXCM Broker Profile

FXCM Broker Profile

To connect MultiCharts to FXCM broker, it is necessary to have their software installed on the computer.

To download the latest version of FXOrder2Go, follow this link: <http://www.fxcorporate.com/Order2Go/FXOrder2Go.EXE>

Trade size for FOREX: 1 contract = 1 lot (the size of a lot depends on the account type).

Open position Profit/Loss is calculated by FXCM broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by FXCM broker and displayed in MultiCharts.

Stop-Limit orders are not supported by FXCM.

Market orders are converted into limit ones on broker side.

Price orders (stop/limit) which are to be executed immediately are converted into market ones on MultiCharts side.

Note: FXCM supports native One-Cancels-Others group. Native OCO-group is used when the broker's plug-in supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker.

Setting up FXCM Broker Profile

In the Properties FXCM window (see Managing Broker Profiles) enter the information provided by FXCM :

1. Enter login and password.
2. Select the type of connection.

3. Enter default account number.

Interactive Brokers Broker Profile

To connect MultiCharts to Interactive Brokers (IB), it is necessary to have IB software installed and launched on the computer. IB provides two applications that can be used for connection to MultiCharts:

1. IB Trader Workstation.
2. IB Gateway.

Note: Java version 7 is strongly recommended for IB software to work correctly.

Though there is choice between web-based and standalone version, standalone version is recommended for MultiCharts connection. To download Trader Workstation and Gateway, follow this link:

http://individuals.interactivebrokers.com/en/control/systemstandalone.php?os=win&ib_entity=llc

For FOREX trade size should be equal to the amount of units, not trade lots.

Open position Profit/Loss is calculated in MultiCharts as IB API provides Profit/Loss values with a delay.

Unrealized Profit/Loss for the account is calculated by Interactive Brokers and displayed in MultiCharts.

Note: Interactive Brokers supports native and simulated One-Cancels-Others group (see Setting up Interactive Brokers Profile).

Native OCO-group is used when the broker's plug-in supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker.

Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Interactive Brokers Profile is already created when MultiCharts is installed. It is not necessary to reconfigure its settings if only one IB account is going to be used with no subaccounts, but it is important to set up connection parameters in IB TWS.

Setting up connection to Interactive Brokers Trader WorkStation

Enable Active X and Socket Clients box should be checked in IB TWS settings:

1. Click on **Configure** in main TWS window.
2. Click on **API** section. Select **Settings**.
3. Check **Enable Active X and Socket Clients** box.

Note: By default both in IB TWS and IB Broker Profile in MultiCharts **Port (Socket port)** number is **7496**. If more than one IB TWS are going to be used, then separate Broker Profile should be created per each additional IB TWS and set their **Port** numbers accordingly, but each IB Broker profile should have unique Port number, that corresponds to one IB TWS.

It is recommended to add **127.0.0.1** to **Trusted IP Addresses**.

Setting up connection to Interactive Brokers Gateway

IB API option should be selected when logging in to IB Gateway.

1. Click on **Configure** in main TWS window.
2. Click on **API** section. Select **Settings**.

Note: By default in IB Gateway **Socket port** number is **4001**. In IB Broker Profile in MultiCharts default Port (Socket port) number is **7496**.

It is recommended to add **127.0.0.1** to **Trusted IP Addresses**.

Setting up Interactive Brokers Profile

In the **Properties Interactive Brokers** window (see Managing Broker Profiles) enter the information provided by Interactive Brokers.

In the pop-up window there are 2 tabs: **Settings** and **Financial Advisor Settings**.

On the Settings tab the following parameters are available:

General Settings section

IP address and **Port** number **Client ID**. "0" by default. If there is another trading platform running on your computer that is connected to IB TWS, it is recommended to change the corresponding value in that piece of software.

Default Order Settings section

Time in Force:

- **DAY**

Order is canceled if it is not executed by the close of the trading day. DAY is set as default; or: •

GTC (Good-Till-Canceled)

Order remains active until it is cancelled.

- **IOC (Immediate-or-Cancel)**

Any portion of an order that is not filled is to be canceled as soon as it becomes available in the market.

Settling Firm.

Clearing Account.

Default Account.

All or None Execution. An order waits for a specified number of contracts at broker. Either all are filled or none of them.

- **Entry Orders;** or:
- **Exit Orders**

Outside RTH tag

This tag is applicable for stocks on real trading accounts – when it's enabled order can be placed and (orders can get executed outside regular trading hours) directly to the exchange outside of regular market hours. If it's disabled, IB will return an error saying that it's impossible to get to the exchange. It's enabled by default in the broker profile for IB.

OCO Group section

Use Native OCO Group Turn on this function to use native OCO group realized by Interactive Brokers, otherwise, OCO group is emulated by MultiCharts.

Reduce Size OCO

When one order of the OCO group is partially filled, the size of other orders in this group is reduced proportionally.

Example: Three buy stop orders with the size of 2 are sent in OCO group. One of the orders is partially filled (1 contract). The size of the two other orders is reduced by 1.

Overfill Protection Turn on to send only one order of an OCO group to the exchange. Other orders of this OCO groups will be held and monitored in TWS. If this option is disabled all orders of the OCO group are sent to the broker.

Connection Settings section

Disable auto trading after X seconds on the connection loss.

In case of the connection loss turns auto-trading off after the specified period of time if the connection is not re-established.

Financial Advisor Settings

To set up Financial Advisor account, select the **Financial Advisor Settings** tab.

There are 3 options to select:

- **Automatic Allocation**

Group: a group of accounts should be created in TWS and the name of the group should be put to this field.

Method: a method of allocation for the group should be specified.

Percentage: percentage of allocation should be specified.

- **Manual Allocation**

Profile: a profile in IB TWS should be created, where all the settings are set up and the profile name should be put to this field; or:

- **Single Account Allocation**

Account: only 1 account of the group should be specified to send all the orders directly on this account.

How stop orders work

- **Native OCO enabled, Overfill protection enabled.**

For orders sent in the OCO group:

All Limit orders (entry and exit) are blue (on broker). All Stop orders (entry and exit) are blue (on broker).

Limit orders sent not in the OCO group:

All Limit orders (entry and exit) are green (on exchange).

- **Native OCO enabled, Overfill protection disabled.**

Limit entry order-blue (on broker).

Limit exit order-green (on exchange).

All Stop orders (entry and exit) are blue (on broker).

- **Native OCO disabled.**

All limits (entry and exit) are green (on exchange). All Stops (entry and exit) are blue (on broker).

Note: On IB Live account you can send Stop orders directly to the exchange (green in TWS).

Enable "Use outside RTH tag" to do that. In order to send multiple orders directly to the exchange "Use Native OCO Group" should also be disabled.

IWBank Quick Trade Broker Profile

To connect MultiCharts to IWBank broker, it is necessary to have their software installed and launched on the computer.

To download the latest version of IW Quick Trade, follow this link: <http://www.iwbank.it/piattaforma-professionale-iwquicktrade-trader.html>

Open position Profit/Loss is calculated in MultiCharts.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

IWBank supports native One-Cancels-Others group. Native OCO-group is used when the broker's plug-in supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker.

Setting up IWBank Quick Trade Broker Profile

In the **Properties IWBank** window (see Managing Broker Profiles) enter your **User ID** on Connection tab.

Select your **Account** on Account Settings tab.

Select **Time in force** of orders on the **Default Order Settings** tab.

- **DAY**

Order is canceled if it is not executed by the close of the trading day. DAY is set as default.

- **GTC (Good-Till-Canceled)**

Order stays within the system and in the marketplace till it gets executed or canceled. GTC orders are automatically cancelled under the following conditions.

- **IOC (Immediate-or-Cancel)**

Any portion of an order that is not filled is to be canceled as soon as it becomes available in the market.

- **GTD (Good Till Date)**

IWBank Quick Trade Broker Profile

Order is placed and it is active up to a specified date. Once GTD Time-In-Force parameter is selected, the **Good Till Date field** appears allowing to specify a number of days.

LMAX Broker Profile

Stop orders are not supported by LMAX. Stop orders are emulated by MultiCharts. Once the stop price is reached, a market order is sent.

Stop-Limit orders are not supported by the LMAX.

Open position Profit/Loss is calculated by LMAX broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by LMAX broker and displayed in MultiCharts once in 10 seconds.

LMAX does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up LMAX Broker Profile

In the **Properties LMAX** window (see Managing Broker Profiles) enter the information provided by LMAX :

1. Select type of connection: **demo / real**

URL is selected automatically according to your type of connection.

2. Enter **Login** and **Password**.

MB Trading Broker Profile

To connect MultiCharts to MB Trading broker, it is necessary to have MB Trading software installed on the computer.

To download the latest version of MBT Desktop, follow the link: <http://www.mbtrading.com/mbtDesktop.aspx>.

To get latest version of MBT Desktop PRO, follow the link: <http://www.mbtrading.com/mbtDesktopPro.aspx> MB Trading software should be installed, but one can't use it simultaneously with MultiCharts.

Open position Profit/Loss is calculated in MultiCharts as it is not provided by MB Trading API.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

For FOREX trade size should be equal to the amount of units, not trade lots.

MB Trading does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up MB Trading Broker Profile

In the **Properties MB Trading** window (see Managing Broker Profiles) enter the information provided by MB Trading:

1. Authority section

Enter **Login** and **Password**.

2. Connection Settings section

Configure timer to reconnect if link to MB Trading is lost.

3. Default Order Settings section

It is possible to reset default order **Routes**.

4. Unrealized Profit Calculation Mode section

Select one of the two modes to calculate unrealized profit: using Best Bid & Best Ask or Last Trade.

Open E Cry Broker Profile

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Note: If you manually drag Stop orders to the price equal to current market price or better (guaranteed to be executed), they won't be converted into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level is met, then it will be converted into market order.

Stop-Limit orders for FOREX are not supported by Open E Cry.

Stop-Limit orders with stop and limit levels not overlapping each other are rejected by the broker.

Trade size for FOREX: 1 contract = 1 lot (size of a lot depends on the type of account).

Price and volume adjustment for orders is not supported on FOREX instruments.

Open position Profit/Loss is calculated by Open E Cry broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by Open E Cry broker and displayed in MultiCharts.

Open E Cry supports Native One-Cancels-Others group, however, it is limited to only 2 orders with the same number of contracts. Therefore, MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Open E Cry Broker Profile

In the Properties Open E Cry window (see Managing Broker Profiles) enter the information provided by Open E Cry:

1. Authority section.

Enter **Login** and **Password**.

2. Connectivity section.

Check the **Server Name** and **Port** number.

3. Connection Settings section.

Configure timer to reconnect if the connection to Open E Cry is lost.

Patsystems Broker Profile

Open position Profit/Loss is calculated by Patsystems broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by PasSystems broker and displayed in MultiCharts. Instead of Account open

Profit/Loss Patsystems returns Total Profit/Loss.

Patsystems does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Note: Patsystems Transaction Server may perform daily Forced Logout of your Patsystems API. As per API instructions, should the logout happen, shut down and restart MultiCharts and all related applications to re-establish connection to Patsystems.

Setting up Patsystems Broker Profile

In the **Properties Patsystems** window (see Managing Broker Profiles) enter the information provided by Patsystems:

Connection Settings tab

1. Common Settings section.

The **Demo Mode** box: check it to disable the profile settings and turn on demo mode. In this mode orders are not sent to the broker.

Enter **Login** and **Password**.

License (default value is FBD653F002), **Environment**, **Application ID** and **Application Version** parameters are configured by default; however the broker may provide different settings. Enter these settings into appropriate fields.

2. Transport Settings section.

Enter **Trade Server**, **Data Server** and **Port** numbers.

3. SSL section.

To use SSL certificate provided by Patsystems, check the **Use SLL** and enter its name.

4. Advance Settings section.

Configure timer to reconnect if connection to Patsystems is lost.

Default Trading Account tab

It is obligatory to select 1 account in drop-down menu after clicking the **Check For Accounts** button.

On Default Order Settings tab select one of the two available **Time-in-Force** order parameters:

- **DAY**

Order is canceled if it does not get executed by the close of the trading day. DAY is set as default; or:

- **GTD (Good Till Date)**

Order is placed and it is active up to a specified date. Once GTD Time-In-Force parameter is selected, the **Good Till Date field** appears allowing to specify a number of days. The grayed-out field nearby indicates the date.

Note: Patsystems connection can be established only after the API download is complete. Please go to Order and Position Tracker -> Logs tab and make sure that you have received the following message: "API has completed downloading data from server"

Rithmic 01 Broker Profile

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by Rithmic broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by Rithmic broker and displayed in MultiCharts.

Rithmic does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Rithmic 01 Broker Profile

Rithmic Broker Profile is created when MultiCharts is installed.

In the **Properties Rithmic 01** window (see Managing Broker Profiles) enter the information provided by Rithmic:

1. Authority section.

Enter **Login** and **Password**.

SSL certificates path is set up by default.

2. Connectivity section.

Make sure that the selected deployment is **Rithmic 01**.

Don't adjust anything else in this section.

The **Reset** button nearby Deployment is to restore correct settings.

3. Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

Rithmic Local Sim Broker Profile

Rithmic Local Sim Broker Profile

To connect Rithmic Local Sim Broker Profile it is necessary to have set up connection to Rithmic/Zen-Fire data feed in QuoteManager (see Built-in Data Sources)

Open position Profit/Loss is calculated in MultiCharts.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

Note: It is not possible to connect Rithmic Local Sim Broker Profile and Zen-Fire Local Sim Broker Profile simultaneously.

Setting up Rithmic Local Sim Broker Profile

In the **Manage Broker Profiles ...** window (see Managing Broker Profiles) click **New** and select **Rithmic Local Sim**. Rithmic Local Sim will be added to the list of Broker Profiles.

In the **Simulator Options** window:

1. Simulation Option section.

Specify range for **Communication Delay**. Milliseconds are used.

Specify range for **Execution Delay**. Milliseconds are used.

Specify **Initial Balance**.

Select **Execution method**.

2. Margin Requirements Calculation section.

Select Margin calculation method.

The **Reset** button becomes active only when the profile is connected. Click **Reset** to reset the settings to default. New settings are applied only when the profile is reconnected.

Trading Technologies Broker Profile

FIX API is used for connection between MultiCharts and Trading Technologies.

Trading Technologies doesn't provide information on the list of accounts, equity and balance.

Entry Price is returned by the broker as Average Entry Price for day.

Market orders are converted into Limit ones on broker end.

Stop orders are converted into Stop-Limit ones. If at the moment an order is sent its stop level is met, then it will be rejected by the broker. All executed stop orders in the end are transformed into limit ones.

Stop-Limit orders with stop and limit levels not overlapping each other will be rejected by the broker. If at the moment an order is sent its stop level is met, then it will be rejected by the broker.

Open position Profit/Loss is calculated in MultiCharts as it is not provided by TT FIX API.

Unrealized Profit/Loss for the account is calculated in MultiCharts as it is not provided by TT FIX API.

There are also following broker limitations:

- There is price ceiling for stop orders. Any orders beyond this limit are rejected by broker.
- On some exchanges (for example: SGX), a stop order and stop prices of a stop-limit order cannot be modified.

This may influence auto trading.

- There are exchanges, which don't support stop orders.

Trading Technologies does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Trading Technologies Broker Profile

In the **Properties Trading Technologies** window (see Managing Broker Profiles) enter the information provided by Trading Technologies

Connection settings tab

1. Order Connection Settings section.

Server IP, Password, Port number, SenderCompID and TargetCompID. 2. Price Connection Settings section.

Server IP, Password, Port number, SenderCompID and TargetCompID.

3. Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

Trading Accounts tab

1. Trading section.

Account number

Clearing Account number

FFT2 tag

Agent Account tag.

Trading Technologies Broker Profile

2. Unrealized Profit Calculation section

Select one of two modes to calculate unrealized profit: using Best Bid & Best Ask or Last Trade.

3. If the account requires enabling multiple gateways feature, check the **Use Multiple Exchange Gateway (Tag 18203)** box.

ZenFire Broker Profile

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Note: If you manually drag Stop orders to the price equal to current market price or better (guaranteed to be executed), they won't be converted.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by ZenFire broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by ZenFire broker and displayed in MultiCharts.

ZenFire does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO

orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Zen-Fire Broker Profile

In the **Properties Zen-Fire** window (see Managing Broker Profiles) enter the information provided by Zen-Fire

1. Authority section.

Enter **Login** and **Password**

SSL certificates path is configured by default.

2. Connectivity section

Make sure that the selected deployment is **Zen-Fire**

Don't adjust anything else in this section

The **Reset** button nearby Deployment is to restore correct settings.

3. Reconnection Settings section.

Configure timer to reconnect if connection to Zen-Fire is lost.

Zen-Fire Local Sim Broker Profile

ZenFire Local Sim Broker Profile

To connect Zen-Fire Local Sim Broker Profile it is necessary to have set up connection to Rithmic/Zen-Fire data feed in QuoteManager (see Built-in Data Sources)

It is not possible to connect Rithmic Local Sim Broker Profile and Zen-Fire Local Sim Broker Profile simultaneously.

Open position Profit/Loss is calculated in MultiCharts.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

Setting up Zen-Fire Local Sim Broker Profile

In the **Manage Broker Profiles ...** window (see Managing Broker Profiles) click **New** and select **Zen-Fire Local Sim**. Zen-Fire Local Sim will be added to the list of Broker Profiles.

In the **Simulator Options** window:

1. Simulation Option section.

Specify range for **Communication Delay**. Milliseconds are used.

Specify range for **Execution Delay**. Milliseconds are used.

Specify **Initial Balance**.

Select **Execution method**.

2. Margin Requirements Calculation section.

Select Margin calculation method.

The **Reset** button becomes active only when the profile is connected. Click **Reset** to reset the settings to default.

New settings are applied only when the profile is reconnected.

ZenFire/Rithmic Server Sim Broker Profile

ZenFire/Rithmic Server Sim Broker Profile

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by ZenFire/Rithmic broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by ZenFire/Rithmic broker and displayed in MultiCharts.

ZenFire does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to the broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up ZenFire Server Sim Broker Profile

Zen-Fire Broker Profile is created when MultiCharts is installed.

In the **Properties ZenFire/Rithmic Server Sim** window (see Managing Broker Profiles) enter the information provided by Zen-Fire/Rithmic.

1. Authority section

Enter **Login** and **Password**

SSL certificates path is set up by default.

2. Connectivity section

Make sure that the selected deployment is **Zen-Fire Server/Rithmic Sim**

Do not change anything else in this section.

The Reset button nearby Deployment is to restore correct settings.

3. Reconnection Settings section

Configure timer to reconnect if connection to Zen-Fire/Rithmic is lost.

Manual Trading

Chart Trading

The chart trading panel allows placing manual orders directly from a chart. The chart is cursor-sensitive, so right-clicking on the chart will create an order at the price level you clicked on. Orders can be also dragged and dropped directly to a specific price on the chart.

You can send single orders and entire strategies using the methods described above. MultiCharts supports simple single orders, One-Cancels-Other order groups (OCO), as well as automated entry and exit strategies. The Entry Automation and Exit Automation strategies can be applied by drag-and-drop or by right-clicking to individual orders, and entire positions.

Orders can be changed or cancelled by right-clicking them and choosing the appropriate option in the shortcut menu or from the Chart trading panel itself. Strategy levels (such as profit target and stop loss) can also be easily changed and moved around. Strategy names are shown on the appropriate levels, showing where the orders came from.

Active orders are shown in a bright color, while dependent inactive orders (wait for the active order to be filled before becoming active) are shown in transparent colors. Changing the size, or the price, of the parent order will automatically recalculate and update the dependent orders.



Show/Hide Chart Trading Panel

To show/hide chart trading panel, click the Chart Trading Panel button  at the top-right corner of the chart.

Full and Compact Modes

To switch to Full/Compact Mode, right-click on the chart trading panel and click **Switch to Full/Compact Mode**.

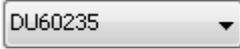
Selecting Broker

To select a broker, click the arrow on the Broker Connection button  and select a broker in drop-down menu. For more info see Broker Profiles Overview

Connecting / Disconnecting Broker Profile

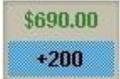
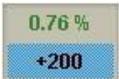
When a broker is selected, click the Broker Connection button  to connect or disconnect it. For more info see Broker Profiles Overview

Selecting Account

Select the account number in the Account Selector box 

PnL and Current Position

Current Position and Profit and Loss are indicated in the PnL and Current position box on the Chart Trading Panel and on the PnL Marker on the chart. Positive value (profit) is colored green, negative value (loss) is colored red.

Profit and Loss can be indicated in: Ticks , percents  and dollars .

To change indication type, click the PnL and Current position box. Current Ask and Bid prices are indicated below.

On the chart the Profit and Loss can be also indicated in: Dollars , Ticks 
Percent .

Click the PnL Marker to change indication type.

Current Position is marked with red or blue color. Long position is colored blue. Short position is colored red.

One-click order placing

Chart Trading panel provides the opportunity of one-click order placing.

Buy or Sell Market orders can be sent by pressing Buy Mkt and Sell Mkt buttons. Buy Ask, Buy Bid & Sell Ask, Sell Bid buttons send buy and sell limit orders at ask and bid prices respectively.



Place Order

Place Order menu allows you to place Stop, Limit and Stop-Limit orders as well as to automate certain methods of entering or exiting positions (see Orders and Strategies). It's perfect for avoiding repetitive tasks, increasing your productivity and focusing on trading. Automation is especially useful when you need to apply an order pair quickly.



Place Order menu strategies give you competitive advantage over other traders: they allow you to exit the position faster than others. They also reduce the risk of two orders execution and would be especially useful for traders who use pyramiding strategies. Each strategy is an OCO group – if one order is filled, the other is canceled.

Note: Not all brokers support server-based OCO groups. Consequently, there is no 100% guarantee that only one order will be executed (See OCO-Orders Risk)

Orders and Entry Strategies are shown as icons on the Chart Trading panel and can be easily applied to the chart. You can visually change the order levels, which saves a lot of time when managing your orders.

The icons are rearranged automatically: the last used icon is displayed in the top left corner of the menu.

To expand or collapse the Place Order menu, use the Expand/Collapse buttons.

To scroll icons in the Place Order menu, use the Scroll buttons.

To select Exit Strategies **Average Open Position Price** calculation mode:

1. Select **File** in the main menu, click **Preferences**, select the **Trading** tab
2. Enable the **received from broker** button to use the price received from broker or the **calculated based on order(s) execution price** button to use the price calculated by MultiCarts based on entry order(s) execution price.

Exit Orders Management

Exit strategies applied to an open position change the number of contracts according to the current position size.

Exit strategies applied to active orders do not change number of contracts regardless of the open position size (do not "jump" onto the active position after the parent order was filled). They remain active and keep protecting orders that were generated by the parent order.

Number of contracts for exit strategies applied to the open position changes taken into account strategies applied to filled orders and their effect on the overall position. In other words, strategies applied to the position protect the remainder that is not protected by strategies applied to individual orders.

If a position was opened by an order that has an exit strategy attached from a flat position, then this strategy is applied to the entire position and "protects" it (see Example 2 below).

Exit strategies applied to positions and strategies applied to orders are visually different on both on the chart and in the DOM: exits strategies applied to positions have "p" letter to the left of the number of contracts.

Example 1 - Shows exit strategy attached to an individual order:

Open position is -1 contract.

Sell limit order for 1 contract is sent to broker.

Profit Target exit strategy is attached to the sell limit order.

Sell limit order is filled. Profit Target becomes active. Open position is -2 contracts. Profit Target size is 1 (attached to the order, not the position).

Sell market order for 2 contracts is sent to broker.

Sell market order is filled. Open position is -4 contracts. Profit Target size is 1.

Example 2 - Shows exit strategy auto-attached to an order opening the position from a flat position:

Open position is flat.

Buy market order for 100 contracts with a Master Strategy auto attached to it is sent to broker.

Buy market order is filled. Master Strategy becomes active. Open position is +100 contracts. Master Strategy size is 100.

Buy stop order for 200 contracts is sent to broker.

Buy Stop order is filled. Open position is +300 contracts. Master Strategy size is 300 (protects entire position since the position was opened by an order that has an exit strategy attached from a flat position).

Example 3 - Shows both exit strategy attached to the entire position and exit strategy attached to an individual order:

Open position is +10 contracts.

Stop-Loss #1 exit strategy is applied to the open position. Stop-Loss #1 size is 10.

Buy stop order for 5 contracts is sent to broker.

Stop-Loss #2 exit strategy is applied to the buy stop order. Stop-Loss #2 size is 5.

Buy stop order is filled. Stop-Loss #2 becomes active. Open position is +15 contracts. Stop-Loss #1 size is 10. Stop-Loss #2 size is 5.

Buy market order for 10 contracts is sent to the broker.

Buy market order is filled. Open position is +25 contracts. Stop-Loss #1 size becomes 20 (attached to the position). Stop-Loss #2 size is 5 (attached to the order, not the position).

Example 4 - Shows exit strategy attached to the entire position

Open position is +50 contracts.

Buy market order for 100 contracts with a Master Strategy auto attached to it is sent to broker.

Buy market order is filled. Master Strategy becomes active. Open position is +150 contracts. Master Strategy size is 100 (attached to the order, not the position).

Buy stop order for 200 contracts is sent to broker.

Buy Stop order is filled. Open position is +300 contracts. Master Strategy size is 300(attached to the position).

OCO-Orders

One Cancels Other (OCO) orders are the price orders sent in a group. When any of OCO orders is filled or partially filled, the system cancels or reduces size of other orders in this OCO-group.

Note: Reduce size functionality is supported by Interactive Brokers only: if one order in OCO group is partially filled, others are reduced in size proportionally.

All Entry Strategies are placed with OCO-orders. There are two types of OCO-groups in MultiCharts: Native and Simulated.

Native OCO-group is used when the broker's API supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker. (Native OCO-group is supported by Interactive Brokers and FXCM).

Simulated OCO-group means that all OCO orders will be sent to the broker, but once one of them is filled, other orders from this OCO group will be cancelled by MultiCharts. In this case, when one of the OCO orders is filled, MultiCharts will send a command to cancel or reduce size of the second OCO order to the broker.

Please note that in case of high market volatility there may be not enough time to cancel the order and therefore both orders may be filled. Both orders also may be filled in the unlikely event of crash or connection loss.

All OCO-orders of the same group will have the same OCO-ID. You may check it in the Orders tab of the Order and Position Tracker window.

Setting Order Quantity

Set order quantity by one of the following methods:

- Type in order quantity in Order Quantity box  in Chart Trading; or:
- Click the Trading Calculator button .

Calculator automatically increases the current trade size setting by one, e.g. if you had 1 in order quantity field, calculator would automatically make it 2.

You can modify the number of contracts by pressing +1, +2, +5 etc. buttons. **Zero** button resets the number of contracts to zero.

Buttons on the right side of the calculator contain 6 last values.

You may set this number of contracts by pressing those buttons. To apply the modifications click **OK**, to cancel the modifications click **Cancel**.

Setting Time in Force

To set time in force of the order, use the **Time in Force** box in **Chart Trading** panel.

- DAY – Good for one day
- GTC – Good 'Til Cancelled
- GTD – Good To Date
- IOC – Immediate or Cancel Order

Order Modification

Order modification allows adjusting price level and changing the quantity of the order that has not been filled yet.

Adjusting price levels

To modify order price, drag the order marker on the chart and drop it to the desired price level.

When you drag the order with the mouse, it shows the difference between the actual position of the cursor and Bid or Ask price while you hold left button.

If you move the order somewhere between Bid and Ask on the price scale, it shows you current spread value changing dynamically.

To cancel the price level adjustment, press Esc before releasing left mouse button.

To modify the length of the line connecting order marker and price label on the price scale see Chart Trading Settings.

Changing Quantity

Change quantity of the order by one of the following methods:

- Right-click the order marker on the chart to see the shortcut menu, select Change Quantity and select the quantity; or:
- Click on volume value on order marker on the chart and modify the quantity in Trading Calculator (see Trading Calculator)

Note: Unlike DOM, in Chart Trading the orders with the same price levels can be moved and modified separately (without joining the orders into one group) by drag-and-drop. If you want to cancel the price level adjustment, press Esc before releasing left mouse button.

Cancelling orders

Cancel separate threads or the order/strategy completely by one of the following methods:

- Click on the Close button on order/strategy marker; or:
- Right-click the order marker on the chart to see the shortcut menu and select Cancel Order.

To cancel multiple orders at a time orders use Cancel Asks, Cancel Bids and Cancel All buttons.

The Cancel Asks button cancels all pending buy orders. The Cancel Bids button cancels all pending sell orders. The Cancel All button cancels all pending orders.

Close position

Close the position by one of the following methods:

- Right-click the order marker on the chart to see the shortcut menu and click Close Position; or:
- Click on the Close button on Chart Trading Panel; or:
- Click on the Close button on the position marker.

Closing the current position cancels all pending orders.

Reverse position

Reverse the position by one of the following methods:

- Right-click the order marker on the chart to see the shortcut menu to call context menu and select Reverse Position; or:
- Click the Reverse button on Chart Trading panel; or:
- Click the Reverse button at the right side of position marker on the chart.

Reverse closes the current position with market order, cancels all pending orders and sends market order to open the position in opposite direction for the same number of contracts.

Chart Trading Settings

To configure Chart Trading Settings:

- Open Format Chart Trading window by one of the following methods:
- Right-click on the chart to see the shortcut menu, then click Format Chart Trading...; or
- Right-click on the Chart Trading panel to see the shortcut menu, then click Format Chart Trading...; or
- Click the Format tab in the main menu and then click Chart Trading.
- Select Common Settings tab

Require Order confirmation – when enabled, the confirmation window will be shown every time you place an order

Show Open Positions – enables/disables active positions indication on the chart

Show Historical Orders – enables/disables historical orders indication on the chart

Show Active orders – enables/disables active orders indication on the chart

Show Trade Panel – shows/hides Trade Panel

Show Best Bid & Best Ask – enables/disables indication of Best Bid & Best Ask in Trade Panel

Stop Limit Offset – allows setting default Stop Limit offset with spin-box

PnL Display Unit – allows selection of PnL indication type (Currency, Point, Percent)

Use as Default – saves the settings as Default. All subsequently created charts will use the same settings

Appearance

To configure visual parameters of Chart Trading orders:

- Open Format Chart Trading window by one of the following methods:
- Right-click on the chart to see the shortcut menu, then click Format Chart Trading...; or
- Right-click on the Chart Trading panel to see the shortcut menu, then click Format Chart Trading...; or
- Click the Format tab in the main menu, then click Chart Trading.
- Select Historical Orders tab or Active Orders and Positions tab

Historical Orders

Select one of the standard 40 colors from the palette box, or click Other to use custom colors for the key components of historical orders markers.

Change the style and the size of the components using 28 custom vertical and horizontal arrows and 7 custom sizes.

Connecting Line Length - modifies the length of the line connecting order marker and price label on the price scale.

To configure order markers size you should change Status Line font size.

To change Status Line font size right-click on the chart to see the shortcut menu, click Format Window, select the Status Line tab and modify Font Size.

Active Orders and Positions

Select one of the standard 40 colors from the palette box, or click Other to create custom colors for the Active Orders and Positions.

Change style and weight of connecting lines using 5 custom line types and 7 custom weights.

Default Active Order Colors

Order/Strategy	Color	RED	GREEN	BLUE
Breakeven Strategy	Yellow	255	255	0
Breakout Down/Fade Strategy	DarkCyan	0	139	139
Breakout Strategy	MediumPurple	147	112	219
Breakout Up/Fade Strategy	Sienna	160	82	45
Buy/Sell Limit	Lime	30	255	0
Buy/Sell Stop	Sienna	160	82	45
Buy/Sell Stop Limit	Magenta	255	0	255
Fade Strategy	OliveDrab	107	142	35
Stop Loss Strategy	Maroon	128	0	0
Profit Target Strategy	Green	0	255	0
Trailing Stop Strategy	Orange	255	165	0

Accessing Performance Report

To access a Strategy Performance Report:

- Apply a strategy to a chart.
- In the menu select View then click Strategy Performance Report.

To access a Trading Performance Report:

- Connect a Broker Profile.
- Make sure that the chart shows historical trades.
- In the menu select View then click Strategy Performance Report.

Chart Trading Orders and Strategies

Stop Order

A Stop Order will buy or sell a security when its price surpasses a particular level defined by the trader, thus ensuring a greater probability of achieving a predetermined entry or exit price. Stop order becomes a market order when the price reaches the predefined level.

Appearance

Stop Order is displayed as sienna marker on the chart connected to the order price label on the price scale with a dotted line.

Default Stop Order marker color and connecting line length can be modified in Format Chart Trading menu.



Creating Stop Order

To create Stop Order:

- Drag-and-drop the Stop Order icon  ; or:
 - Right-click at the desired price level to see the shortcut menu, select **Place Order** and then click **Buy / Sell Stop...**;
- or:

- Right-click the Stop Order icon  in the Place Order menu to see the shortcut menu and click **Apply Strategy** (**Buy Stop** order at Ask price will be created).
- Double-click the Stop Order icon  in the Place Order menu (**Buy Stop** order at Ask price will be created).

Note: Chart is context-sensitive and allows creating Buy or Sell orders depending on the price level at which you click on the chart. If you right-click above current price level, Buy Stop option will be available in the shortcut menu. If you right-click below current price level, Sell Stop option will be available in the shortcut menu. Right-clicking on the current price level makes both Buy Stop and Sell Stop options available.

Stop Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in **Time In Force** field (see Setting Time in Force) When placing Stop order the **Place Order** confirmation window appears.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation** window.

Note: When Require Order confirmation option is disabled no confirmation window will appear.

Limit Order

A Limit Order will buy or sell a set number of shares at a specified price or better.

Appearance

Limit Order is displayed as lime marker on the chart connected to the order price label on the price scale with a dotted line.

Default Limit Order marker color and connecting line length can be modified in Format Chart Trading menu.



Creating Limit Order

To create Limit Order:

- Drag-and-drop the Limit Order icon  to the chart; or:
- Right-click at the desired price level on the chart to see the shortcut menu, select **Place Order** and then click **Buy / Sell Limit...**; or:
- Right-click the Limit Order icon  in the Place Order menu to see the shortcut menu and click **Apply Strategy** (Buy Limit order at Bid price will be created).
- Double-click the Limit Order icon  in the Place Order menu (Buy Limit order at Bid price will be created).

Limit Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in **Time In Force** field (see Setting Time in Force) When placing **Limit** order the **Place Order confirmation** window appears.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation window**.

Note: When Require Order confirmation option is disabled no confirmation window will appear.

Stop Limit Order

Stop Limit Order combines the features of stop order with those of a limit order. A stop-limit order will buy or sell a set number of shares at a specified price (or better) after a given stop price has been reached. Once the stop price is reached, the stop-limit order becomes a limit order to buy (or sell) at the limit price or better.



Appearance

Default Stop Limit Order marker color and connecting line length can be modified in Format Chart Trading menu.

Creating Stop Limit Order

To create Stop Limit order:

- Drag-and-drop the Stop Limit order icon  to the DOM window; or:
- Right-click at the desired price level on the DOM window on the Sell or Buy columns to see the shortcut menu, select Buy / Sell Stop Limit...; or:
- Right-click the Stop Limit order icon  in the Place Order menu to see the shortcut menu and click **Apply Strategy** (Buy Stop Limit order at Ask price will be created).
- Double-click the Stop Limit Order icon  in the Place Order menu (Buy Stop Limit order at Ask price will be created).

Note: Chart is context-sensitive and allows creating Buy or Sell orders depending on the price level at which you click on the chart. If you right-click above current price level, Buy Stop Limit option will be available in the shortcut menu. If you right-click below current price level, Sell Stop Limit option will be available in the shortcut menu. Right-clicking on the current price level makes both Buy Stop Limit and Sell Stop Limit options available.

Stop Limit Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in **Time In Force** field (see Setting Time in Force)

When placing **Stop Limit** order the **Place Order confirmation** window appears allowing to modify *Limit price*.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation** window

Note: When Require Order confirmation option is disabled no confirmation window will appear and **Limit Price** will be based on **Stop Limit Offset** set in Format Chart Trading menu. **Stop Limit offset** value is set to 1 tick by default.

Modification of Stop Limit Order offset

To modify Stop Limit offset:

1. Open **Format Chart Trading** window by one of the following methods:
 - Right-click on the chart to see the shortcut menu and then click **Format Chart Trading**; or:
 - Right-click on the **Chart Trading** panel to see the shortcut menu, and then click **Format Chart Trading**; or:

- Select **Format** in the main menu and click **Chart Trading....**
- 2. Select the **Common Settings** tab.
- 3. Modify the offset in the **Stop Limit Offset** box.
- 4. Click **OK** to save changes.

Breakout Strategy

A breakout is usually defined as a sudden and significant price movement through the support and resistance levels, usually followed by large trading volume and increased volatility. A breakout trader will buy if the price goes up through the resistance level and sell if the price goes down through the support level, assuming that the motion will continue.



Breakout Strategy on the chart

The Breakout Strategy will place two stop orders at the prices (distance) specified, in order to catch the breakout when it happens. A buy stop order will be placed above the current price and a sell stop order below the current price.

Appearance

Breakout Strategy orders are displayed as medium purple markers on the chart connected to the order price labels on the price scale with a dotted line.

Default Breakout Strategy order markers color and connecting lines length can be modified in Format Chart Trading menu.

Creating Breakout Strategy orders

- Drag-and-drop the Breakout Strategy icon  to the chart; or:
- Right-click at the desired price level on the chart to see the shortcut menu, select **Place Order** and then click **Breakout Strategy**; or:

- Right-click the Breakout Strategy  icon in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.

- Double-click the Breakout  Strategy icon in the **Place Order** menu.

Breakout Strategy Parameters

To modify default Breakout Strategy parameters:

1. Right-click the Breakout Strategy icon <http://www.multicharts.com/img/wiki/strategies/12.png> in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify breakout and breakdown values in **Breakout At** and **Breakdown At** boxes.

Breakout/Breakdown levels are *interrelated* with price offsets. You may modify either **Breakout/Breakdown** level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated in ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:

- Right-click the Breakout Strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:

- Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Breakout parameters.
3. Click **Save**.

4. Choose the **Breakout Template**  icon.
5. Enter Breakout template name.
6. Click **OK**.

Fade Strategy

Fading is usually defined as trading against the trend, a 'mirror-image' of the breakout. If the market goes up, fading traders will sell, hoping that the price will go down. Similarly, fading traders will buy if the price goes down.



The Fade Strategy will place two limit orders at the prices (distance) specified, so fading can start when the price moves. A buy limit order will be placed below the current price and a sell limit order above the current price.

Appearance

Fade Strategy orders are displayed as olive drab markers on the chart connected to the order price labels on the price scale with a dotted line.

Default Fade Strategy order markers color and connecting lines length can be modified in Format Chart Trading menu.

Creating Fade Strategy orders

To create Fade strategy orders:

- Drag-and-drop the Fade Strategy icon  to the chart; or:
- Right-click at the desired price level on the chart to see the shortcut menu, select **Place Order** and then click **Fade Strategy**; or:

- Right-click the Fade Strategy  icon in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.

- Double-click the Fade  Strategy icon in the **Place Order** menu.

Fade Strategy Parameters

To modify default Fade strategy parameters:

1. Right-click the Fade Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify upper and lower limits values in **Upper Limit At** and **Lower Limit At** boxes.

Upper and lower limits levels are interrelated with price offsets. You may modify either level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Fade Strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Fade parameters.
3. Click **Save**.
4. Choose the **Fade Template** icon.
5. Enter Fade template name.
6. Click **OK**

Breakout Up/Fade Strategy

This strategy is a combination of the breakout and fade strategies defined above, and it is used when the trader expects the price will go up. This strategy will place a buy stop above the current price and a buy limit order below the current price. The breakout can be activated if it happens, but also catch the fade if the price falls.



Appearance

Breakout Up/Fade Strategy orders are displayed as sienna markers on the chart connected to the order price labels on the price scale with a dotted line.

Default Breakout up/fade strategy order markers color and connecting lines length can be modified in Format Chart Trading menu.

Creating Breakout Up/Fade Strategy orders

To create Breakout up/fade strategy orders:

- Drag-and-drop the Breakout Up/Fade Strategy icon  to the chart; or:

- Right-click at the desired price level on the chart to see the shortcut menu, select **Place Order** and then click **Breakout Up/Fade Strategy**; or:

- Right-click the Breakout Up/Fade Strategy  icon in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.

- Double-click the Breakout Up/Fade  Strategy icon in the **Place Order** menu.

Breakout up/fade Strategy Parameters

To modify default Breakout up/fade strategy parameters:

1. Right-click the Breakout Up/Fade Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify **Breakout** and **Lower limit** values in **Breakout At** and **Lower Limit At** boxes.

Breakout and **lower limit** levels are *interrelated* with price offsets. You may modify either level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Breakout Up/Fade strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default **Breakout Up/Fade** parameters.
3. Click **Save**.
4. Choose the **Breakout Up/Fade Template** icon.
5. Enter Fade template name.
6. Click **OK**.

Breakout Down/Fade Strategy

This strategy is a combination of the breakout and fade strategies defined above, and it is used when the trader expects the price will go down. This strategy will place a sell stop order below current price and buy limit above current price. The breakout can be activated if it happens, but also catch the fade if the price rises.

Appearance

Breakout down/fade strategy orders are displayed as dark cyan markers on the chart connected to the order price labels on the price scale with a dotted line.



Default Breakout down /fade strategy order markers color and connecting lines length can be modified in Format Chart Trading menu.

Creating Breakout Down/Fade Strategy orders

To create Breakout down /fade strategy orders:

- Drag-and-drop the Breakout Down/Fade Strategy icon  to the chart; or:
- Right-click at the desired price level on the chart to see the shortcut menu, select **Place Order** and then click **Breakout Down/Fade Strategy**; or:

- Right-click the Breakout Down/Fade Strategy  icon in the **Place Order** menu to see the shortcut menu and click Apply Strategy.

- Double-click the Breakout Up/Fade Strategy  icon in the **Place Order** menu.

Depth of Market (DOM)

Depth-of-Market window displays market depth, PnL, current positions as well as pending orders and provides one-click trading features. Entry and exit automation can be set up directly in the DOM window making it a unique and self-sufficient tool for manual trading (see [Chart_Trading_Orders_and_Strategies](#)).

MultiCharts DOM displays up to 10 levels of market depth. 10 levels is the limit, if the broker provides less data, DOM displays fewer levels of market depth.

Ask and Bid Size is shown in Buy and Sell columns respectively.

Best Bid and Best Ask are marked with white color. Last trade price and size are highlighted in yellow in Price column. Those are default colors that can be changed.

Note: Please check if you have a subscription for depth-of-market data for the particular symbol that you are going to use in the DOM. Dukascopy and FXCM brokers cannot be used for DOM trading since they do not support depth-of-market.

Broker Connection Button Instrument Selector Account Selector

DOM - ESH2 : Interactive Brokers

ESH2 DU60235

Buy	Price	Sell
	1,358.50	1.4K
	1,358.25	1.2K
	1,358.00	1.4K
	1,357.75	LMT 1.3K 1 X
	1,357.50	1.2K
	1,357.25	1.1K
	1,357.00	1.3K
	1,356.75	502
651	(1)1,356.50	
766	1,356.25	
1.1K	1,356.00	
1.2K	1,355.75	
1.6K	1,355.50	
1.8K	1,355.25	
1.7K	1,355.00	STP 1 X
1.3K	1,354.75	
1.3K	1,354.50	
1.3K	1,354.25	
	1,354.00	
	1,353.75	
	1,353.50	
	1,353.25	

Current Position Display: Buy Mkt 1, PnL \$-8.26, Sell Mkt 1

Order Quantity: 1, Time in Force: DAY, Date: 2/22/2012

Place Order Menu: BRK, B/M Buy, Fade

Exit Strategy Menu: Pause (1)

Dynamic and Semi-Static Modes

MultiCharts DOM has two modes: dynamic and semi-static.

Dynamic DOM mode means the DOM window will automatically re-center after each new tick (price update) received. This mode is very useful for scalping strategies.

To enable Dynamic mode right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu and check Dynamic Price Scale.



If Dynamic Price Scale option is disabled, DOM operates in semi-static mode.

Semi-static DOM mode means the DOM window will re-center once the current price hits the upper or lower boundary of the window. A 5 second countdown precedes re-centering.

Static DOM has been patented by Trading Technologies: absolutely static DOM, no auto-recentering. MultiCharts DOM is semi-static meaning that it will move without input from the user (i.e. if the price goes off the screen), which creates the possibility of making an error during input. It was implemented this way in order not to violate the patent.

Regardless of the DOM mode that is selected, to center last trade price double click on the Price column.

Creating New DOM Window

Open a new DOM window by one of following methods:

- Click the New DOM Window icon  on the Main toolbar, or:
- In the main menu select File, then point to New and click DOM Window, or:
- Use Ctrl+Alt+Ins keys combination on the keyboard

Selecting Broker

To select a broker, click on the arrow next to the Broker Connection button  and select a broker from the list. For more info see Broker Profiles Overview.

Connecting / Disconnecting Broker Profile

When a broker is selected, click on the Broker Connection button  to connect/disconnect it. When MultiCharts is establishing the connection with the broker, the Broker Connection button is yellow. Once the connection is established, it becomes green.

You can also right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu and click Connect / Disconnect Broker Profile.

For more info see Broker Profiles Overview.

Selecting Account

Select the account number in the Account Selector box

Selecting Instrument

To select the instrument you want to trade with:

- Type in the symbol name into the Instrument Selector field and press Enter; or:
- Click on the Lookup button to select the necessary symbol from the database.

Note: To be able to trade the instrument in the DOM, you should add it to the Quote Manager (see Operating Symbol List).

PnL and Current Position

PnL and Current Position box indicates Current Position and Profit and Loss. Positive value (profit) is colored green, negative value (loss) is colored red.

Profit and Loss can be indicated in: Dollars , Ticks and Percent .

To change indication type, click on PnL and Current position box.

AvgEntry Price of the position is highlighted in white in Price column.

		1,357.00	1.3K
		1,356.75	502
651	(1)	1,356.50	
766		1,356.25	
1.1K		1,356.00	

One-Click Order Placing

DOM window allows you to place Market, Stop, Limit and Stop-Limit orders with just one click.

Require Order Confirmation

To enable order confirmation, right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu and check the Require Order Confirmation check box.

When Require Order Confirmation check box is checked you will see Place Order confirmation window every time you place an order. Check the Do not ask me again check box to disable order confirmation.

Placing Market Orders

To place Market orders ,use the Buy Mkt and the Sell Mkt buttons under the price ladder. Order Size is defined by Quantity field, Time In Force (TIF) is defined by the value set in the Time In Force field.

Placing Limit Orders

Place a Limit order by one of the following methods:

- Click on price scale near corresponding price in Bid Size column (buy order) or Ask Size column (sell order). Order Volume is defined by Qty field (see Setting Order Quantity), Time In Force (TIF) is defined by the value set in Time In Force field (see Setting Time in Force); or:

Note: If you click below Best Ask price in Sell column or above Best Bid price in Buy column, a Stop order will be sent by default. To send Sell limit orders below Best Ask price or Buy limit orders above Best Bid price hold Shift button and click on the price at which you want to send an order.

- Drag-and-drop Limit order icon to the price scale near corresponding price in Bid Size column (buy order) or Ask Size column (sell order).

Note: If you drag and drop limit order icon above Best Ask price, a Sell Limit order will be placed regardless of the column where you drag the order to (Buy or Sell). If you drag and drop limit order icon below Best Bid price, a Buy Limit order will be placed regardless of the column where you drag the order to (Buy or Sell).

- Hold the Ctrl (or Shift) key on the keyboard and click Buy Bid/ Buy Ask or Sell Bid/Sell Ask buttons.

Note: When the Ctrl key is held, the Buy Mkt and the Sell Mkt buttons will become Buy Bid and Sell Bid buttons respectively. When the Shift key is held, the Buy Mkt and the Sell Mkt buttons will become the Buy Ask and the Sell Ask buttons respectively.

Placing Stop Orders

Place a Stop order by one of the following methods:

- Click on price scale near corresponding price in Bid Size column (buy order) or Ask Size column (sell order). Order Volume is defined by Qty field (see Setting Order Quantity), Time In Force (TIF) is defined in Time In Force field(see Setting Time in Force) ; or:

Note: If you click above Best Ask price in Sell column or below Best Bid price in Buy column, a Limit order will be sent by default. To send Sell Stop orders above Best Ask price or Buy limit orders below Best Bid price hold Ctrl button and click on the price at which you want to send an order.

- Drag-and-drop of Stop order icon to the price scale near corresponding price in Bid Size column (buy order) or Ask Size column (sell order). Order Volume is defined by Qty field (see Setting Order Quantity), Time In Force (TIF) is defined by the value set in the Time In Force field (see Setting Time in Force) .

Note: If you drag and drop Stop order icon above Best Ask price, a Buy Stop order will be placed regardless of the column where you drag the order to (Buy or Sell). If you drag and drop limit order icon below Best Bid price, a Sell Stop order will be placed regardless of the column where you drag the order to (Buy or Sell).

Placing Stop-Limit Orders

Place a Stop-Limit order by one of the following methods:

- Click on price scale near corresponding price in Bid Size column or Ask Size column while holding Ctrl+Shift buttons. Order Volume is defined by Qty field(see Setting Order Quantity), Time In Force (TIF) is defined in Time In Force field (see Setting Time in Force).
- Drag-and-drop of Stop-Limit order icon to the price scale near corresponding price in Bid Size column or Ask Size column. Order Volume is defined by Qty field(see Setting Order Quantity), Time In Force (TIF) is defined by the value set in the Time In Force field (see Setting Time in Force).

Note: When Require Order Confirmation check box is checked, Stop Limit price level can be customized in confirmation window. When Require Order Confirmation check box is unchecked, Stop Limit price level will correspond to the level where it is placed (see Require Order Confirmation).

Place Order

Place Order menu allows you to place Stop, Limit and Stop-Limit orders as well as to automate certain methods of entering or exiting positions. It's perfect for avoiding repetitive tasks, increasing your productivity and focusing on trading. Automation is especially useful when you need to apply an order pair quickly (see Orders and Strategies).



Place Order menu strategies give you competitive advantage over other traders: they allow you to exit the position faster than others. They also reduce the risk of two orders execution and would be especially useful for traders who use pyramiding strategies. Each strategy is an OCO group – if one order is filled, the other is canceled.

Note: Not all brokers support server-based OCO groups. Consequently, there is no 100% guarantee that only one order will be executed (See OCO-Orders Risk)

Orders and Entry Strategies icons are rearranged automatically: the last used icon is displayed in the top left corner of the menu.

To expand or collapse the Place Order menu, use the Expand/Collapse buttons.

To scroll icons in the Place Order menu, use the Scroll buttons.

To select Exit Strategies **Average Open Position Price** calculation mode:

1. Select **File** in the main menu, click **Preferences**, select the **Trading** tab
2. Enable the **received from broker** button to use the price received from broker or the **calculated based on order(s) execution price** button to use the price calculated by MultiCarts based on entry order(s) execution price.

Exit Orders Management

Exit strategies applied to an open position change the number of contracts according to the current position size.

Exit strategies applied to active orders do not change number of contracts regardless of the open position size (do not "jump" onto the active position after the parent order was filled). They remain active and keep protecting orders that were generated by the parent order.

Number of contracts for exit strategies applied to the open position changes taken into account strategies applied to filled orders and their effect on the overall position. In other words, strategies applied to the position protect the remainder that is not protected by strategies applied to individual orders.

If a position was opened by an order that has an exit strategy attached from a flat position, then this strategy is applied to the entire position and "protects" it (see Example 2 below).

Exit strategies applied to positions and strategies applied to orders are visually different on both on the chart and in the DOM: exits strategies applied to positions have "p" letter to the left of the number of contracts.

Example 1 - Shows exit strategy attached to an individual order:

1. Open position is -1 contract.
2. Sell limit order for 1 contract is sent to broker.
3. Profit Target exit strategy is attached to the sell limit order.
4. Sell limit order is filled. Profit Target becomes active. Open position is -2 contracts. Profit Target size is 1 (attached to the order, not the position).
5. Sell market order for 2 contracts is sent to broker.
6. Sell market order is filled. Open position is -4 contracts. Profit Target size is 1.

Example 2 - Shows exit strategy auto-attached to an order opening the position from a flat position:

1. Open position is flat.
2. Buy market order for 100 contracts with a Master Strategy auto attached to it is sent to broker.
3. Buy market order is filled. Master Strategy becomes active. Open position is +100 contracts. Master Strategy size is 100.
4. Buy stop order for 200 contracts is sent to broker.
5. Buy Stop order is filled. Open position is +300 contracts. Master Strategy size is 300 (protects entire position since the position was opened by an order that has an exit strategy attached from a flat position).

Example 3 - Shows exit strategy attached to the entire position:

1. Open position is +50 contracts.
2. Buy market order for 100 contracts with a Master Strategy auto attached to it is sent to broker.
3. Buy market order is filled. Master Strategy becomes active. Open position is +150 contracts. Master Strategy size is 100 (attached to the order, not the position).
4. Buy stop order for 200 contracts is sent to broker.
5. Buy Stop order is filled. Open position is +300 contracts. Master Strategy size is 300(attached to the position).

Example 4 - Shows both exit strategy attached to the entire position and exit strategy attached to an individual order:

1. Open position is +10 contracts.
2. Stop-Loss #1 exit strategy is applied to the open position. Stop-Loss #1 size is 10.
3. Buy stop order for 5 contracts is sent to broker.
4. Stop-Loss #2 exit strategy is applied to the buy stop order. Stop-Loss #2 size is 5.
5. Buy stop order is filled. Stop-Loss #2 becomes active. Open position is +15 contracts. Stop-Loss #1 size is 10. Stop-Loss #2 size is 5.
6. Buy market order for 10 contracts is sent to the broker.
7. Buy market order is filled. Open position is +25 contracts. Stop-Loss #1 size becomes 20 (attached to the position). Stop-Loss #2 size is 5 (attached to the order, not the position).

OCO-Orders

One Cancels Other (OCO) orders are the price orders sent in a group. When any of OCO orders is filled or partially filled, the system cancels or reduces size of other orders in this OCO-group.

Note: Reduce size functionality is supported by Interactive Brokers only: if one order in OCO group is partially filled, others are reduced in size proportionally.

All Entry Strategies are placed with OCO-orders. There are two types of OCO-groups in MultiCharts: Native and Simulated.

Native OCO-group is used when the broker's API supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker. (Native OCO-group is supported by Interactive Brokers and FXCM).

Simulated OCO-group means that all OCO orders will be sent to the broker, but once one of them is filled, other orders from this OCO group will be cancelled by MultiCharts. In this case, when one of the OCO orders is filled, MultiCharts will send a command to cancel or reduce size of the second OCO order to the broker.

Please note that in case of high market volatility there may be not enough time to cancel the order and therefore both orders may be filled. Both orders also may be filled in the unlikely event of crash or connection loss.

All OCO-orders of the same group will have the same OCO-ID. You may check it in the Orders tab of the Order and Position Tracker window.

Setting Order Quantity

Set order quantity by one of the following methods:

- Type in order quantity in Order Quantity box  in DOM window; or:
- Click the Trading Calculator button.

Calculator automatically increases the current trade size setting by one, e.g. if you had 1 in order quantity field, calculator would automatically make it 2.

You can modify the number of contracts by pressing +1, +2, +5 etc. buttons. Zero button resets the number of contracts to zero.

Buttons on the left side of the calculator contain 6 last values.

You may set this number of contracts by pressing those buttons. To apply the modifications click OK, to cancel the modifications click Cancel.

Setting Time in Force

To set time in force of the order, use the Time in Force box in DOM window.

- DAY – Good for one day
- GTC – Good 'Til Cancelled
- GTD – Good To Date
- IOC – Immediate or Cancel Order

Order status types

MultiCharts DOM indicates different order statuses with different colors.

- Order status – Sent 
- Order status – Submitted 
- Order status – Inactive (Tot Triggered) 
- Order status – PreCancelled, PreModified 

Order Modification

Order modification allows modifying price level and changing the quantity of the active order that has not been filled yet.

Modifying price levels

To modify an order price, drag and drop the order marker to desired price level.

		81	(6)1,335
		849	1,335.0
		1.3K	1,334.7
X	1	LMT 1,567	1,334.5
		1,632	1,334.2
X	1	1,760	1,334.0
		1,425	1,333.7
		1,415	1,333.5

To cancel price adjustment, press the Esc button before you release left mouse button.

Changing Quantity

Change quantity of the order by one of the following methods:

- Click on the order marker on the chart to call context menu, select Modify Quantity and select the quantity; or:
- Click on volume value on order marker on the chart and modify the quantity in Trading Calculator (see Trading Calculator).

Managing Multiple Orders with the same price

If you place two or more orders of the same type at the same price level, they will be displayed as one order with the actual number of orders shown in brackets. Unlike Chart Trading panel, if you drag and drop such group of orders in DOM, all orders will be replaced.

		1 150,00		
		1 149,75		
		1 149,50	LMT(2)	10 X
		1 149,25		
		1 149,00		

To modify quantity or cancel every single order in such group, right-click on the orders group in DOM to see the shortcut menu, select Modify Quantity or Cancel Order and click on the order ID. To cancel all orders in a group, click Cancel All Orders in this Cell.

If you place two or more orders of the same type at the same price level, they will be displayed one above the other showing bottom order color at the right side of the displayed order. To switch between the orders click on this color

		1 146,00		
		1 145,75	STL	5 X
		1 145,50		
		1 145,25		

marker at the right side of the displayed order.

		1 146,00		
		1 145,75	LMT	5 X
		1 145,50		
		1 145,25		

In case of Entry and Exit strategies to switch between different strategies click on the Switch button.

		1 146,75		
		1 146,50		
		1 146,25	LMT(2)	10 X
		1 146,00		
		1 145,75		

		1 145,00		
		1 144,75		
X	5	1 144,50		
		1 144,25		
		1 144,00		
		1 143,75		

Reverse position

To reverse current position:

- Click the Reverse button; or:
- Right-click on the Average Entry Price highlighted in white to see the shortcut menu and click Reverse Position.

Close Position

Close the position by one of the following methods:

- Click the Close button  on Chart Trading Panel; or:
- Click on the X on order/strategy marker; or:
- Right-click on the Average Entry Price highlighted in white to see the shortcut menu and select Close Position.

Closing the current position cancels the orders associated with it. It also cancels all pending orders.

Cancelling orders

Cancel separate threads or the order/strategy completely by one of the following methods:

- Click on the X button on order/strategy marker; or:
- Right-click the order to see the shortcut menu and select Cancel Order.

To cancel all Buy orders, click on the Cancel  button at the left of Buy Mkt button.

To cancel all Sell orders, click on the Cancel button  at the right of Sell Mkt button.

Resizing DOM

DOM window height can be customized. To resize the whole DOM window or change the depth, drag the bottom of the scale.

Compact Mode and Extended Mode

Extended mode stretches DOM from top to bottom of your screen, and Compact mode shows a more compact trade panel.

To switch between Compact and Extended Mode in Depth Of Market Window

- Right click on any free space of the DOM window and click **Switch To Compact/Full Mode**; or:
- Click the **Switch To Compact/Full Mode** button  .

Always Show Entire Number option

Always Show Entire Number feature affects the type of volume numbers indication.

When **Always Show Entire Number** feature is enabled, volume quantity in Bid and Ask price scales will be indicated as is, i.e. full-length.

When **Always Show Entire Number** feature is disabled, and volume quantity in Bid and Ask price scales is more than 999, the quantity will be indicated rounded or abbreviated.

Examples

Quantity	Always Show Entire Number ON	Always Show Entire Number OFF
33,000	33,000	33K
25,700,000	25,700,000	25.7M
25,700,001	25,700,001	25.7M
25,763,275	25,763,275	25.8M

To enable/disable Always Show Entire Number feature, right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu, then check/uncheck Always Show Entire Number feature.

How to Change Font Size

Font settings can be easily customized in select font... menu. Right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu and click Select Font...

Default Order Colors

Order/Strategy	Color	RED	GREEN	BLUE
Breakeven Strategy	Yellow	255	255	0
Breakout Down/Fade Strategy	DarkCyan	0	139	139
Breakout Strategy	MediumPurple	147	112	219
Breakout Up/Fade Strategy	Sienna	160	82	45
Fade Strategy	OliveDrab	107	142	35
Limit Order	Green	0	255	0
Stop Limit Order	Magenta	255	0	255
Stop Loss Strategy	Red	255	0	0
Stop Order	Sienna	160	82	45
Take Profit Strategy	LimeGreen	50	205	50
Trailing Stop Strategy	Orange	255	165	0

How to Customize DOM Colors

Right-click anywhere on the DOM window except for Buy, Price & Sell columns and control elements to see the shortcut menu and select **Format Colors...**, then click on the color to customize it.

Select one of the standard 40 colors from the palette box, or click the Other button to choose custom colors.

Manual Trading and Automated Trading on the Same Instrument at the Same Time

Strategy trading on a chart has nothing in common with manual trading on the same instrument even if the same chart is used. Auto Trading Engine doesn't have access to information of what manual orders are placed, it works only with the strategy on chart. The following information should help customers who place orders manually when auto trading is turned on to synchronize their actions with strategy calculation and correct chart or broker positions.

Example: Market position at broker = 0. Market position on chart = 0. If your strategy on chart generates 1 contract long entry and it is executed, then the strategy assumes that the position has changed to +1. If 1 contract short market order is placed manually by a customer, then chart doesn't know about it. So the strategy continue trading individually on the charts, assuming that the chart position is still +1 long. However, since the instrument at broker is the same, the market position at broker on the instrument is the net position of the orders sent from both charts. In this example the position will be flat after 1 generated by the script order and 1 manual order.

Among prebuilt standard signals in MultiCharts there are 2 scripts that were introduced specifically for comparing market positions at broker and on chart to synchronize one of them with the other if they differ. Essentially there are 2 possible expected scenarios when market positions can get out of synch (only SA mode of autotrading is considered):

1. Placing manual orders when a strategy is auto trading (the same broker, account, instrument)
2. Auto trading from one chart window when a strategy is auto trading on a different chart (the same broker, account, instrument)

Note: If AA mode of auto trading is used, one should not expect matching of chart position and broker position in any case.

Depending on the direction of synchronization you need to use one or the other synchronizer script:

! From Broker To Strategy MP Synchronizer !

The strategy checks the market position at broker and then checks chart market position. If the positions are different, then the signal generates an emulated order with the number of contracts and average entry price as on broker end to match the broker position. The order is not sent to broker, so it affects only market position on chart for the strategy. It is displayed on the chart, but it is not shown in Order and Position Tracker window.

! From Strategy To Broker MP Synchronizer !

The strategy checks the market position at broker and then checks chart market position. If the positions are different, then the signal generates a market order with the number of contracts to match the chart position. The order is sent to broker, but the strategy itself is not aware of market position change, so it affects only broker position.

Note: **!From Strategy To Broker MP Synchronizer!** sends real orders to broker so you need to be careful when using it with a Live account.

Place Order Option

Place Order Menu

There are several ways an order can be placed manually:

- On Trade Bar
- In Depth of market (DOM)
- From Chart Trading Panel

There is one more way to place an order:

1. Make a right-click on chart and then select the first option **Place Order**.
2. In the dropdown list there are several options for entries and exits:

Note: There are 2 requirements for the **Place Order** option to appear when you make a right-click on the chart:

1. A connected Broker Profile
2. Correctly set up Symbol Mapping

If you don't see the **Place Order** option, then one of the requirements is not fulfilled.

Entry Orders

- Place a **Buy/Sell Limit** order for a specified number of contracts at the clicked price level
- Place a **Buy/Sell Stop** order for a specified number of contracts at the clicked price level
- Place a **Buy/Sell Stop Limit** order for a specified number of contracts at the clicked price level

Exit Orders

- Breakout Strategy
- Fade Strategy
- Breakout Up/Fade Strategy
- Breakout Down/Fade Strategy

Note: The number of contracts should be specified in the Setting Order Quantity field on Chart Trading Panel. Setting the number of contracts in Trade Bar will not affect Place Order option.

Bracket

Bracket Exit Strategy orders on the chart Bracket Exit

Bracket in MultiCharts is a One-Cancel-Other (OCO) order group, with one limit order and one stop order. This exit strategy is a one-click combo of the stop loss and profit target. If one of these orders is filled, the other one will be cancelled by MultiCharts. Targets placed separately from stop losses, provide more flexibility, but they also come with the responsibility of cancelling orders no longer needed.



	1,364.50	133	1	X
	1,364.25	126		
	1,364.00	1.3K		
	1,363.75	639		
103	(1)1,363.50			
194	1,363.25			
270	1,363.00		1	X
324	1,362.75			

Appearance

Bracket Strategy is displayed as green and maroon markers on the chart connected to the order price label on the price scale with a dotted line and as green and maroon markers in the DOM window.

For the **chart window**, Connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, Default Bracket Strategy order markers color can be modified in Format Colors menu.

Note: When Bracket Strategy is auto attached to an order and **has not been triggered yet**, inactive orders are indicated as semi-transparent.

Applying Bracket Exit Strategy

Apply Bracket Exit Strategy to an active order or open position by one of the following methods:

- Drag-and-drop the Bracket icon  to an active order or open position **on the chart**; or:
- Drag-and-drop the Bracket icon  to an active order or open position on the **DOM window**; or:
- Right-click on the active order or open position on the chart to see the shortcut menu, select **Attach Exit Strategy** and click **Bracket**.
- Right-click on the active order or open position on the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Bracket**.
- Right-click on the Bracket icon  in the **Exit Strategy** menu to see the shortcut menu and check **Apply To Open Position**.

Bracket Parameters

To modify default Bracket Parameters:

1. Right-click the Bracket icon  in the **Exit Strategy** menu to see the shortcut menu.
2. Click **Edit...**
3. Modify *profit target* and *stop loss* values in **Profit Target** and **Stop Loss** boxes.

Profit target and stop loss levels can be both set as price levels or offsets. Click the **Price Level** button or the **Offset** button to switch between entry modes.

Offset values can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Time In Force** field (see Time in Force section) and **Stop Loss** type buttons.

Stop Loss type buttons allow to choose the type of the Stop Loss order: *Stop Market* or *Stop Limit* with adjustable Bracket offset.

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Bracket Exit Strategy to orders by one of the following methods:

- Right-click the Bracket icon  in the Exit Strategy menu to see the shortcut menu, then check Auto Attach to Orders; or:
- Double-click the Bracket icon in the Exit Strategy menu; or:

- Enable Auto Attach to Orders feature in the Place Strategy window when applying the strategy.

Note: When Bracket exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in **Exit Strategy** menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, **no** Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click **Auto Apply**.

Saving as Template

1. Open **Strategy Parameters** window by one of the following methods:

- Right-click the Bracket icon  in the **Exit Strategy** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Bracket parameters.
 3. Click **Save**
 4. Choose the **Bracket Template** icon .
 5. Enter **Bracket Template** name.

6. Click **OK**

Breakeven

Breakeven

Breakeven is a conservative exit strategy for exiting the market without losing any money (counting your transaction costs). If a long position is held, then the strategy will place a sell stop; and vice versa, if a short position is held, then it will place a buy stop. Define the profit needed to trigger this order, and once it triggers it will become active. If the price is reached, then the order will be executed.



Appearance

Breakeven Exit Strategy is displayed as yellow marker on the chart connected to the order price label on the price scale with a dotted line and as yellow marker in the DOM window.

For the **chart window**, connecting line length can be modified in Format Chart Trading menu.



For the **DOM window**, default Breakeven Exit Strategy order marker color can be modified in Format Colors menu.

Note: When Breakeven Strategy is auto attached to an order and **has not been triggered yet**, inactive orders are indicated as semi-transparent.

Applying Breakeven Exit Strategy

- Drag-and-drop the Breakeven icon  to an active order or open position **on the chart**; or:
- Drag-and-drop the Breakeven icon  to an active order or open position **in the DOM window**; or:
- Right-click on the active order or open position on the chart to see the shortcut menu, select **Attach Exit Strategy** and click **Breakeven**.
- Right-click on the active order or open position in the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Breakeven**.
- Right-click on the Breakeven icon  in the Exit Strategy menu to see the shortcut menu and check **Apply To Open Position**.

Breakeven Strategy Parameters

To modify default Breakeven Parameters:

1. Right-click the Breakeven icon  in the Exit Strategy menu to see the shortcut menu.
2. Click **Edit...**
3. Modify activate at profit and transaction costs values in **Activate at Profit** and **Transaction Costs** boxes.

Activate at Profit level defines the profit level needed to trigger breakeven. It may be set in ticks or percent.

Transaction costs level defines the level of the breakeven order taking into account the transaction costs/commission that should be paid in order to exit the market without losing any money. **Transaction Costs** level can be set in ticks or percent.

To change level indication type, click the **Tick/Percent** button.

Click **More parameters >>** to show **Time In Force** box (see Time in Force section) and **Stop Loss** type buttons.

Stop Loss type buttons allow to choose the type of the Stop Loss order: **Stop Market** or **Stop Limit** with adjustable offset.

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Breakeven Exit Strategy to orders by one of the following methods:

- Right-click the Breakeven icon  in the Exit Strategy menu to see the shortcut menu, then check **Auto Attach to Orders**; or:
- Double-click the Breakeven icon  in the Exit Strategy menu; or:
- Enable **Auto Attach to Orders** feature in the Place Strategy window when applying the strategy.

Note: When Breakeven exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in Exit Strategy menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, **no** Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click **Auto Apply**.

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:

- Right-click the Breakeven icon  in the Exit Strategy menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Breakeven Parameters.
 3. Click **Save**.
 4. Choose the **Breakeven Template** icon .
 5. Enter Breakeven Template name.
 6. Click **OK**.

Breakout Down/Fade Strategy

Breakout Down/Fade Strategy

This strategy is a combination of the breakout and fade strategies defined above, and it is used when the trader expects the price will go down. This strategy will place a sell stop order below current price and sell limit above current price. The breakout can be activated if it happens, but also catch the fade if the price rises.



Appearance

Breakout down/fade strategy orders are displayed as dark cyan markers on the chart connected to the order price labels on the price scale with a dotted line and as dark cyan markers in the DOM window.

For the **chart window**, default Breakout down /fade strategy order



Breakout Strategy in the DOM window markers color and connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Breakout down /fade strategy order markers color can be modified in Format Colors menu.

Creating Breakout Down/Fade Strategy orders

Create Breakout down /fade strategy orders by one of the following methods:

- Drag-and-drop the Breakout Down/Fade Strategy icon  **to the chart**; or:
- Drag-and-drop the Breakout Down/Fade Strategy icon  **to the DOM window**; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Breakout Down/Fade Strategy**; or:

- Right-click at the desired price level on the **DOM window** on the **Sell** or **Buy** columns to see the shortcut menu, select **Place Strategy** and then click **Breakout Down/Fade Strategy**; or:

- Right-click the Breakout Down/Fade Strategy icon  in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.

- Double-click the Breakout Up/Fade Strategy icon  in the **Place Order** menu.

Breakout Down/Fade Strategy Parameters

To modify default Breakout Down/Fade strategy parameters:

1. Right-click the Breakout Down/Fade Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify Breakdown and Upper limit levels in **Upper Limit At** and **Breakdown At** boxes.

Breakdown and **Upper limit** levels are *interrelated* with price offsets. You may modify either level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Breakout Down/Fade Strategy

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Breakout Down/Fade strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default **Breakout Down/Fade** parameters.
3. Click **Save**.
4. Choose the **Breakout Down/Fade Template** icon.
5. Enter Fade template name.
6. Click **OK**.

Breakout

A breakout is usually defined as a sudden and significant price movement through the support and resistance levels, usually followed by large trading volume and increased volatility. A breakout trader will buy if the price goes up through the resistance level and sell if the price goes down through the support level, assuming that the motion will continue.

The Breakout Strategy will place two stop orders at the prices (distance) specified, in order to catch the breakout when it happens. A buy stop order will be placed above the current price and a sell stop order below the current price.



Breakout Strategy on the chart



Breakout Strategy in the DOM window

Appearance

Breakout Strategy orders are displayed as medium purple markers on the chart connected to the order price labels on the price scale with a dotted line and as medium purple markers in the DOM window.

For the **chart window**, default Breakout Strategy order marker color and connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Breakout Strategy order marker color can be modified in Format Colors menu.

Breakout Strategy

Creating Breakout Strategy orders

Create Breakout Strategy orders by one of the following methods:

- Drag-and-drop the Breakout Strategy icon  to the **chart**; or:
- Drag-and-drop the Breakout Strategy icon  to the DOM window; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Breakout Strategy**; or:
- Right-click at the desired price level on the DOM window on the **Sell** or **Buy** columns to see the shortcut menu, select **Place Strategy** and then click **Breakout Strategy**; or:
- Right-click the Breakout Strategy icon  in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.
- Double-click the Breakout Strategy icon  in the **Place Order** menu.

Breakout Strategy Parameters

To modify default Breakout Strategy parameters:

1. Right-click the Breakout Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify breakout and breakdown values in **Breakout At** and **Breakdown At** boxes.

Breakout/Breakdown levels are *interrelated* with price offsets. You may modify either **Breakout/Breakdown** level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated in ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:

- Right-click the Breakout Strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:

- Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Breakout parameters.
 3. Click **Save**.

4. Choose the **Breakout Template** icon  .
5. Enter Breakout template name.
6. Click **OK**.

Breakout Up/Fade Strategy

Breakout UP/Fade Strategy

This strategy is a combination of the breakout and fade strategies defined above, and it is used when the trader expects the price will go up. This strategy will place a buy stop above the current price and a buy limit order below the current price. The breakout can be activated if it happens, but also catch the fade if the price falls.

Appearance

Breakout Up/Fade Strategy orders are displayed as sienna markers on the chart connected to the order price labels on the price scale with a dotted line and as sienna markers in the DOM window. For the **chart window**, default Breakout up/fade strategy order

Breakout Strategy on the chart markers color and connecting lines length can be modified in Format Chart Trading menu.

For the **DOM window**, default Breakout up/fade strategy order markers color can be modified in Format Colors menu.



Breakout Strategy on the chart

X	1	1,364.00	1.3K
		1,363.75	759
		1,363.50	800
	96	(3)1,363.25	
	238	1,363.00	
X	1	225	1,362.75
		313	1,362.50

Creating Breakout Up/Fade Strategy orders

To create Breakout up/fade strategy orders:

- Drag-and-drop the Breakout Up/Fade Strategy icon  to the chart; or:
- Drag-and-drop the Breakout Up/Fade Strategy icon  to the DOM window; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Breakout Up/Fade Strategy**; or:
- Right-click at the desired price level on the DOM window on the **Sell** or **Buy** columns to see the shortcut menu, select **Place Strategy** and then click **Breakout Up/Fade Strategy**; or:
- Right-click the Breakout Up/Fade Strategy icon  in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.
- Double-click the Breakout Up/Fade Strategy icon  in the **Place Order** menu.

Breakout up/fade Strategy Parameters

To modify default Breakout up/fade strategy parameters:

1. Right-click the Breakout Up/Fade Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify **Breakout** and **Lower limit** values in **Breakout At** and **Lower Limit At** boxes.

Breakout and **lower limit** levels are *interrelated* with price offsets. You may modify either level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Breakout Up/Fade Strategy

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Breakout Up/Fade strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default **Breakout Up/Fade** parameters.
3. Click **Save**.
4. Choose the **Breakout Up/Fade Template** icon.
5. Enter Fade template name.
6. Click **OK**.

Fade Strategy

Fading is usually defined as trading against the trend, a 'mirror-image' of the breakout. If the market goes up, fading traders will sell, hoping that the price will go down. Similarly, fading traders will buy if the price goes down.

The Fade Strategy will place two limit orders at the prices (distance) specified, so fading can start when the price moves. A buy limit order will be placed below the current price and a sell limit order above the current price.



		1,364.25	144		
		1,364.00	257	1	X
		1,363.75	759		
		1,363.50	810		
		(1) 1,363.25	29		
	228	1,363.00			
X	1	219	1,362.75		
	315	1,362.50			

Appearance

Fade Strategy orders are displayed as olive drab markers on the chart connected to the order price labels on the price scale with a dotted line. Fade Strategy in the DOM window and as olive drab markers in the DOM window.

For the **chart window**, default Fade Strategy order marker color and connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Fade Strategy order marker color can be modified in Format Colors menu.

Creating Fade Strategy orders

Create Fade strategy orders by one of the following methods:

- Drag-and-drop the Fade Strategy icon  to the **chart**; or:
- Drag-and-drop the Fade Strategy icon  to the **DOM window**; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Fade Strategy**; or:
- Right-click at the desired price level on the **DOM window** on the **Sell** or **Buy** columns to see the shortcut menu, select **Place Strategy** and then click **Fade Strategy**; or:
- Right-click the Fade Strategy icon  in the **Place Order** menu to see the shortcut menu and click **Apply Strategy**.
- Double-click the Fade Strategy icon  in the **Place Order** menu.

Fade Strategy Parameters

To modify default Fade strategy parameters:

1. Right-click the Fade Strategy icon  in the **Place Order** menu to see the shortcut menu.
2. Click **Edit**.
3. Modify upper and lower limits values in **Upper Limit At** and **Lower Limit At** boxes.

Upper and lower limits levels are interrelated with price offsets. You may modify either level or the price offset.

Click the **Price Level** button or the **Price Offset** button to switch between entry modes.

Price offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Qty** and **Time In Force** fields (for more info see Setting Order Quantity and Time in Force sections).

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Fade Strategy icon  in the **Place Order** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Fade parameters.
3. Click **Save**.
4. Choose the **Fade Template** icon.
5. Enter Fade template name.
6. Click **OK**

Limit Order

A Limit Order will buy or sell a set number of shares at a specified price or better.

Appearance

Limit Order is displayed as lime marker on the chart connected to the order price label on the price scale with a dotted line and as lime marker in the **DOM window**.

For the **chart window**, default Limit Order marker color and connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Limit Order marker color can be modified in Format Colors menu.




		1,363.75	180	
		1,363.50	LMT 898	1
	(6)	1,363.25	180	
	57	1,363.00		
	318	1,362.75		
x	1	LMT 246	1,362.50	
	304	1,362.25		

Limit Orders in the DOM window

Creating Limit Order

Create Limit Order by one of the following methods:

- Drag-and-drop the Limit Order icon  to the **chart**; or:



- Drag-and-drop the Limit Order icon  to the desired price level in **Sell** or **Buy** columns of the **DOM window**; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Buy / Sell Limit...**; or:
- Right-click at the desired price level on the **DOM window** on the **Sell** or **Buy** columns to see the shortcut menu, select **Buy / Sell Limit...**; or:



- Right-click the Limit Order icon  in the **Place Order** menu to see the shortcut menu and click **Apply Strategy (Buy Limit order at Bid price will be created)**.



- Double-click the Limit Order icon  in the **Place Order** menu (**Buy Limit order at Bid price will be created**).

Limit Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in **Time In Force** field (see Setting Time in Force) When placing **Limit** order the **Place Order confirmation** window appears.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation window**.

Note: When Require Order confirmation option is disabled no confirmation window will appear.

Master Strategy

The Master Exit Strategy is a multi-level strategy where all components interact closely with one another. Multiple bracket levels, trailing stops, breakevens, and all levels may be set so they are constantly synced with one another. It's an essential tool for scaling-in and scaling-out of positions and for pyramiding positions.

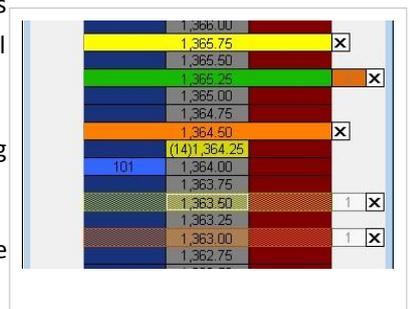


Appearance

The appearance of the Master Strategy in the DOM window and on the chart depends on the selected type of orders to be used in it. Master Strategy can include visual markers of the Bracket, Breakeven and Trailing Stop strategies.

For the **chart window**, connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Breakeven Exit Strategy order marker color can be modified in Format Colors menu.



Note: When Master Strategy is auto attached to an order and **has not been triggered yet**, inactive orders are indicated as semi-transparent.

Applying Master Strategy

- Drag-and-drop the Master Strategy icon  to an active order or open position **on the chart**; or:
- Drag-and-drop the Master Strategy icon  to an active order or open position on the **DOM window**;
or:
- Right-click on the active order or open position **on the chart** to see the shortcut menu, select Attach Exit Strategy and click Master Strategy.
- Right-click on the active order or open position in the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Master Strategy**.
- Right-click on the Master Strategy icon  in the Exit Strategy menu to see the shortcut menu and check **Apply To Open Position**.

Master Strategy Parameters

To modify default Master Strategy Parameters:

1. Right-click the Master Strategy icon  in the Exit Strategy menu to see the shortcut menu.
2. Click **Edit...**
3. Set the desirable Number of Levels in the **Number of Levels** box. Master strategy allows using up to **4** levels.
4. Modify profit target and stop loss values for each level in **Profit Target** and **Stop Loss** boxes.

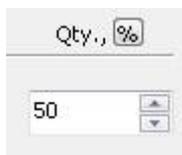
Click the **Price Level** button or the **Offset** button to switch between entry modes.

Offset values can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

For each master strategy level the strategy type can be selected:

Master Strategy

- Check **Breakeven** check box (see Breakeven Strategy) to apply this strategy type to a particular level.
- Check **Trailing Stop** check box (see Trailing Stop Strategy) to apply this strategy type to a particular level. • If both these types are unchecked, the Master Strategy level will work as a **Bracket Strategy** (see Bracket Strategy).



Contracts quantity can be set in percents of total contracts or directly in numbers of contracts. To change quantity type, click on the **Qty** button.

Click **More parameters >>** to show **Time In Force** box (see Time in Force section) and **Stop Loss** type buttons.

Stop Loss type buttons allow to choose the type of the Stop Loss order: **Stop Market** or **Stop Limit** with adjustable offset.

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Master Strategy to orders by one of the following methods:

- Right-click the Master Strategy icon  in the Exit Strategy menu to see the shortcut menu, then check **Auto Attach to Orders**; or:
- Double-click the Master Strategy icon  in the Exit Strategy menu; or:
- Enable **Auto Attach to Orders** feature in the Place Strategy window when applying the strategy.

Note: When Master Strategy exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in Exit Strategy menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, **no** Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click Auto **Apply**.

Saving as Template

To save the parameters as a template:

1. Open Strategy Parameters window by one of the following methods:

- Right-click the Master Strategy icon  in the Exit Strategy menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the Place Strategy window when applying the strategy.
2. Modify default Master Strategy Parameters.
 3. Click 'Save'.
 4. Choose Master Strategy Template icon.
 5. Enter Master Strategy Template name.
 6. Click **OK**.

Profit Target

A profit target is a limit order placed ahead of time to define how much profit must be attained before the position is closed and the profit is realized (i.e. contracts either bought or sold to reduce or close the position).

Appearance

Profit Target Strategy is displayed as green marker on the chart connected to the order price label on the price scale with a dotted line and as green marker in the DOM window.

For the **chart window**, Connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Profit Target order marker color can be modified in Format Colors menu.

Note: When Profit Target is auto attached to an order and **has not been triggered yet**, inactive orders are indicated as semi-transparent.

Applying Profit Target Exit Strategy

Apply Profit Target Exit Strategy to an active order or open position by one of the following methods:

- Drag-and-drop the Profit Target icon  to an active order or open position **on the chart**; or:
- Drag-and-drop the Profit Target icon  to an active order or open position on the **DOM window**; or:
- Right-click on the active order or open position **on the chart** to see the shortcut menu, select **Attach Exit Strategy** and click **Profit Target**.
- Right-click on the active order or open position on the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Profit Target**.
- Right-click on the Profit Target icon  in the **Exit Strategy** menu to see the shortcut menu and check **Apply To Open Position**.



	1,364.75	136	
	1,364.50	133	1 X
	1,364.25	127	
	1,364.00	134	
	1,363.75	633	
98	(1),363.50		
201	1,363.25		

Profit Target order in the DOM window

Profit Target Parameters

To modify default Profit Target Parameters:

1. Right-click the Profit Target icon  in the **Exit Strategy** menu to see the shortcut menu.
2. Click **Edit...**
3. Modify amount of profit in the **Amount of Profit** box.

Amount of Profit can be set as a fixed price or an offset indicated as ticks or %.

- To set the Profit Target at a fixed price level:
 1. Click the **N/A** button  to activate the price input field (if it is unavailable);
 2. Enter the price for a Profit Target order;
 - Click the **Save** button to save the settings.
- To set the amount of Profit at a fixed offset:
 1. Click the **N/A** button  to activate the offset input field (if it is unavailable);
 2. Click the **Tick/Percent** button  to select the offset type;
 3. Enter the offset value;
 4. Click the **Save** button to save the settings.

Note: In real-time trading Profit target values are based on the average entry price provided by the broker ((execution price + commission) / position size). Some brokers may not include the commission. If the price does not conform to the minimum price variation Profit Target value is rounded up.

Click **More Parameters >>** to show **Time In Force** field (for more info see Time in Force section).

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Profit Target Exit Strategy to orders by one of the following methods:

- Right-click the Profit Target icon  in the **Exit Strategy** menu to see the shortcut menu, the **Auto Attach to Orders**; or:
- Double-click the Profit Target icon  in the **Exit Strategy** menu; or:
- Enable **Auto Attach to Orders** feature in the **Place Strategy** window when applying the strategy.

Note: When Profit Target exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in **Exit Strategy** menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, **no** Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click **Auto Apply**.

Saving as Template

To save the parameters as a template:

1. Open **Strategy Parameters** window by one of the following methods:
 - Right-click the Profit Target icon  in the **Exit Strategy** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default **Profit Target** parameters.
3. Click **Save**
4. Choose the Profit Target Template icon .
5. Enter Profit Target Template name.
6. Click **OK**.

Stop Limit Order

Stop Limit Order combines the features of stop order with those of a limit order. A stop-limit order will buy or sell a set number of shares at a specified price (or better) after a given stop price has been reached. Once the stop price is reached, the stop-limit order becomes a limit order to buy (or sell) at the limit price or better.

Appearance

For the **chart window**, default Stop Limit Order marker color and connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Stop Limit Order marker color can be modified in Format Colors menu.



X	1	STL	1,364.00	263
			1,363.75	739
			1,363.50	890
		(1)	1,363.25	186
	70		1,363.00	
	317		1,362.75	STL
	244		1,362.50	

Stop Limit Orders in the DOM window

Creating Stop Limit Order

Create Stop Limit order by one of the following methods:

- Drag-and-drop the Stop Limit Order icon  to the **chart**; or:
- Drag-and-drop the Stop Limit order icon  to the **DOM window**; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Buy / Sell Stop Limit...**; or:
- Right-click at the desired price level on the **DOM window** on the **Sell** or **Buy** columns to see the shortcut menu, select **Buy / Sell Stop Limit...**; or:

- Right-click the Stop Limit order icon  in **Place Order** menu to see the shortcut menu and click **Apply Strategy** (Buy Stop Limit order at Ask price will be created).

- Double-click the Stop Limit Order icon  in the **Place Order** menu (Buy Stop Limit order at Ask price will be created).

Note: Chart is context-sensitive and allows creating Buy or Sell orders depending on the price level at which you click on the chart. If you right-click above current price level, Buy Stop Limit option will be available in the shortcut menu. If you right-click below current price level, Sell Stop Limit option will be available in the shortcut menu. Right-clicking on the current price level makes both Buy Stop Limit and Sell Stop Limit options available.

Stop Limit Order

Stop Limit Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in Time In Force field (see Setting Time in Force)

When placing **Stop Limit** order the **Place Order confirmation** window appears allowing to modify *Limit price*.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation** window

Note: When Require Order confirmation option is disabled no confirmation window will appear and **Limit Price** will be based on **Stop Limit Offset** set in Format Chart Trading menu. **Stop Limit offset** value is set to 1 tick by default.

Modification of Stop Limit Order offset

To modify Stop Limit offset on the chart:

1. Open Format Chart Trading window by one of the following methods:
 - Right-click on the chart to see the shortcut menu and then click Format Chart Trading; or:
 - Right-click on the Chart Trading panel to see the shortcut menu, and then click Format Chart Trading; or:
 - Select Format in the main menu and click Chart Trading....
2. Select the **Common Settings** tab.
3. Modify the offset in the **Stop Limit Offset** box.

4. Click **OK** to save changes.

To modify Stop Limit offset in the DOM window:

1. Open Format Chart Trading window by one of the following methods:
 - Right-click anywhere on the **DOM window** *except* for Buy, Price & Sell columns and control elements to see the shortcut menu and check Require Order Confirmation check box; or:
 - When **Require Order Confirmation** check box is checked, you may customize Stop Limit offset in confirmation window when placing the Stop Limit Order on the chart.
2. Customize the offset in the **Stop Limit Offset** box.
3. Click **OK** to save changes.

Stop Loss

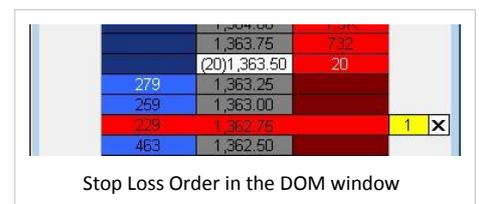
Stop order specifies a price at which to buy or sell. It is called a Stop Loss because it is used to define how much loss is tolerable before a position will be exited. When the specified price is reached the order becomes a market order, and the broker executes the order.



Stop Loss Order on the chart

Appearance

Stop Loss Strategy is displayed as maroon marker on the chart connected to the order price label on the price scale with a dotted line and as maroon marker in the DOM window.



Stop Loss Order in the DOM window

For the **chart window**, Connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Stop Loss order marker color can be modified in Format Colors menu.

Note: When Stop Loss is auto attached to an order and **has not been triggered yet**, inactive orders are indicated as semi-transparent.

Applying Stop Loss Exit Strategy

Apply Stop Loss Exit Strategy to an active order or open position by one of the following methods:

1. Drag-and-drop the Stop Loss icon  to an active order or open position **on the chart**; or:
2. Drag-and-drop the Stop Loss icon  to an active order or open position on the **DOM window**; or:
3. Right-click on the active order or open position **on the chart** to see the shortcut menu, select **Attach Exit Strategy** and click **Stop Loss**; or:
4. Right-click on the active order or open position in the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Stop Loss**; or
5. Right-click on the Stop Loss icon  in the **Exit Strategy** menu to see the shortcut menu and check **Apply To Open Position**.

Stop Loss Parameters

To modify default Stop Loss Parameters:

1. Right-click the Stop Loss icon  in **Exit Strategy** menu to see the shortcut menu.
2. Click **Edit...**
3. Modify amount of loss in the **Amount of Loss** box.

Amount of Loss can be set as a fixed price or an offset indicated as ticks or %.

- To set the Stop Loss at a fixed price level:
 1. Click the **N/A** button  to activate the price input field (if it is unavailable);
 2. Enter the price for a Stop Loss order;
- Click the **Save** button to save the settings.
- To set the amount of Stop Loss at a fixed offset:

Stop Loss

1. Click the **N/A** button  to activate the offset input field (if it is unavailable);
2. Click the **Tick/Percent** button  to select the offset type;
3. Enter the offset value;
4. Click the **Save** button to save the settings.

Note: In real-time trading Stop loss values are based on the average entry price provided by the broker ((execution price + commission) / position size). Some brokers may not include the commission. If the price does not conform to the minimum price variation Stop loss value is rounded down.

Click **More Parameters >>** to show **Time In Force** field (for more info see Time in Force section).

Stop Loss Type buttons allow choosing the type of the Stop Loss order: **Stop Market** or **Stop Limit** with adjustable offset.

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Stop Loss Exit Strategy to orders by one of the following methods:

- Right-click the Stop Loss icon  in the **Exit Strategy** menu to see the shortcut menu, then check **Auto Attach to Orders**; or:
- Double-click the Stop Loss icon  in the **Exit Strategy menu**; or:
- Enable **Auto Attach to Orders** feature in the **Place Strategy** window when applying the strategy.

Note: When Stop Loss exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in **Exit Strategy** menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, **no** Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click **Auto Apply**.

Saving as Template

1. Open **Strategy Parameters** window by one of the following methods:

- Right-click the Stop Loss icon  in the **Exit Strategy** menu to see the shortcut menu, then click **Save as Template**; or:
 - Click on the **Save as Template** button in the **Place Strategy** window when applying the strategy.
2. Modify default Stop Loss parameters.
 3. Click **Save**
 4. Choose the **Stop Loss Template** icon .
 5. Enter **Stop Loss Template** name.
 6. Click **OK**

Stop Order

Stop Order

A Stop Order will buy or sell a security when its price surpasses a particular level defined by the trader, thus ensuring a greater probability of achieving a predetermined entry or exit price. Stop order becomes a market order when the price reaches the predefined level.

Appearance

Stop Order is displayed as sienna marker on the chart connected to the order price label on the price scale with a dotted line and as sienna marker in the DOM window.

For the chart window, default Stop Order marker color and connecting line length can be modified in Format Chart Trading menu.

For the DOM window, default Stop Order marker color can be modified in Format Colors menu.



		1,364.00	253	
		1,363.75	726	
X	1	STP	1,363.50	897
			1,363.25	189
	55	(B)	1,363.00	
	305		1,362.75	STP
	243		1,362.50	
				1 X

Stop Orders in the DOM window

Creating a Stop Order

Create Stop Order by one of the following methods:

- Drag-and-drop the Stop Order icon  to the **chart**; or:



- Drag-and-drop the Stop Order icon to the desired price level in **Sell** or **Buy** columns of the **DOM window**; or:
- Right-click at the desired price level in **Sell** or **Buy** columns of the **DOM window** to see the shortcut menu, then select **Buy / Sell Stop ...**; or:
- Right-click at the desired price level **on the chart** to see the shortcut menu, select **Place Order** and then click **Buy / Sell Stop...**; or:



- Right-click the Stop Order icon in the **Place Order** menu to see the shortcut menu and click **Apply Strategy (Buy Stop order at Ask price will be created)**.



- Double-click the Stop Order icon in the **Place Order** menu (**Buy Stop order at Ask price will be created**).

Note: Chart is context-sensitive and allows creating Buy or Sell orders depending on the price level at which you click on the chart. If you right-click above current price level, Buy Stop option will be available in the shortcut menu. If you right-click below current price level, Sell Stop option will be available in the shortcut menu. Right-clicking on the current price level makes both Buy Stop and Sell Stop options available.

Stop Order Parameters

Order Size is defined by **Qty** field (see Setting Order Quantity).

Time In Force (TIF) is defined in **Time In Force** field (see Setting Time in Force) When placing Stop order the **Place Order** confirmation window appears.

Click **Yes** to create the order or **Cancel** to abort the operation.

Check the **Do not ask me again** check box to disable **Place Order confirmation** window.

Note: When Require Order confirmation option is disabled no confirmation window will appear.

Trailing Stop

A trailing stop is a 'smart' stop order that recognizes that losing only a certain % of money is acceptable, and a hard price level isn't always appropriate. A trailing stop will effectively follow the current position's profit, and it will execute if the price goes in the opposite direction. However, if the trailing stop is set too tight, in a volatile market a position can be closed before it really is desirable.



Trailing Stop Exit Strategy on the chart



Trailing Stop Exit Strategy in the DOM window

Appearance

Trailing Stop Strategy is displayed as orange marker on the chart connected to the order price label on the price scale with a dotted line and as orange marker in the DOM window.

For the **chart window**, connecting line length can be modified in Format Chart Trading menu.

For the **DOM window**, default Trailing Stop Exit Strategy order marker color can be modified in Format Colors menu.

Note: When Trailing Stop is auto attached to an order and has not been triggered yet, inactive orders are indicated as semi-transparent.

Applying Trailing Stop Exit Strategy

- Drag-and-drop the Trailing Stop icon  to an active order or open position **on the chart**; or:
- Drag-and-drop the Trailing Stop icon  to an active order or open position on the **DOM window**; or:
- Right-click on the active order or open position on the chart to see the shortcut menu, select **Attach Exit Strategy** and click **Trailing Stop**.
- Right-click on the active order or open position on the **DOM window** to see the shortcut menu, select **Attach Exit Strategy** and click **Trailing Stop**.
- Right-click on the Trailing Stop icon  in the Exit Strategy menu to see the shortcut menu and check **Apply To Open Position**. Trailing Stop

Trailing Stop Exit Strategy Parameters

To modify default Trailing Stop Parameters:

1. Right-click the Trailing Stop Strategy icon  in Exit Strategy menu to see the shortcut menu.
2. Click **Edit...**
3. Set the desirable *Number of Levels* and amounts of *profit* and *stop loss* in the **Number of Level box**.
4. Modify amounts of profit and stop loss values for each level in **Amount of Profit and Stop Loss** boxes.

Trailing Stop Strategy may contain up to 5 levels.

Amount of **Profit** and **Stop Loss** offsets can be indicated as ticks or %. To change indication type, click the **Tick/Percent** button.

Click **More Parameters >>** to show **Time In Force** box (see Time in Force section) and **Stop Loss** type buttons.

To save custom parameters, click **Save**.

Auto Attach

Auto Attach Trailing Stop Exit Strategy to orders by one of the following methods:

- Right-click the Trailing Stop icon  in the Exit Strategy menu to see the shortcut menu, then check **Auto Attach to Orders**; or:
- Double-click the Trailing Stop icon  in the Exit Strategy menu; or:
- Enable **Auto Attach to Orders** feature in the Place Strategy window when applying the strategy.

Note: When Trailing Stop exit strategy is auto attached, custom parameters will be used.

When one or several Exit Strategies auto attached, the **Pause/Auto Apply** button with the number of auto attached exit strategies in brackets will be shown in Exit Strategy menu. Click **Pause** to temporarily disable auto attach feature.

When auto attach feature is paused, no Exit Strategies will be automatically applied to an each new entry.

To re-enable auto attach feature click **Auto Apply**.

Saving as Template

To save the parameters as a template:

1. Open Strategy Parameters window by one of the following methods:

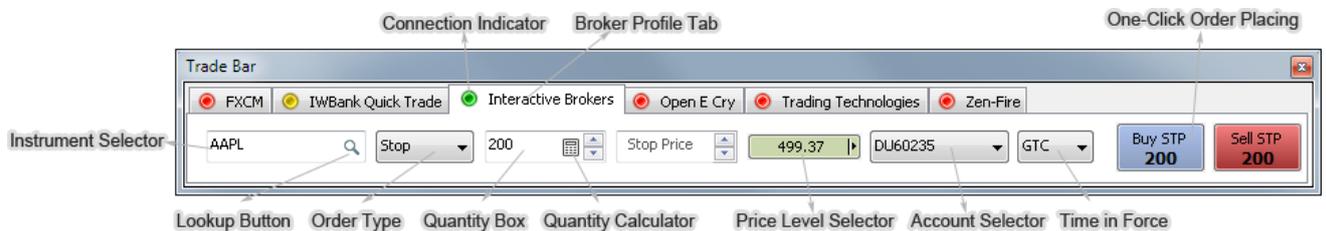
- Right-click the Trailing Stop icon  in the Exit Strategy menu to see the shortcut menu, then click **Save as Template**; or:
 - Click the **Save as Template** button in the Place Strategy window when applying the strategy.
2. Modify default Trailing Stop Parameters.
 3. Click **Save**.
 4. Choose the Trailing Stop template icon.
 5. Enter Trailing Stop Template name.
 6. Click **OK**.

Trade Bar

Trade Bar allows navigating between the brokers and trading with a few clicks. It contains a series of tabs that shows all the brokers for which you have created broker profiles, this allows you to click on the appropriate broker tab and execute trades to that broker.

Trade Bar also shows you which broker connections are currently active by showing a green light next to broker name and which ones are offline by showing a red light. It is a very convenient tool for placing orders without plotting charts or using DOM windows.

The main advantage is that you can see all of the currently connected brokers and place orders through several brokers at the same time. For example, you may have one broker for Forex and another one for futures, and place orders on both without logging in or out.



How to Show/Hide Trade Bar

Trade Bar can be shown or hidden. Show/hideTrade Bar by one of the following methods:

- Select View In the main menu and enable/disable Show Trade Bar feature; or
- Press Ctrl+Shift+T on the keyboard.

Alternatively you can click X on the Trade Bar to hide it.

Connecting / Disconnecting Broker Profile

To connect /disconnect the broker profile that you want to trade with, right-click the Broker Profile tab to see the shortcut menu and then click **Connect / Disconnect**.

Note: Broker Connection indicator  on the Trade Bar shows Broker Profile connection status which is not the same as Data Feed connection status. For more info see and

Selecting Account

Select the account number in the Account Selector box

Selecting Instrument

To select the instrument you want to trade with:

- Type in the symbol name into the Instrument Selector field and press Enter; or
- Click on the Lookup button  to select the necessary symbol from your database.

Note: To be able to trade the instrument from Trade Bar, you should add it to the Quote Manager (see Operating Symbol List).

Setting Order Quantity

Set order quantity by one of the following methods:

- Type in order quantity in Order Quantity box  on Trade Bar; or:
- Click the Trading Calculator button .

Calculator automatically increments the current trade size setting by one, e.g. if you had 1 in order quantity field, calculator would automatically make it 2.

You can adjust the number of contracts by pressing +1, +2, +5 etc. buttons. Zero button resets the number of contracts to zero.

Buttons on the left side of the calculator contain 6 last values.

You may set this number of contracts by pressing those buttons. To apply the modifications click OK, to cancel the modifications click Cancel.

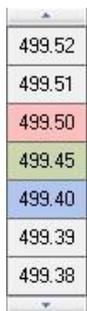
Price Level Selector

Price Level Selector  allows you to set the price of your order with just a few clicks. It also shows Bid and Ask prices without opening charts or DOM windows.

By default Price Level Selector shows an average price of bid and ask.

Click on the arrow at the right of Price Level Selector to see the range of prices. Three colored prices are: pink price at the top is ask, blue price at the bottom is bid, green price in the middle is an average price of bid and ask.

Scroll the list of prices up or down, using up and down arrows. To set the price for Limit, Stop or Stop-Limit order just click the price that you need.



499.52
499.51
499.50
499.45
499.40
499.39
499.38

Setting Time in Force

To set time in force of the order, use the Time in Force box on the Trade Bar.

- DAY – Good for one day
- GTC – Good 'Til Cancelled
- GTD – Good To Date
- IOC – Immediate or Cancel Order



GTC
DAY
GTC
GTD
IOC

One-click order placing

Market, stop, limit and stop limit orders can be sent directly from Trade Bar. Choose the order type in the Order Type box



When the order type is chosen, place an order by pressing the Buy Mkt / LMT / STP / STL  or the Sell

Mkt / LMT / STP / STL  buttons on the Trade Bar.

Order Size is defined by Qty field, Time In Force is defined by the value set in the Time In Force field (see Setting Order Quantity and Setting Time In Force).

If the market type of order is selected then the market price is chosen by default.

If the limit/stop/stop limit type of order is selected then limit/ stop/ stop limit price box comes up where you can set stop and limit prices.

Select the price by one of the following methods:

- Enter the price manually in the Limit/Stop/Stop Limit Price box; or:
- Choose the price using the Price selector

Note: if you do not see the order on the chart/in DOM window and/or do not see any change in your current position (in case of a market order), please check the Logs tab of Order and Order_and_Position_Tracker for error messages (e.g. Order Breaks Limits).

Strategy Trading

Auto Trading

Auto Trading Tab

Require Order Confirmation

It is possible to manually confirm or reject strategy order transmission to the order execution gateway. Order Confirmation is set in the **Auto Trading** tab of the **Strategy Properties** window: **Require Order Confirmation**

To learn more, see [Setting Up Auto Trading in MultiCharts](#)

With Order Confirmation selected, each time that one or more orders are generated, a **New Order** dialog box displaying the orders will appear in the center of the desktop. To confirm order transmission, click **Transmit Orders**, and to prevent order transmission, click **Ignore Orders**.

- When more than one order is displayed in the **New Order** dialog box, it is not possible to transmit one order and ignore another; either all of the orders are transmitted, or all of the orders are ignored.
- If neither **Transmit Orders** or **Ignore Orders** is selected before a new Market order or set of Market orders is generated, or before a new bar is started, the previous order or set of orders is ignored and not sent to the execution gateway.

Note: Order transmission confirmation affects only the transmission of the strategy order to the execution gateway; once the order has been transmitted, execution of the order by the broker is subject to market conditions.

Replace to Market Partially Filled Orders

If the option is turned on, the unfilled part of any partially filled price order remaining unfilled by the end of the current bar will be converted into market order and will be sent on open of next bar.

Note: If conditions for order generation are met on the next bar, the unfilled part of the order will not be converted into market one, it will be sent as original order but with number of remained unfilled contracts.

Show Order Execution Status

If the option is turned on, status of any order placed from this chart will be displayed in a pop-up alert message in the right bottom corner of the screen.

Note: Since MultiCharts 7.0 all standard alerts are disabled by default. It means that the checkbox won't work until the required flag in registry is on: **HKEY_CURRENT_USER\Software\TS**

Support\MultiCharts\TraderServer\GlobalMessenger>ShowAlerts.

Optimize Order Flow

If One-Cancel-Others group is emulated in MultiCharts the situation when more than one order is filled is possible. One Cancels Other (OCO) orders are the price orders sent in a group. When any of OCO orders is filled or partially filled, the system cancels or reduces size of other orders in this OCO-group.

Note: Reduce size functionality is supported by Interactive Brokers only: if one order in OCO group is partially filled, others are reduced in size proportionally.

There are two types of OCO-groups in MultiCharts: Native and Simulated. Native OCO-group is used when the broker's API supports OCO-groups. In this case all OCO orders are sent to the broker directly and unfilled OCO orders will be cancelled by the broker. (Native OCO-group is supported by Interactive Brokers, FXCM and IWBank).

Simulated OCO-group means that all OCO orders will be sent to the broker, but once one of them is filled, other orders from this OCO group will be cancelled by MultiCharts. In this case, when one of the OCO orders is filled, MultiCharts will send a command to cancel or reduce size of the second OCO order to the broker.

In case of high market volatility there may be not enough time to cancel the order and therefore both orders may be filled. Both orders also may be filled in the unlikely event of crash or connection loss.

Optimize Order Flow optimizes the process of sending orders to broker in order to avoid overfill.

Example 1: You are flat. Strategy generates 3 buy limit orders. Position limits are set to 2 entry orders in the same direction as the currently held position. MultiCharts will send to broker only 2 orders with the prices more likely to be filled depending on the current market price.

Example 2: The position at broker is +3. Strategy generates 3 sell limit orders and 3 sell stop orders. MultiCharts will send to broker 3 OCO group in the following sequence:

MC sends 1 stop order and 1 limit order with the prices most likely to be filled.

When one of these 2 orders is filled, the other is cancelled.

MC sends 1 stop order and 1 limit order with the prices most likely to be filled (among the rest 2 stops and 2 limits).

When one of these 2 orders is filled, the other is cancelled.

MC sends the last 2 orders: 1 stop order and 1 limit order.

When one of these 2 orders is filled, the other is cancelled.

Example 3: You are flat. Strategy generates 2 sell market orders: order #1 and order #2. Position limits are set to 2 entry orders in the same direction as the currently held position. MultiCharts will send to broker 1 sell market order with the size = size of the order #1 + size of the order#2

Cancel Market Orders as Obsolete If not Filled Within X Seconds

This option sets the timeout to cancel market orders not filled within specified time. If the option is not enabled any market order will be cancelled in 40 seconds automatically

Audio Alert

If the feature is turned on, it triggers a sound alert when an order placed by a strategy from the chart is filled. Once the box is checked, the File field becomes active and allows you to locate a sound file to play when an order is filled. To select the file, click the "...". It is possible to specify if the sound file should be played once or repeated by selecting one of these options below the File field. After the file is specified, one can try it by clicking the **Test** button.

Note: Only .wav file format is supported.

Unfilled Strategy Order Replacement

There 2 checkboxes in this sections. If they are checked:

1. The first one converts unexecuted limit/stop only entry orders to market orders after X seconds.
2. The second one converts unexecuted limit/stop only exit orders to market orders after X seconds.

Note: If one of the described boxes is checked, then an entry/exit order maybe converted into a market order almost at once simply because price hit its level, but the order queue is too long and the order fails to be filled.

Recalculate on Broker Events

The option can be used to force the strategy to be recalculated after a certain event during live trading. One can check the following events:

1. When Market Position Changes.
2. When an Order is Filled.

Note: Without enabled Intra-Bar Order Generation (IOG) the strategy will be recalculated, but it will place **no new** orders intrabar because of this setting.

Note 2: If strategy generates **both entry and exit orders at the same time when there is no market position opened**, only the entry order will be sent. When the market position is opened, the exit orders will be placed intrabar even without enabled Intra-Bar Order Generation (IOG), no matter if this feature is used or not.

Get Real-Time Data from

This option affects special orders monitoring and defining the moment to convert price orders into market ones.

Note: Special trailing stop order (*SetDollarTrailing*) will be calculated based on the distance from the entry price order to the real-time price. The entry price is defined by the broker. In MC this price is the real price of order fill. It doesn't depend on trading mode or the source of real time.

i_OpenEquity, *OpenPositionProfit* keywords are not affected by this option, they are always calculated from chart prices.

Example: Autotrading mode is Async. (see Understanding Automated Trade Execution) , Get Real-Time from Chart is selected, there is an executed entry and a trailing stop is sent. The trailing order price is calculated based on the entry order fill price at the broker and the real-time price from the chart.

1. From Broker: Asks and Bids are taken from the connected broker.
2. From Chart: depends on the BackTesting Mode:
 - a) If it is Classic Backtesting, then the data is taken from the data series 1;
 - b) If it is Extended Backtesting (see Precise Backtesting) , then the data is taken from the Ask and Bid subseries.

Mode Selection

Automated execution from chart can be turned on in one of two available modes: synchronous and asynchronous:

- In **synchronous** mode [**SA**] one can see the same open market position and active orders on the chart as at broker. All orders generated by historical calculation during are wiped out from the chart when auto execution is turned on. Executed order is displayed only if it has been executed at broker and the final status of the order has been received by MultiCharts. To use synchronous mode for auto trading select **Entries/Exits are based on the execution confirmation by the broker (Sync)**

Note: Chart market position and broker market position are in synch only if no more than one chart is auto trading without any manual orders on a particular symbol connected a particular broker account, assuming that at

the moment the automation was turned the broker market position was flat or, if it was not flat at broker, assigned manually on start of auto trading in MC to match it (see Assign the Initial Market Position at the Broker Settings). If more than 1 chart is auto trading in [SA] mode and/or manual trading is used as the same time on the same symbol at broker, chart can easily get out of synch. To learn more, see Trading from Multiple Charts on One Instrument.

- In **asynchronous** mode **[AA]** the strategy on the chart starts auto trading based on the historically calculated orders and open position, displaying all generated by the script orders on chart even if an order was not executed at broker. In AA strategy on chart acts separately from broker.

To use asynchronous mode for auto trading select **Entries/Exits are independent of the execution status at the broker (Async)**

Assign the Initial Market Position at the Broker Settings

Whenever automated trading is turned on a strategy starts working with a particular market position. Depending on the mode of auto trading the position can vary. In [SA] mode it is always flat on chart when you turn it on, but in [AA] mode it can be short, flat or long, depending on what was generated in backtesting (to learn more see Mode Selection). This option allows you to control the initial market position for the strategy to start calculation and order generation when you turn on automated trading.

Two options are available:

- Show the Assign the Initial Market Position at the Broker Dialogue

By default it this variant is selected. If market position on the chart is not flat and automation is turned on, than the Assign the Initial Market Position Dialogue window will pop up. There the direction of current market position, number of open contracts, average entry price and maximum position profit amount can be put.

Note: The **Show Always** box should be checked to get the Assign the Initial Market Position Dialogue every time the automation is enabled, no matter what is the strategy position by that moment. It is extremely important for [SA] mode, because it is always flat when automation is turned on in [SA].

- Do not Show the Assign the Initial Market Position at the Broker Dialogue When this variant is selected it opens two sub variants:

- **Assume the Initial Market Position at the Broker** is always **FLAT** when automation is enabled. **Example:**

Assume that according to your backtesting the current position is 1 contract long and your real broker position is 1 contract short. With this option you will have +1 on your chart, flat for auto trading engine within the software and -1 short at broker, when the automation is turned on.

- **Assume the Initial Market Position at the Broker is the SAME AS on the CHART when automation is** enabled.

Select Broker Plug-in

Each chart has a Broker Plug-in selected for it by default when it is created. Broker Plug-ins are similar to Broker Profiles. All information about broker plug-in configuration is stored in a corresponding Broker Profile.

Example: If the chart has data from Interactive Brokers, IB automated trading plug-in is selected by default for this chart. Connection settings are the same as in the corresponding Broker Profile (except for Default Account settings for FXCM Broker Profile).

If the instrument on the chart is provided by a data vendor that is not a broker, then the default plug-in for automated trading will be the same as the first existing Broker Profile on the Trade Bar.

Example: If the first Broker Profile on the Trade Bar is Dukascopy and a new chart is created using eSignal data feed, then Dukascopy will be selected by default as the broker plug-in for automated trading.

To change a Broker Plug-in for a particular chart, click the arrow in the Broker Plug-in field to get a dropdown list and choose the required one.

Settings of the Plug-in can be adjusted and become different from the corresponding Broker Profile settings. Not all the settings are the same, to learn more about particular Broker Plug-ins, see here [Broker Plug-ins](#).

Distinguished Features of Auto Trading

Auto Trading Status Switch

The Auto Trading Status Switch is a button on the chart that lets the user turn on auto trading quickly. The button will be labeled either **SA** or **AA** depending on whether the user selected synchronous auto trading or asynchronous auto trading mode for the strategy.

By default, the location of this button is on the top left corner of the chart. However, it is possible to move it to a different location by doing the following:

1. Select **Format** from the main menu.
2. Select **Window**.
3. In the **Format Window** dialogue box, select the **Status Line** tab.
4. In the list box, find **Automate Order Execution Switch**.
5. Click on **Move Up** or **Move Down** to change the order and the location. To remove it from the chart, deselect it.

Automatic Termination of Auto Trading

Auto Trading is stopped automatically if any of the following occurs:

- Any changes are made to the symbol chart or charts, to which the strategy is applied: chart reload, adding, removing, changing any of the symbols or their request parameters that result in the strategy's recalculation (not to be confused with receiving historical data).
- Any of the strategy signals are turned on or off
- Any of the strategy signal inputs are changed
- Any of the strategy signals are recompiled
- Any signals are removed from or added to the strategy
- Any strategy parameters are changed
- Any Auto Trading parameters are changed
- Connectivity between MultiCharts and the execution gateway has been lost and the disconnection time exceeded the specified acceptable level.

Pending Order Cancellation upon Termination of Auto Trading

If any orders are pending when Auto Trading is terminated, an **Auto Trading Warning – Do you want to cancel the order?** window appears.

A list of pending orders is displayed in the window.

To cancel some or all of the pending orders, select the check boxes to the left of the orders that are to be canceled, and clear the check boxes to the left of the orders that are not to be canceled, and click **Cancel Order(s)** .

To not cancel any of the pending orders, click **Do Not Cancel Order(s)** .

Closing of Open Positions upon Termination of Auto Trading

If any positions are open when Auto Trading is terminated, an **Auto Trading Warning – Do you want to close position?** window appears. A list of open positions is displayed in the window.

To close open positions, click **Close Position**.

To leave the positions open, click **Do Not Close Position**.

Auto Trading the Same Symbol from Multiple Charts

If the same symbol is traded from multiple charts, market position for each chart is tracked separately. For detailed review of such situation, please read [Trading from Multiple Charts on One Instrument](#).

Tracking Market Position from the Broker During Auto Trading

In auto trading, there can be a de-synchronization between the market position of the strategy and the actual filled position from the broker. The de-synchronization is usually caused by orders that are submitted but not filled. In such cases, the user may want to have the strategy adjust calculations based on the actual filled position instead of adjusting the calculations manually.

PowerLanguage keywords are available to track the actual filled positions during auto trading. The user can use these keywords to enable hands free trading.

The following keywords are available:

```
i_MarketPosition_at_Broker
```

```
i_MarketPosition_at_Broker_for_The_Strategy
```

```
MarketPosition_at_Broker
```

```
MarketPosition_at_Broker_for_The_Strategy
```

Auto Trading Status Messages

In automated trading, informational messages and order execution status messages are displayed in a pop-up window in the lower right-hand corner of the screen.

These messages can be generated by either MultiCharts or the execution gateway.

Order Execution messages only can be disabled in the **Auto Trading** tab of the **Strategy Properties** window.

Status Messages are displayed on following events:

- Connection to order execution gateway has been established

**09.04.2008 20:42:25**
Message: Interactive Brokers
Unable to connect to Interactive Brokers Trader Workstation.
Make sure that the Workstation software is running, and that the ActiveX and Socket Clients option is enabled.
Make sure that your firewall is not blocking communication between MultiCharts and the Workstation.

**09.04.2008 20:09:23**
Message: Interactive Brokers
Connection to the Interactive Brokers Trader Workstation has been established.

- Connection attempt to order execution gateway has not been successful

Note: If you get this message, please make sure that you have enabled API connections in your order execution gateway. Please refer to your gateway's documentation.

- Connection to order execution gateway has been lost

**09.04.2008 20:40:28**
Message: Interactive Brokers
Automated Order Execution mode has been turned off due to a settings change

**09.04.2008 20:40:28**
Message: Interactive Brokers
The connection to Interactive Brokers Trader Workstation has been lost.

Note: Once the connection to order execution gateway is restored, the **Connection to order execution gateway has been established** message will be displayed.

- An order has been Filled

**09.04.2008 20:36:32**
Message: Interactive Brokers
Symbol: EUR.USD
Order: Sell Market 1000
Filled: 1000 Remained: 0
Average filled price: 1.4486000

- An order has been Rejected

**09.04.2008 20:51:27**
Message: Interactive Brokers
Symbol: EUR.USD
Order: Buy Limit 25555
Status: Rejected

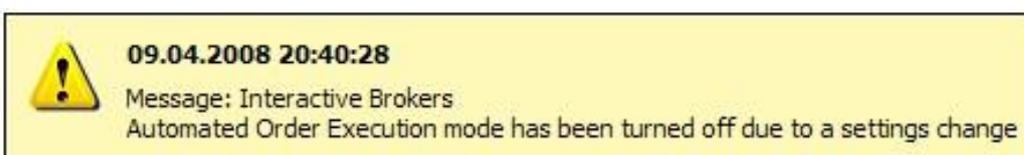
Note: An order can be rejected if the symbol was not set up correctly in QuoteManager. If this message appears, please verify that the Price Scale, Min Movement, and Big Point Value settings for the symbol are AutoTrading Status Messages

correct in QuoteManager. To learn more, see Setting Properties

- An order has been Canceled

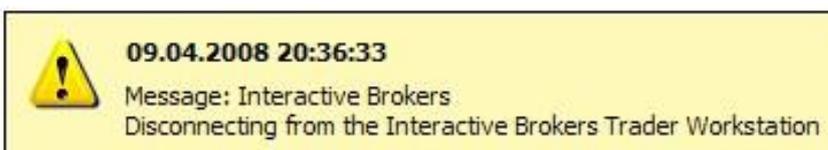


- Automated Order Execution has been turned off



Note: Please see Automatic Termination of Auto Trading for an explanation of when auto trading is automatically turned off.

- MultiCharts is disconnecting from the execution gateway



Note: This message is displayed when the last auto trading enabled chart is closed.

Getting Started with Auto Trading

Setting Up AutoTrading in MultiCharts

1. Determine the symbol to plot on a chart. In QuoteManager, verify that that the **Price Scale**, **Min Movement**, and **Big Point Value** settings for the symbol are correct. MultiCharts will have the correct settings for most of the symbols, but it is not possible to cover every symbol. If these settings are not correct, then the chart will not plot properly and orders may be rejected by the execution gateway. To learn more, see Setting Properties.
2. Create a chart of the necessary symbol. To learn more, see Creating Charts.
3. Add the necessary signals to the chart. To learn more, see Using Studies.
4. Set signal and strategy properties. To learn more, see Signal Settings and Strategy Properties.
5. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click **Properties** to open the **Strategy Properties** window.
6. Select the **Auto Trading** tab.
7. Select the **Require order confirmation** check box to have the opportunity to confirm or reject each order before it is sent to the execution gateway.
8. Select **Replace to Market Partially Filled Orders** check box to automatically convert the remaining portion of a partially filled limit order into a market order. For example, there is a sell limit order above the market price for 10 contracts. The trading price touches the sell limit price, but pulls back. Six of the contracts are filled and the remaining four contracts are unfilled. MultiCharts will convert the sell limit order for the remaining contracts to a sell market order at the close of the bar. (e.g., If the chart is plotting 5 minute bars, then the remaining portion of the limit order will be converted to a market order at the close of the 5 minute bar.)

Note: As long as there is a partially filled order, MultiCharts will always convert the order as described in this step regardless of any settings that are in **Unfilled Strategy Order Replacement**. If the order was not partially filled and **Unfilled Strategy Order Replacement** was turned on, then MultiCharts will convert the order according to the settings in **Unfilled Strategy Order Replacement**.

9. Select the **Show order execution status** check box to have a status message displayed every time an order is sent, canceled, filled, or rejected, or any other informational message is received from the gateway application.
10. Select the **Audio Alert** check box and choose a sound file to activate an audio alert every time a notification window appears.

Selecting an Alert Sound File:

1. Enter the path and name of the wave (.wav) sound file to be used into the **File** text box, or click the ... <http://www.multicharts.com/img/wiki/portfolio/ellipse.gif> button on the right side of the text box for **Open** dialog box, navigate to and select a sound file, and click the **Open** button.
2. Click the **Test** button to test the alert.
3. Select **Play Once** or **Repeat** for the alerts to be played once or repeatedly, respectively.

In the **Mode Selection** section, there are two options: synchronous and asynchronous mode.

1. Select **Entries/Exits are based on the execution confirmation by the broker (Sync)** option for synchronous auto trading mode (SA).
2. Select **Entries/Exits are independent of the execution confirmation by the broker (Async)** option in the **Mode Selection** section for Asynchronous auto trading mode (AA). If AA is selected, two group boxes become available.

Unfilled Strategy Order Replacement

This feature gives the strategy the ability to automatically convert limit orders or stop orders into market orders after a certain period of time.

- Select **Convert unexecuted limit or stop entry orders to market orders** check box to convert unexecuted limit or stop entry orders to market after a specified number of seconds. Enter the number of seconds in the list box.
- Select **Convert unexecuted limit or stop exit orders to market orders** check box to convert unexecuted limit or stop exit orders to market after a specified number of seconds. Enter the number of seconds in the list box.

Note: The waiting period for converting unfilled limit or stop orders to market orders must be less than the duration of a single bar.

Note: As long as the order is completely unfilled, MultiCharts will always convert the order as described in this step regardless of any settings under **Replace to Market Partially Filled Orders**. If there is a partially filled order and **Replace to Market Partially Filled Orders** was turned on, then MultiCharts will convert the order according to the settings in **Replace to Market Partially Filled Orders**.

Assign the Initial Market Position at the Broker Settings

To learn more, see Synchronization of Market Position in Auto Trading Mode.

- Select **Show the Assign the Initial Market Position at the Broker** radio button to display a dialog box to input the initial position and average entry price. This dialog box will appear when auto trading is turned on in the chart (see last step).
- Select **Do not show the Assign the Initial Market Position at the Broker** radio button to set the initial position here instead of in the dialog box. There are two choices:
 - Select **Assume the initial market position at the broker FLAT** to set the initial position to 0.
 - Select **Assume the initial market position at the broker the SAME AS on the CHART** to set the initial position to the position that's on the chart.

Note: Synchronization of the Market Position in the Auto Trading Mode may not work correctly if pyramiding was used in the strategy. It may also not work correctly if more than one active entry was generated on a chart when auto trading is launched. The reason for this limitation is that dialog window is set up to define only one active entry.

12. Choose the broker/gateway from the list box in the **Select Broker Plug-in** section.

13. Click **Settings**.

14. Input the settings for the appropriate broker/gateway.

1. Turn on auto trading. There are two ways to do this.

- Turning on auto trading on the chart
- SA Mode

1. Select the Auto Trading Status Switch and select **Automate Order Execution**.

2. Read the disclaimer and click **Yes**.

3. The button will turn green which means auto trading is on.

- AA Mode

1. Select the Auto Trading Status Switch and select **Automate Order Execution**.

2. Read the disclaimer and click **Yes**.

3. If **Show the Assign the Initial Market Position at the Broker dialogue** was selected earlier, then a dialog box will appear.

Enter the initial market position and average entry price. Then select **Yes**.

4. The button will turn green which means auto trading is on.

- Turning on auto trading from main menu

- SA Mode
 1. Select **Format** from the main menu.
 2. Select **Automate Order Execution**.
 3. Click on the switch and select **Automate Order Execution**.
 4. Read the disclaimer and click **Yes**.
 5. The button will turn green which means auto trading is on.
- AA Mode
 1. Select **Format** from the main menu.
 2. Select **Automate Order Execution**.
 3. Click on the switch and select **Automate Order Execution**.
 4. Read the disclaimer and click **Yes**.
 5. If **Show the Assign the Initial Market Position at the Broker dialog** was selected earlier, then the dialog box will appear. Input the initial market position and average entry price. Then select **Yes**.
 6. The button will turn green which means auto trading is on.
- 2. Turn off auto trading. There are two ways to do this.
 - Turning off auto trading from the chart
 1. Select the Auto Trading Status Switch and deselect **Automate Order Execution**.
 2. If there are orders pending, a dialog box will appear to ask if pending orders should be cancelled. Select **Cancel Orders** or **Do Not Cancel Orders** to proceed.
 3. If there are open positions, a dialog box will appear to ask if open positions should be closed. Select **Close Positions** or **Do Not Close Positions** to proceed.
 4. The Auto Trading Status Switch will turn gray which means auto trading is turned off.
 - Turning off auto trading from the main menu
 1. Select **Format** and deselect **Automate Order Execution**.
 2. If there are orders pending, a dialog box will appear to ask if pending orders should be cancelled. Select **Cancel Orders** or **Do Not Cancel Orders** to proceed.
 3. If there are open positions, a dialog box will appear to ask if open positions should be closed. Select **Close Positions** or **Do Not Close Positions** to proceed.
 4. The Auto Trading Status Switch will turn gray which means auto trading is turned off.

Note: If the workspace (or MultiCharts) was closed while auto trading mode was enabled on one or several charts, a dialogue asking you if you want to enable auto trading on these charts on restart. Click **Yes** to enable auto trading or **No** to open charts with auto trading disabled.

Trading on One Instrument From Multiple Charts

Since hedging is not supported in MultiCharts it is extremely important to understand all possible circumstances clearly to find your own correct way for auto trading from multiple charts on the same instrument. Below one can find useful information of how MultiCharts may behave in such situation.

General Understanding of the Situation

When a customer uses 2 or more separate charts and auto trade from these charts on the same instrument on the same account of the same broker, then the strategies that are used on the charts are not connected in anyway (if global variables are not used in their scripts to pass values between them). Even if MarketPosition_at_broker is used, it simply can get the real position from broker, but the actual position on chart may differ in this case. The following example can demonstrate a simple possible scenario of trading from 2 charts on the same instrument:

Example:

Market position at broker = 0. Market position on each chart = 0.

If your strategy on chart A generates a long entry, then the strategy on chart B doesn't know about it.

If the strategy on Chart B goes short, then chart A also doesn't know about it.

So the strategies continue trading individually on their charts, preserving their chart positions.

However, since the instrument at broker is the same, the market position at broker on the instrument is the net position of the orders sent from both charts. In this example the position will be flat after 1 order from each chart.

If the chart A sends short entry order after this, which is reverse in fact, then the broker receives 2 contracts order from MC at this moments: 1 contract is to close open +1 long position (chart A assumes that it is still open) that is in fact an order to sell 1 contract; and another 1 contract is to open -1 short position.

If we take into consideration that the real broker position by that moment is 0, then it gets sell 1 contract and sell another 1 contract, the actual position at broker for this instrument becomes -2.

The chart B still assumes that the position is -1 meanwhile. Similar scenario but in the opposite direction would have taken place if the reverse order had been sent from chart B.

The main thing one should keep in mind trading from different chart windows by script on the same broker instrument is that the real broker position in most cases does not match chart positions.

Strategy Synchronizers for Multiple Chart Windows and Manual Orders During Enabled Auto Execution

Among prebuilt standard signals in MultiCharts there are 2 scripts that were introduced specifically for comparing market positions at broker and on chart to synchronize one of them with the other if they differ. Essentially there are 2 possible expected scenarios when market positions can get out of synch (**only SA mode of autotrading is considered**):

1. Placing manual orders when a strategy is auto trading (the same broker, account, instrument)
2. Auto trading from one chart window when a strategy is auto trading on a different chart (the same broker, account, instrument)

Note: If AA mode of auto trading is used, one should not expect matching of chart position and broker position in any case.

Depending on the direction of synchronization, the strategy works in 2 different ways:

! From Broker To Strategy MP Synchronizer !

The strategy checks the market position at broker and then checks chart market position. If the positions are different, then the signal generates an emulated order with the number of contracts and average entry price as on broker end to match the broker position. The order is not sent to broker, so it affects only market position on chart for the strategy. It is displayed on the chart, but it is not shown in Order and Position Tracker window.

! From Strategy To Broker MP Synchronizer !

The strategy checks the market position at broker and then checks chart market position. If the positions are different, then the signal generates a market order with the number of contracts to match the chart position. The order is sent to broker, but the strategy itself is not aware of market position change, so it affects only broker position.

Note: !From Strategy To Broker MP Synchronizer! sends real orders to broker so you need to be careful when using it with a Live account.

Understanding Automated Trade Execution

After developing a strategy, the next step is to have the strategy actually send the orders. MultiCharts automated trading platform can automate the trading process and seamlessly integrate with the following order execution gateways: FXCM, Interactive Brokers, Patsystems, Rithmic Trader, Trading Technologies, and Zen-Fire.

Implementing automated trade execution involves using a program that serves as the order execution gateway on the computer and configuring the link between MultiCharts and the gateway program. Orders, generated by a trading strategy in MultiCharts, are passed to the gateway program for execution. The gateway program is also often used to provide the data feed for MultiCharts, although it is possible and sometimes advantageous to use a different data source.

Automated trading has two primary benefits: convenience and speed. The trader can let his strategy trade automatically without having to constantly monitor the strategy and enter the orders himself. Automated trading can also send the orders much quicker. Certain strategies require orders to be sent as quickly as possible without delay. With auto trading, the trader does not have to manually type the order into the gateway. The trades are submitted automatically and the chances of delay are reduced.

In addition to the obvious advantages of convenience, automated trading makes possible the execution of high-frequency trading strategies such as arbitrage, where the acceptable response time for placing orders is too quick for manual order entries.

Both, Synchronous and Asynchronous auto trading modes are deployed in MultiCharts. These two modes are profoundly different. Select the mode that better suits the strategy on the chart. Synchronous mode makes it possible to show a position on the chart that matches the actual filled position. However there is no guarantee that the order will get filled. When using the Asynchronous mode, every order generated on the chart is filled, although the actual execution time and price can be different from the time and price shown on the chart.

Synchronous Mode for Auto Trading

The synchronous auto trading mode (SA) is a mode where entry/exit arrows are plotted on the chart only after orders have been executed at the broker.

The synchronous auto trading mode ensures avoiding discrepancies between the market position on the chart and the market position at the broker. The following conditions must be met in order for the synchronous auto trading mode to work properly:

1. The same symbol can be traded from more than one chart but it may cause a market position conflict between the charts. For more information see Trading from Multiple Charts on One Instrument section.

2. The market position at the broker must be 0 at the time when auto trading is launched.
3. A trader must not trade the symbol directly through the broker's platform while trading the same symbol through MultiCharts platform.
4. At the moment of connection loss, the broker did not send notifications about complete order filling or cancellation.

Understanding Automated Trade Execution

Asynchronous Mode for Auto Trading

The asynchronous auto trading mode (AA) is the mode where entry/exit arrows are plotted on the chart when the price value meets the strategy conditions.

However, order execution by the broker is not guaranteed if the conversion of unexecuted limit/stop entry orders is disabled. It may cause a market position conflict between the chart and the broker.

Enabling order conversion guarantees that an order will be filled at the broker, although the executed order price value could be different from the order price plotted on the chart.

Comparison of Synchronous and Asynchronous Mode

Mode	Pro	Con
Synchronous	Only orders filled at the broker will be displayed on the chart with the exact same price value as at the broker.	Possibility of non-execution of entry orders at the broker such as Limit or Stop as a result of not meeting theoretical conditions set on the chart.
Asynchronous	An ability to convert entry orders such as Limit or Stop to Market orders if the defined price mark was not met within indicated amount of time. Market orders ensure that the order will be filled at the broker and market position will stay the same on the chart and the broker, but they don't guarantee the price at which the order will be executed.	If order converting is disabled, then orders that will be generated on the chart may never be filled at the broker. Thus, the actual position at the broker may not be the same as the position shown on the chart.

Strategy Properties

Strategy properties are separate from the individual signals' settings, affect all the signals applied to a chart, and regulate the actions of a group of signals as a whole.

Strategy properties include **Costs/Capitalization**, **Maximum bars back**, **Position limits**, and **Trade size** sections.

Setting Costs/Capitalization

Cost/Capitalization section includes Commission, Slippage, and Initial Capital and Interest Rate settings.

Strategy properties are set from the **Properties** tab of the **Strategy Properties** window:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.

3. Click **Properties** to open the **Strategy Properties** window.

2. Select the **Properties** tab.

3. In the **Costs/Capitalization** section, in the **Commission Rule** list, select the Commission Rule;

- Click **Manage Rules...** to change existing rules or add a new one. [Click here](#) to learn how to operate **Commission Rules Manager**.

4. In the **Slippage** box, enter the slippage;

- Click **per Trade** to select slippage per trade.

- Click **per Share/Contract** to select slippage per share/contract

5. In the **Initial Capital** box, enter the Initial Capital, and in the **Interest Rate** box, enter the interest rate to be used in the performance ratio calculations.

Setting Maximum Bars Back

All signals based on past data use a certain number of bars for their calculations. The number of bars is called **Maximum number of bars a study will reference**, or **Maximum Bars Back**.

Maximum Bars Back value is set from the **Properties** tab of the **Strategy Properties** window:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.

- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.

3. Click **Properties** to open the **Strategy Properties** window.

2. Select the **Properties** tab.

3. In the **Maximum Bars Back** box enter the maximum number of bars the signals will reference.

Note: The Maximum Bars Back value should not exceed the actual number of bars plotted on the chart.

Setting Position Limits

Position limits section allows setting the maximum number same-direction entry orders and maximum number of shares/contracts per position.

Strategy properties are set from the **Properties** tab of the **Strategy Properties** window:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.

3. Click **Properties** to open the **Strategy Properties** window.

2. Select the **Properties** tab.

3. In the **Position limits** section:

- To allow multiple same-direction entry orders (known as *pyramiding*):
 1. Check the **Allow up to N entry orders in the same direction as the currently held position** checkbox. Strategy Properties
 2. Enter the maximum number of entries into the **entry orders** box.
 3. Select **when the order is generated by a different entry order** to limit entries to one per each entry order, or select **regardless of the entry that generated the order** to allow multiple entries by the same entry order.
 - To prevent multiple same-direction entry orders, clear the **Allow up to N entry orders in the same direction as the currently held position** checkbox.
 4. In the **Maximum shares/contracts per position** box, enter the maximum position limit.

Setting Trade Size

Trade size settings set the size of each trade, either by the number shares/contracts or by currency value.

Trade size settings select the number shares/contracts or the currency value per each trade.

Please note that these settings are ignored if trade size is specified by the signal.

Trade size settings are set from the **Properties** tab of the **Strategy Properties** window:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.

- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click **Properties** to open the **Strategy Properties** window.

2. Select the **Properties** tab. 3. In the **Trade size** section:

- Select **Fixed Shares/Contracts** to specify the trade size by number of shares or contracts, and enter the number of shares or contracts into the box, or:
- Select **Dollars per Trade** to specify the trade size by currency value of the transaction, and enter the currency value in to the box.

To round the number of shares or contracts down to the nearest number of lots of certain size, enter the lot size in the **Round down to nearest shares/contracts** box.

To specify a minimum number of shares/contracts (lot) to trade, enter the lot size in the **Minimum number shares/contracts** box.

Note: if the amount entered in Dollars per Trade box is not sufficient to trade the minimum number of shares/contracts, the trade will not be executed.

To use current strategy properties settings for all new charts of, check the **Use as Default** check box.

Commission Rules

Commission settings in Strategy properties are designed to make backtesting and real-time simulation more realistic. They also affect strategy order prices calculation in auto trading (i.e. trailing stops, profit targets) as well as Strategy and Trading Performance Reports. Flexible commission settings templates are based on major broker commissions allowing to configure auto trading the way you each user needs.

Selecting Commission Rules

To access Commission Rules settings:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click **Properties** to open the **Strategy Properties** window.

2. Select the **Properties** tab.

In the **Costs/Capitalization** section, in the **Commission Rule** list, select the Commission Rule.

The default rule is **No Commission**. Other prebuilt Commission Rules are:

- **0.01\$ per Contract**. Commission is set to \$0.01 per contract regardless of the trade size.
- **0.01% per Contract**. Commission is set to 0.01% of trade value regardless of the trade size.
- **1\$ per Trade**. Commission is set to \$1 per trade regardless of the trade size.
- **Tiered per Month**. Commission is set to 0.01% of trade value if trade size is less than 9999, 0.005% of trade value if trade size is between 10000 and 99999, 0.0025% of trade value if trade size is equal or higher than 100000.

Every template parameter can be changed. In most cases default templates should be enough. However, if it is not the case custom templates can be created.

Commission Rules Manager

Click **Manage Rules** to open **Commission Rules Manager**.

To create a new rule:

1. Click **New Rule...**
2. Enter the rule name in the **Rule Name**.
3. Select volume measurement unit from the **Volume in** list.
4. Select the accumulation period from the **Reset Volume Counter** list.
 1. **After every trade**. Volume used for commission calculation is reset after every trade.
 2. **Monthly**. Volume used for commission calculation is reset at the end of the calendar month.
5. Select calculation mode from the **Calculate Commission** list.
 - **in real-time**. Commission is calculated in real-time, after every filled contract inside one order. If your order falls on two or more commission levels, commission will be calculated for each portion and then added.

Example 1:

After every trade is selected in the Reset Volume Counter list.

Commission rules:

0-99 \$0.05 per Contract

100-999 \$0.03 per Contract

>=1000 \$0.01 per Contract

The strategy buys 60 contracts - commission = $\$0.05 * 60 = \3

The strategy sells 150 contracts - commission = $\$0.05 * 99 + \$0.03 * 51 = \$6.48$

The strategy buys 3000 contracts - commission = $\$0.05 * 99 + \$0.03 * 900 + \$0.01 * 2001 = \51.96

Example 2:

Monthly is selected in the Reset Volume Counter list.

Commission rules:

0-99 \$0.05 per Contract

100-999 \$0.03 per Contract

≥ 1000 \$0.01 per Contract

First day

The strategy buys 60 contracts - commission = $\$0.05 * 60 = \3

The strategy sells 150 contracts - commission = $\$0.05 * 39 + \$0.03 * 111 = \$5.28$

The strategy buys 3000 contracts - commission = $\$0.03 * 789 + \$0.01 * 2211 = \$45.78$

First day ends: accumulated volume for the month = $60 + 150 + 3000 = 3210$

Second day

The strategy sells 100 contracts - commission = $\$0.01 * 100 = \1

...

First day of the next month: accumulated volume for the month = 0

The strategy sells 50 contracts - commission = $\$0.05 * 50 = \2.5

The strategy sells 50 contracts - commission = $\$0.05 * 49 + \$0.03 * 1 = \$2.48$

- **after every trade.** Commission is calculated after the entire order is processed. If your order falls on two or more commission levels, commission level corresponding to the entire order size will be applied.

Example 3:

After every trade is selected in the Reset Volume Counter list.

Commission rules:

>0 \$1 per Trade

≥ 100 \$1.25 per Trade

≥ 1000 \$1.5 per Trade

The strategy buys 60 contracts - commission = \$1

The strategy sells 150 contracts - commission = \$1.25

The strategy buys 3000 contracts - commission = \$1.5

Example 4:

Monthly is selected in the Reset Volume Counter list.

Commission rules:

>0 \$1 per Trade

>=100 \$0.75 per Trade

>=1000 \$0.5 per Trade

First day: accumulated volume for the month = 0

The strategy buys 10 contracts - accumulated volume = 10 - commission = \$1

The strategy sells 20 contracts - accumulated volume = 30 - commission = \$1

The strategy buys 100 contracts - accumulated volume = 130 - commission = \$0.75

The strategy buys 100 contracts - accumulated volume = 230 - commission = \$0.75

First day ends: accumulated volume for the month = 10 + 30 + 100 = 230

Second day

The strategy sells 100 contracts - accumulated volume = 330 - commission = \$0.75

...

First day of the next month: accumulated volume for the month = 0

The strategy sells 50 contracts - accumulated volume = 50 - commission = \$1

The strategy sells 50 contracts - accumulated volume = 100 - commission = \$0.75

- **once per day.** Commission is calculated based on the number of contracts traded from the first calendar day of the month till the end of the previous calendar day for all orders processed during the current day.

Note: **Once per day** option is available only when **Monthly** accumulation period is selected in the Calculate Commission list..

Example 5:

Commission rules:

>0 \$1 per Trade

>=100 \$0.75 per Trade

>=1000 \$0.5 per Trade

First day: accumulated volume for the month = 0

The strategy buys 10 contracts - accumulated volume = 0 - commission = \$1

The strategy sells 20 contracts - accumulated volume = 0 - commission = \$1

The strategy buys 100 contracts - accumulated volume = 0 - commission = \$1

The strategy buys 100 contracts - accumulated volume = 0 - commission = \$1

First day ends: accumulated volume for the month = 10 + 20 + 100 + 100 = 230

Second day: accumulated volume for the previous period = 230

The strategy sells 100 contracts - accumulated volume = 230 - level 2 - commission = \$0.75

...

First day of the next month: accumulated volume for the month = 0

The strategy sells 50 contracts - accumulated volume = 0 - level 1 - commission = \$1

The strategy sells 50 contracts - accumulated volume = 0 - level 1 - commission = \$1

Click **Add...** to add new **Fixed Commission Rule**

1. Enter the volume value into the **Volume** field.
2. Enter the commission value into the **Commission Value** field.
3. Select commission measurement unit from the list:
 - Cash per Contract;
 - Cash per Trade;
 - Percent of Trade Value;
 - (FX) Basis Points of Trade Value;
 - (FX) % % Basis Points of Trade Value.
4. Check the **Commission Limits** check box to enable commission maximum and minimum values.
 1. Check the **Min Value** check box, setup the minimum commission value and select **per Contract / per Trade** calculation mode.
 2. Check the **Max Value** check box, setup the maximum commission value and select **per Contract / per Trade** calculation mode.

Example 6: Commission rule is set to \$0.1 per contract. Min Value is set to \$1 per trade and Max Value is set to 5\$ per trade. If the strategy sells 5 contracts, the commission will be \$1. If the strategy buys 100 contracts, the commission will be \$5.

5. Click **OK** to save the **Fixed Commission Rule** or **Cancel** to cancel the operation.
6. To edit an existing Fixed Commission Rule select a rule with the mouse and click **Edit...'**.
7. To delete a Fixed Commission Rule select a rule with the mouse and click **Delete'**.
8. Click **OK** to save the rule or **Cancel** to cancel the operation.

Note: Trade means a filled order.

To modify an existing rule, select the rule by clicking it with the mouse and click **Edit**.

To clone an existing rule, select the rule by clicking it with the mouse click **Clone...**

To delete a rule, select the rule by clicking it with the mouse click **Delete**.

To save the changes and close **Commission Rules Manager** click **OK**

To exit **Commission Rules Manager** without saving any changes to the rules click **Cancel**.

Understanding Strategies

A strategy is a set of signals, applied to a chart.

Signals systematically specify market entry or exit points according to a set of trading rules implemented in the signals' algorithms, and can be viewed as the basic building blocks of strategies.

While signals can be based on the same formulas as indicators, signal calculations are substantially more complex and take in to account a far greater number of factors, such as trading costs, order generation priorities, and strategy performance measurements, that affect market entry and exit conditions. Signal algorithms utilize price action models and make use of backtesting concepts. Signal logic can make assumptions about price movement within bars that allow appropriate market entry and exit points to be determined when intra-bar data is not available. Signals compile strategy performance data and support backtesting and Automated Trade Execution.

Over 100 pre-built, customizable signals, covering the most popular trading concepts, are already included with the platform, and additional signals can be imported from a variety of sources.

Signals can be fully customized, or entirely new signals created, using PowerLanguage® scripting in **PowerLanguage Editor**. Strategies are constructed by simply applying a set of signals to a chart window, without the need to combine signal code manually.

To learn about applying signals to a chart, see [Using Studies](#)

To learn about signal settings, see [Signal Settings](#)

Market entry or exit points, specified by the signals, can be used to send orders electronically directly to the broker, fully automating the trading process.

To learn more, see [Automated Trade Execution](#)

Strategy Properties, separate from the individual signals' settings, regulate the actions of a group of signals as a whole.

An essential part of developing a trading strategy is Strategy Backtesting. To learn more, see [Backtesting](#)

Strategy Alerts

Alert is a visual or/and audio notification triggered when the market conditions meet the criteria specified in the signal. Audio and visual alerts can be enabled simultaneously.

Alerts can only be used with the signals containing Alert Triggering Conditions code. Most, but not all, signals contain alerts. To learn how to add alerts to signals' code refer to the PowerLanguage manual. A check for the alert triggering conditions is performed whenever one of the following events occurs:

- Workspace is opened
- Data series (symbol) is replaced with another data series (symbol)
- A bar is closed or a new tick is received

Enabling Alerts

Alerts can be enabled in the **Strategy Properties** window.

To enable alerts:

1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. Check the **Enable Alerts** check box to enable alerts; uncheck the box to disable the alerts.

Tip: To use these alert settings as the default for all signals, check **Use as Default** check box.

Alert Conditions Check

You can elect whether to check for Alert Triggering Conditions every time a new tick is received, or only at the close of each bar.

Alert Conditions Check can be set from the **Strategy Properties** window:

To enable alerts:

1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. In the **Alert Conditions Check** section click the **On Bar Close, Every Tick** or the **Once Per Bar** radio button, to select the alert triggering conditions to be checked at the close of each bar only, every time a new tick is received or every time a new tick is received once per bar only, respectively.

Tip: To use these alert settings as the default for all signals, check **Use as Default** check box.

Audio Alerts

A PC speaker beep or a sound file played by the PC's sound card can be set as the audio alert type.

Setting Beep Alert

Alerts can be enabled in the **Strategy Properties** window.

To enable alerts:

1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. In the **Audio Alert** section, check the **Audio Alert** check box to enable audio alerts; uncheck the box to disable the audio alerts.
4. Click the **Beep** radio button to set the PC speaker beep as the audio alert type.

Tip: To use these alert settings as the default for all signals, check **Use as Default** check box.

Setting Sound Alert

Alerts can be enabled in the **Strategy Properties** window.

To enable alerts:

1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. In the **Audio Alert** section, check the **Audio Alert** check box to enable audio alerts; uncheck the box to disable the audio alerts.
4. Click the **Sound** radio button to select a .wav sound file as the audio alert type.
5. Enter the path and name of the wave (.wav) sound file to be used into the **File** text box, or click the **...** button on the right side of the text box for **Open** dialog box, navigate to and select a sound file, and click the **Open** button.
6. Click the **Test** button to test the alert.
7. Click the **Play Once** or the **Repeat** radio button, for the alerts to be played once or repeatedly, respectively.

Tip: To use these alert settings as the default for all signals, check **Use as Default** check box.

Visual Alert

Alerts can be enabled in the **Strategy Properties** window.

To enable alerts:

1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. In the **Visual Alert** section, check the **Visual Alert** check box to enable visual alerts; uncheck the box to disable the visual alerts.
4. In the **Display Notify Window for** drop-down list box select the length of time that the alert notification window is to be displayed for.

Tip: To use these alert settings as the default for all signals, check **Use as Default** check box.

E-mail Alert

E-mail alerts can be sent when market conditions meet your defined criteria.

This feature can be used to stay informed about market conditions while away from the computer.

To add alert to signal:

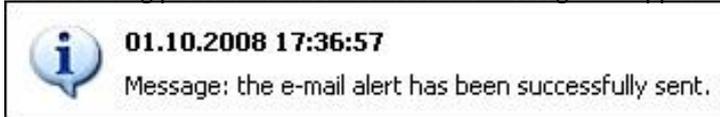
1. Make sure the signal's PowerLanguage code contains alert code so that alerts will be triggered.

Alerts can be enabled in the **Strategy Properties** window. To enable alerts:

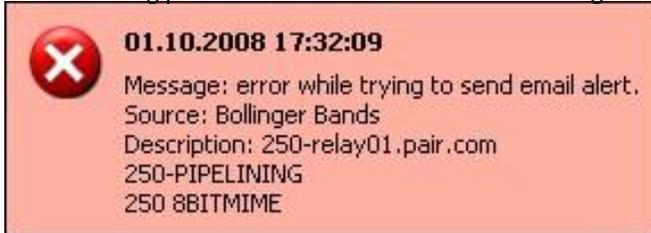
1. In the main MultiCharts menu select **Format** and click **Strategy properties**.
2. Select the **Alerts** tab.
3. Check **Enable Alerts** checkbox to enable alerts.
4. Check the **E-mail Alert** checkbox.
5. Press the **Settings** button. The **E-mail Alert** window will appear.
6. Enter the email addresses of the sender.
7. Enter the email address of the recipient. To send the email to multiple recipients, separate each email address with a semi-colon.
8. Enter the **SMTP Server Name or IP address**, and **Port** number into the textboxes. Please get this information from your email provider.
9. Check the SMTP Server authentication data checkbox if your SMTP server requires authentication to send emails. Enter the **User name** and **Password**.

10. Press the **Test** button to send a test email.

If the sending process has been successful a message will appear in the pop-up window



If the sending process has been unsuccessful a message will appear in the pop-up window:



11. Press **OK** to close the **E-mail Alert** window. Example of Email Alert Message:

Broker Plug-ins

CQG Broker Plug-in

To connect MultiCharts to CQG data feed, it is necessary to have their software installed on the computer. CQG has 2 programs that can be used for connection MultiCharts to CQG :

1. <http://www.cqg.com/Support/Getting-Started/CQGT.aspx>
2. <http://www.cqg.com/Products/CQG-API.aspx>

Note: CQG software and MultiCharts should not be launched simultaneously.

Open position Profit/Loss is provided through CQG API.

Unrealized Profit/Loss for the account is provided through CQG API.

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Note: If a stop order is adjusted manually or by your script to the price equal to current market price or better (guaranteed to be executed), the order won't be converted into market order. It will be rolled back.

Stop-Limit orders: if at the moment an order is sent its stop level is met, then it will be converted into market order.

Stop-Limit orders with stop and limit levels not overlapping each other are rejected by the broker.

When an orders is sent from MultiCharts to CQG broker to be executed on an expired contract, the broker will automatically redirect the order to the same symbol, but currently active contract.

CQG does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up CQG Broker Plug-in

In the **Properties CQG** window (see Managing Broker Profiles) enter the information provided by CQG:

1. Authority section.

Enter **Login** and **Password**.

Note: By default demo mode is NOT turned on. Check the CQGT demo box to turn it on. Demo mode is **required to be on** for demo accounts. If you have real account, the box is **required to be off**

2. Reconnection Settings section.

Configure timer to reconnect if connection to CQG is lost.

3. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available Time In Force order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **AON - All Or None; or:**

A condition used on a buy or sell order to instruct the broker to fill the order completely or not at all. Read more:

<http://www.investopedia.com/terms/a/aon.asp#ixzz22Dg5BBG7>

- **IOC (Immediate-or-Cancel)**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

Dukaskopy Broker Plug-in

The settings of Dukaskopy Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see Dukaskopy Broker Profile

FXCM Broker Plug-in

The settings of FXCM Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see FXCM Broker Profile

Interactive Brokers Broker Plug-in

The settings of Interactive Brokers Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see Interactive Brokers Broker Profile

IWBank Quick Trade Broker Plug-in

The settings of IWBank Quick Trade Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see IWBank Quick Trade Broker Profile

LMAX Broker Plug-in

The settings of LMAX Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see LMAX Broker Profile

MB Trading Broker Plug-in

To connect MultiCharts to MB Trading broker, it is necessary to have MB Trading software installed on the computer.

To download the latest version of MBT Desktop, follow the link: <http://www.mbtrading.com/mbtDesktop.aspx>.

To get latest version of MBT Desktop PRO, follow the link: <http://www.mbtrading.com/mbtDesktopPro.aspx> MB Trading software should be installed, but one can't use it simultaneously with MultiCharts.

Open position Profit/Loss is calculated in MultiCharts as it is not provided by MB Trading API.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

MB Trading does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up MB Trading Broker Plug-in

In the **Properties MB Trading** window (see Managing Broker Profiles) enter the information provided by MB Trading:

1. Authority section

Enter **Login** and **Password**.

2. Connection Settings section

Configure timer to reconnect if link to MB Trading is lost.

3. Default Order Settings section

It is possible to reset default order **Routes**.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Default order **Routes** can be reset in this section.

4. Unrealized Profit Calculation Mode section

Select one of the two modes to calculate unrealized profit: using Best Bid & Best Ask or Last Trade.

Open E Cry Broker Plug-in

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Note: If you manually drag Stop orders to the price equal to current market price or better (guaranteed to be executed), they won't be converted into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level is met, then it will be converted into market order.

Stop-Limit orders for FOREX are not supported by Open E Cry.

Stop-Limit orders with stop and limit levels not overlapping each other are rejected by the broker.

Trade size for FOREX: 1 contract = 1 lot (size of a lot depends on the type of account).

Price and volume adjustment for orders is not supported on FOREX instruments.

Open position Profit/Loss is calculated by Open E Cry broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by Open E Cry broker and displayed in MultiCharts.

Open E Cry supports Native One-Cancels-Others group, however, it is limited to only 2 orders with the same number of contracts. Therefore, MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Open E Cry Broker Profile

In the Properties Open E Cry window (see Managing Broker Profiles) enter the information provided by Open E Cry:

1. Authority section.

Enter **Login** and **Password**.

2. Connectivity section.

Check the **Server Name** and **Port** number.

The **Allow Remoting** box: if it is checked, it is possible to launch MultiCharts and Open E Cry software simultaneously. However it is recommended to leave it unchecked and run MultiCharts only when Open E Cry Software is closed.

3. Connection Settings section.

Configure timer to reconnect if the connection to Open E Cry is lost.

4. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of 4 available Time In Force order parameters:

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

Patsystems Broker Plug-in

The settings of Patsystems Broker Plug-in for auto trading are the same as settings of the corresponding Broker Profile.

For more details see Patsystems Broker Profile

Rithmic 01 Broker Plug-in

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by Rithmic broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by Rithmic broker and displayed in MultiCharts.

Rithmic does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Rithmic 01 Broker Profile

Rithmic Broker Profile is created when MultiCharts is installed.

In the **Properties Rithmic 01** window (see Managing Broker Profiles) enter the information provided by Rithmic:

1. Authority section.

Enter **Login** and **Password**.

SSL certificates path is set up by default.

2. Connectivity section.

Make sure that the selected deployment is **Rithmic 01**.

Don't adjust anything else in this section.

The **Reset** button nearby Deployment is to restore correct settings.

3. Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

4. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available Time In Force order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

Rithmic Local Sim Broker Plug-in

To connect Rithmic Local Sim Broker Profile it is necessary to have set up connection to Rithmic/Zen-Fire data feed in QuoteManager (see Built-in Data Sources)

Open position Profit/Loss is calculated in MultiCharts.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

Note: It is not possible to connect Rithmic Local Sim Broker Profile and Zen-Fire Local Sim Broker Profile simultaneously.

Setting up Rithmic Local Sim Broker Profile

In the **Manage Broker Profiles ...** window (see Managing Broker Profiles) click **New** and select **Rithmic Local Sim**. Rithmic Local Sim will be added to the list of Broker Profiles.

In the **Simulator Options** window:

1. Simulation Option section.

Specify range for **Communication Delay**. Milliseconds are used.

Specify range for **Execution Delay**. Milliseconds are used.

Specify **Initial Balance**.

Select **Execution method**.

2. Margin Requirements Calculation section. Select Margin calculation method.

3. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available Time In Force order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

The **Reset** button becomes active only when the profile is connected. Click **Reset** to reset the settings to default. New settings are applied only when the profile is reconnected.

Trading Technologies Broker Plug-in

Trading Technologies Broker Plug-in

FIX API is used for connection between MultiCharts and Trading Technologies.

Trading Technologies doesn't provide information on the list of accounts, equity and balance.

Entry Price is returned by the broker as Average Entry Price for day.

Market orders are converted into Limit ones on broker end.

Stop orders are converted into Stop-Limit ones. If at the moment an order is sent its stop level is met, then it will be rejected by the broker.

Stop-Limit orders with stop and limit levels not overlapping each other will be rejected by the broker. If at the moment an order is sent its stop level is met, then it will be rejected by the broker.

Open position Profit/Loss is calculated in MultiCharts as it is not provided by TT FIX API.

Unrealized Profit/Loss for the account is calculated in MultiCharts as it is not provided by TT FIX API.

There are also following broker limitations:

- There is price ceiling for stop orders. Any orders beyond this limit are rejected by broker.
- On some exchanges (for example: SGX), a stop order and stop prices of a stop-limit order cannot be modified.

This may influence auto trading.

- There are exchanges, which don't support stop orders.

Trading Technologies does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up Trading Technologies Broker Profile

In the **Properties Trading Technologies** window (see Managing Broker Profiles) enter the information provided by Trading Technologies

Connection settings tab

1. Order Connection Settings section.

Server IP, Password, Port number, SenderCompID and TargetCompID. 2. Price Connection Settings section.

Server IP, Password, Port number, SenderCompID and TargetCompID.

3. Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

Trading Accounts tab

1. Trading section.

Account number

Clearing Account number

FFT2 tag

Agent Account tag.

2. Unrealized Profit Calculation section

Select one of two modes to calculate unrealized profit: using Best Bid & Best Ask or Last Trade.

Trading Technologies Broker Plug-in

3. If the account requires enabling multiple gateways feature, check the **Use Multiple Exchange Gateway (Tag 18203)** box.

Order Settings tab

Time In field.

Select one of 4 available **Time In Force** order parameters

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

- **ATO (At the opening); or:**

An order specifying that a trade is to be executed at the opening of the market, otherwise it's canceled.

- **GTD (Good Till Date)**

Order is placed and it is active up to a specified date. Once GTD time-in-force parameter is selected, the **Good Till Date field** occurs to specify number of days for order to stay active. The inactive field nearby indicates the date.

ZenFire broker Plug-in

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by ZenFire broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by ZenFire broker and displayed in MultiCharts.

ZenFire does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Zen-Fire Broker Plug-in

Setting up Zen-Fire Broker Profile

In the **Properties Zen-Fire** window (see Managing Broker Profiles) enter the information provided by Zen-Fire

1. Authority section.

Enter **Login** and **Password**

SSL certificates path is configured by default.

2. Connectivity section

Make sure that the selected deployment is **Zen-Fire**

Don't adjust anything else in this section

The **Reset** button nearby Deployment is to restore correct settings.

3. Reconnection Settings section

Configure timer to reconnect if connection to Rithmic is lost.

4. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available **Time In Force** order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

ZenFire Local Sim Broker Plug-in

To connect Zen-Fire Local Sim Broker Profile it is necessary to have set up connection to Rithmic/Zen-Fire data feed in QuoteManager (see Built-in Data Sources)

It is not possible to connect Rithmic Local Sim Broker Profile and Zen-Fire Local Sim Broker Profile simultaneously.

Open position Profit/Loss is calculated in MultiCharts.

Unrealized Profit/Loss for the account is calculated in MultiCharts.

Setting up Zen-Fire Local Sim Broker Profile

In the **Manage Broker Profiles ...** window (see Managing Broker Profiles) click **New** and select **Zen-Fire Local Sim**. Zen-Fire Local Sim will be added to the list of Broker Profiles.

In the **Simulator Options** window:

1. Simulation Option section.

Specify range for **Communication Delay**. Milliseconds are used.

Specify range for **Execution Delay**. Milliseconds are used.

Specify **Initial Balance**.

Select **Execution method**.

2. Margin Requirements Calculation section. Select Margin calculation method.

3. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available Time In Force order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

The **Reset** button becomes active only when the profile is connected. Click **Reset** to reset the settings to default.

New settings are applied only when the profile is reconnected.

ZenFire/Rithmic Server Sim Broker Plug-in

ZenFire/Rithmic Server Sim Broker Plug-in

If MultiCharts sends a stop order with the price equal to current market price or better (guaranteed to be executed) it will be rejected by the broker. Therefore, MultiCharts converts such stop orders into market orders.

Stop-Limit orders: if at the moment an order is sent its stop level or both stop and limit levels are met, then it will be converted to limit order.

Buy Stop-Limit orders with Stop level higher than Limit level and Sell Stop-Limit orders with Stop level lower than Limit level are rejected by the broker.

Open position Profit/Loss is calculated by ZenFire/Rithmic broker and displayed in MultiCharts.

Unrealized Profit/Loss for the account is calculated by ZenFire/Rithmic broker and displayed in MultiCharts.

ZenFire does not support Native One-Cancels-Others group. In this case MultiCharts emulates OCO group on its end. Simulated OCO-group means that all OCO orders are sent to the broker, price is monitored by MultiCharts and once one of the orders is filled, other orders from this OCO group are cancelled by MultiCharts. When one of the OCO orders is filled, MultiCharts sends a command to cancel the second OCO order to the broker. Note that the second order may also be filled if price reaches its level before the cancellation is processed by the broker (see OCO-Orders Risk).

Setting up ZenFire Server Sim Broker Profile

Zen-Fire Broker Profile is created when MultiCharts is installed.

In the **Properties ZenFire/Rithmic Server Sim** window (see Managing Broker Profiles) enter the information provided by Zen-Fire/Rithmic.

1. Authority section

Enter **Login** and **Password**

SSL certificates path is set up by default.

2. Connectivity section

Make sure that the selected deployment is **Zen-Fire Server/Rithmic Sim** Do not change anything else in this section.

The Reset button nearby Deployment is to restore correct settings.

3. Reconnection Settings section

Configure timer to reconnect if connection to Zen-Fire/Rithmic is lost.

4. Default Order Settings section.

It is obligatory to specify an account in Account field to send orders to. Click Lookup button to get list of available accounts and select one of them.

Select one of the four available Time In Force order parameters.

- **DAY; or:**

Order is canceled if it does not execute by the close of the trading day. Unless otherwise specified, every order is a Day order.

- **FOK (Fill or Kill Orders); or:**

Specifying that the order must execute immediately and in its entirety, or be canceled.

- **GTC (Good-Till-Canceled); or:**

Order will continue to work within the system and in the marketplace until it executes or is canceled.

- **IOC (Immediate-or-Cancel); or:**

Any portion of an order that is not filled as soon as it becomes available in the market is canceled.

Backtesting vs Live Trading

Order and position Tracker

Order and Position Tracker provides detailed summary of orders, positions, and accounts across all brokers being used for trading. You can cancel or modify pending orders, or even flatten entire positions, directly from this window. All information can be sorted and filtered to see the details. Contents of Order and Position Tracker can also be exported into Excel for further analysis.

Open Order and Position Tracker Window by one of the following methods:

- In the main menu select File, then point to New and click Order and Position Tracker Window; or:
- Click on the Order and Position Tracker icon on the Main toolbar.

Accounts Tab

Accounts tab shows the following information:

- Profile – shows Broker Profile name;
- Account – shows the account number;
- Balance – shows balance of the account;
- Equity – shows equity of the account;
- Open P/L – shows open profit and loss of the account.
- Daily P/L - shows daily profit and loss of the account.

Broker	Account	Balance	Equity	Open P/L	Daily P/L
FXCM	+	+	+	+	-
Interactive Brokers	+	+	+	+	-
Patsystems	+	Calculated by MultiCharts	+	+	-
Trading Technologies	-	-	-	-	-
Open E Cry	+	+	+	+	-
Zen-Fire	+	+	+	+*	-
Rithmic	+	+	+	+	-
PFG Best	+	+	+	+**	-
MBTrading	+	-	Calculated by MultiCharts	Calculated by MultiCharts	+

- + - information received from broker API
- - - not available
- * Requested every second.
- ** Requested every 5 minutes and calculated by MC in-between.

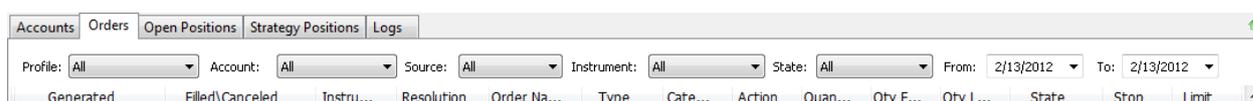
Orders Tab

Orders tab shows the orders generated by the strategy or created manually.

The following information is available:

- Generated – shows the time and date when the order was generated;
- Filled/Cancelled – shows the time when the order was filled or cancelled;
- Instrument – shows the instrument on which the order was placed;
- Resolution – shows the resolution of the instrument (if applicable);
- Order Name – shows the name of the order that was generated;
- Order Type – shows the type of the order that was generated;
- Order Category – shows the category of the order that was generated;
- Action – shows an action that was made (Sell or Buy);
- Quantity – shows the size of the order that was generated;
- Quantity Filled – shows the quantity of contracts filled;
- Quantity Left - shows the quantity of contracts left;
- State – shows the state of orders (sent, submitted, pre-cancelled, cancelled, partially filled, filled, rejected);
- Stop – shows the stop price at which the order was placed;
- Limit – shows the limit price at which the order was placed;
- Filled – shows the execution price at the broker;
- TIF – shows the Time In Force setting of the order;
- Profile – shows Broker Profile name;
- Account – shows the account number;
- Broker Order ID – shows the ID of the order at the broker;
- OCO ID – shows the ID of the One Cancel Other group;
- Strategy Name – shows the name of the strategy that has generated the order
- Workspace – shows the name of the workspace where the order was generated

The information in Orders tab can be filtered by Profile, Account, Source, Instrument, State and Date (From... To).



Order Modification

To cancel the order right-click on the order to see the shortcut menu and click Cancel Order.

To cancel all active orders for all symbols right-click on one of the orders to see the shortcut menu and click Cancel All Orders.

To cancel all active orders for the particular symbol right-click on one of the orders to see the shortcut menu and click Cancel All Orders for This Symbol.

To cancel all active orders and close all open positions right-click on one of the orders to see the shortcut menu and click Flatten Everything.

To change the price of an active order right-click on the order to see the shortcut menu and then click Change Stop Price /Change Limit Price.

To change the size of an active order right-click on the order to see the shortcut menu and then click Change Order Quantity.

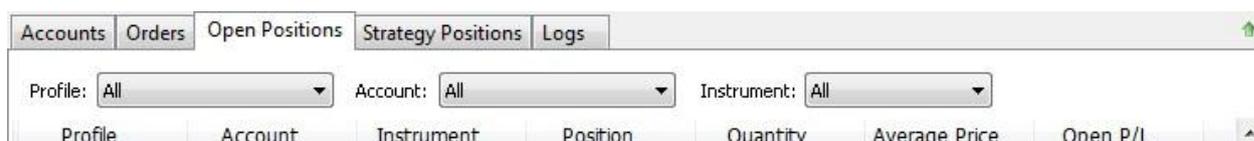
Open Positions Tab

Open Positions tab provides the information about the open positions.

The following information is available:

- Profile – where you can see the broker profile that is connected;
- Account – shows an account number that is used;
- Instrument – shows the instrument on which the position is open;
- Position – shows position that is currently open;
- Quantity – shows the size of the position in contracts;
- Average Price - average price of executed entry orders that have created this position;
- Open P/L – shows open profit and loss for this position;

The information in Open Positions tab can be filtered by Profile, Account, Source, Instrument.



Position Modification

To close a particular position right-click on the position to see the shortcut menu and click Close this “Instrument” position at Account #.

To cancel all active orders and close all open positions right-click on one of the orders to see the shortcut menu and click Flatten Everything.

Broker	Account	Instrument	Position	Quantity	Average Price	Open P/L
FXCM	+	+	+	+	+	+
Interactive Brokers	+	+	+	+	+	Calculated by MC
Patsystems	+	+	+	+	+	+
Trading Technologies	+	+	+	+	+	Calculated by MC
MBTrading	+	+	+	+	+	Calculated by MC
Open E Cry	+	+	+	+	+	+
Zen-Fire	+	+	+	+	+	+
Rithmic	+	+	+	+	+	+
PFG Best	+	+	+	+	+	+
MBTrading	+	+	+	+	+	Calculated by MC

- + - information received from broker API
- * Requested every second.
- ** Requested every 5 minutes and calculated by MC in-between.

Strategy Positions tab

Strategy positions tab shows the positions that were opened by your strategy as a result of automated trading.

Note: only orders that were generated by a strategy are showed in Strategy Positions tab. The orders that were placed manually or sent from another program are not showed.

After the position is closed the corresponding line in the Strategy Positions tab is removed.

The following information is available:

- Broker Position – shows a broker position for a particular instrument and account;
- Positions Match – shows you if the strategy position and position at broker are the same. True (position at broker matches the strategy position) or False (position at broker does not match the strategy position) status;
- Average Price – shows the average price of executed entry orders of the strategy at broker;
- Instrument – shows the instrument on which the order was placed;
- Resolution – shows the resolution of the chart where the strategy is applied;
- Strategy Open P/L – shows open profit and loss of the strategy;
- Profile – where you can see the broker profile that is connected;
- Strategy Name – shows the name of the strategy that has generated this position;
- Workspace – shows the name of the workspace with the chart where the strategy is applied is situated.

The information in Strategy Positions tab can be filtered by Instrument.



Positions History Tab

Positions History tab provides the information about the positions that were opened in the past.

The following information is available:

- Date/Time – shows the date and time when the position was opened;
- Profile – where you can see the broker profile that is connected;
- Account – shows an account number that is used;
- Instrument – shows the instrument on which the position is open;
- Position – shows position that is currently open;
- Quantity – shows the size of the position in contracts;
- Average Price - average price of executed entry orders that have created this position;
- Open P/L – shows open profit and loss for this position;

The information in Positions History tab can be filtered by Profile, Account, Source, Instrument and Date (From... To).

Note: We display all updates coming to MultiCharts from your broker. Unfortunately the updates of avg entry price and current market position come asynchronously from your broker. MultiCharts doesn't filter them, otherwise it can lose some information. Symbol Mapping can also affect number of the duplicated lines (depends on the number of lines with epey same instrument in Symbol Mapping window) in Position History tab.

Logs tab

Logs tab shows the information on the trading events and messages received from broker.

- Date/Time – shows the date and time of the event;
- Category – shows the category of the message;
- Profile – shows the broker profile that is connected;
- Strategy Name – shows the name of the strategy that has generated the order;

- **Message** – shows information on connecting/disconnecting broker profiles, placing/cancellation/execution/rejection of orders, warnings from brokers, error messages, and market position change.

The information in Logs tab can be filtered by Profile, Strategy, Instrument, Category (Information, Warning, Error) and Date (From... To).

Alerts Tab

Alerts tab shows the alerts generated by the scripts.

The following information is available:

- **Date/Time** – shows the date and time when the alert was triggered;
- **Study** - name of the study that generated the alert;
- **Price** - price level at which the alert was triggered
- **Message** - alert message.

The information in Alerts tab can be filtered by Profile and Date (From... To).

Managing columns

To show/hide a column, right-click on the column heading and check/ uncheck the column name check boxes.

To move one of the columns drag it to the left or right.

To change the alignment of a column, right-click on the column heading, point to Alignment and select the option that you need.

To be able to highlight rows by numbers right-click on the column heading and check the Show Row Selector check box.

To change the column width right-click on the column heading and click Fit to Text.

Exporting Data to Excel

To export data from the active tab in the main menu select File and click Export to Excel.

An Excel file will pop up automatically.

Note: the Excel file is not saved automatically. In order to store the information in Excel format you need to save the file in Excel.

Note: In order to export data to excel make sure that Microsoft Office 2003 and higher is installed on your machine (Visual Basic for Applications (VBA) must be supported).

Changing Themes of Order and Position

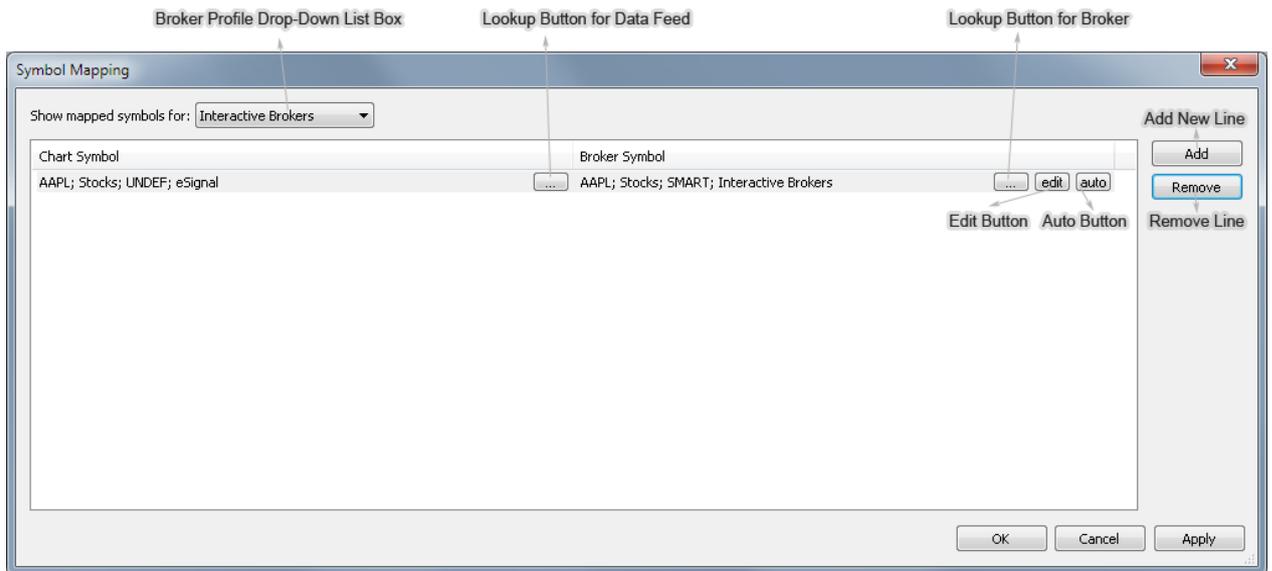
To change themes of Order and Position Tracker: click the View tab in the main menu of MultiCharts , point to Themes and choose one of the themes available in the list.

Currency

To select the currency to display values in the **Accounts** tab select **File** in the main menu, click **Preferences**, select the **Trading** tab and select the currency from the **Preferred Currency** list.

Symbol Mapping

Symbol Mapping is a universal symbol name translation tool between data feeds and brokers. Very often data feeds and brokers have different names for the same symbol and orders can get rejected because of incorrect symbol reference. Thanks to Symbol Mapping tool it is possible to use any combination of data feeds and brokers. It helps to route your order to the broker, and to receive order status.



How Symbol Mapping Works

Data Source = Broker

Symbol mapping is automatically correct if the data on chart comes from a data source that is your broker at the same time. Examples: IB, CQG, LMAX and so on. A mapping line is created in a broker profile when there is plotted chart, the chart trading panel is opened and a broker profile is connected. The important point is to add symbols through symbol lookup and not manually. If a symbol is added through symbol lookup, then it has all correct parameters, so this symbol on chart and the symbol at broker end will match. As the result, mapping is correct.

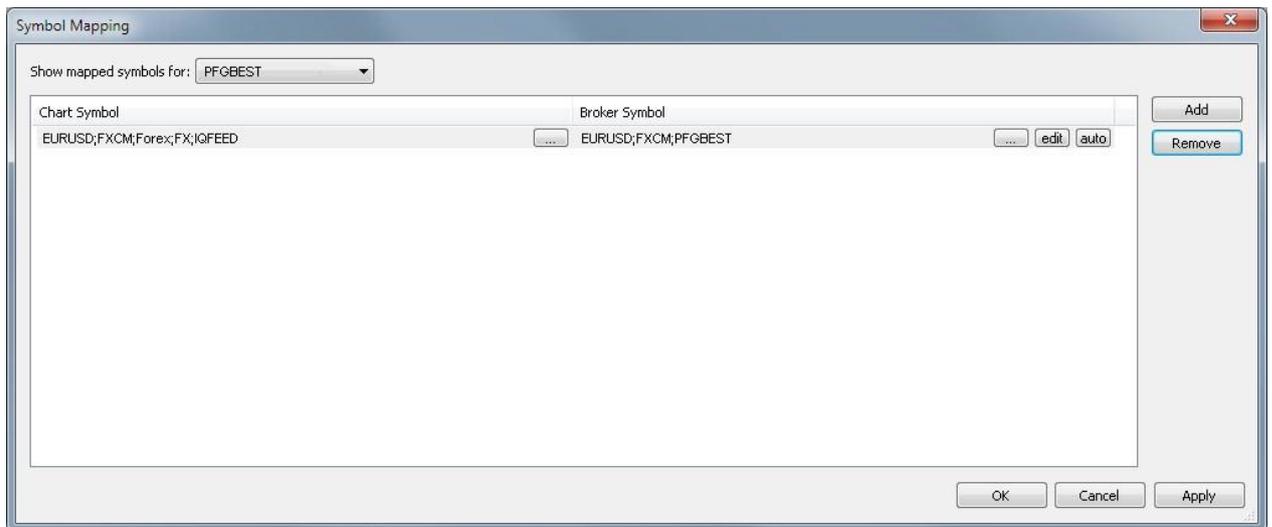
Data Source ≠ Broker

Symbol mapping is not automatically correct if the data on chart comes from a data source that is not your broker. It should be adjusted manually. Examples: IQFeed, eSignal, TradeStation on charts and IB, CQG, LMAX etc. as brokers. A mapping line is created in a broker profile when there is plotted chart, the chart trading panel is opened and a broker profile is connected. The important point is to add symbols through symbol lookup and not manually. If a symbol is added through symbol lookup, then it has all correct parameters, so this symbol on chart and the symbol

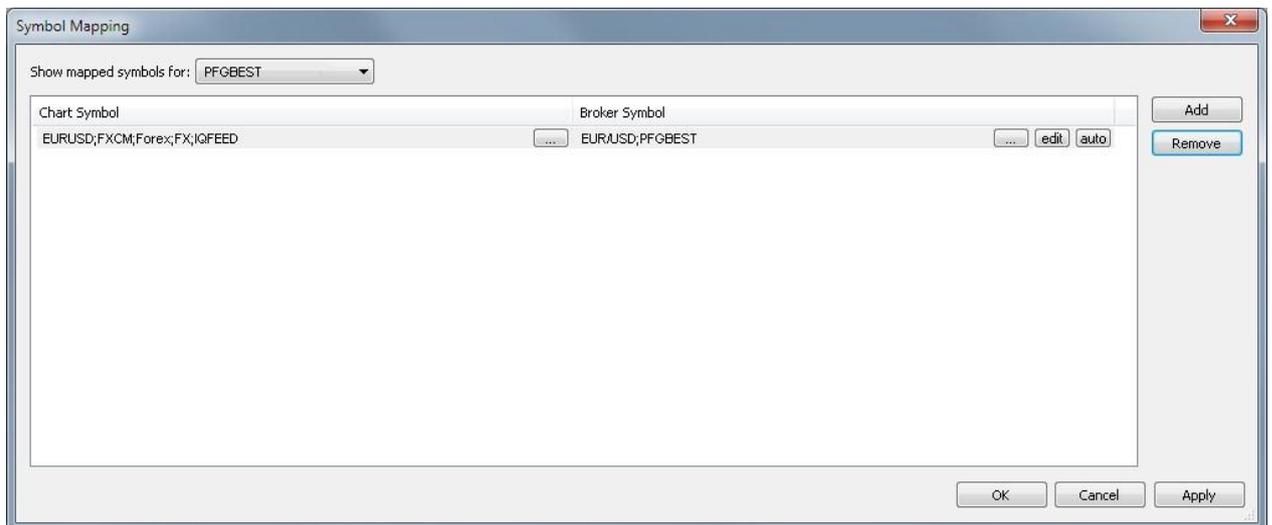
at broker end will match. As the result, mapping is correct.

Symbol Mapping Example #1

Chart Symbol is EURUSD.FXCM from IQFeed. The broker is PFGBest. Default Symbol Mapping is not correct: Broker Symbol name should be changed.

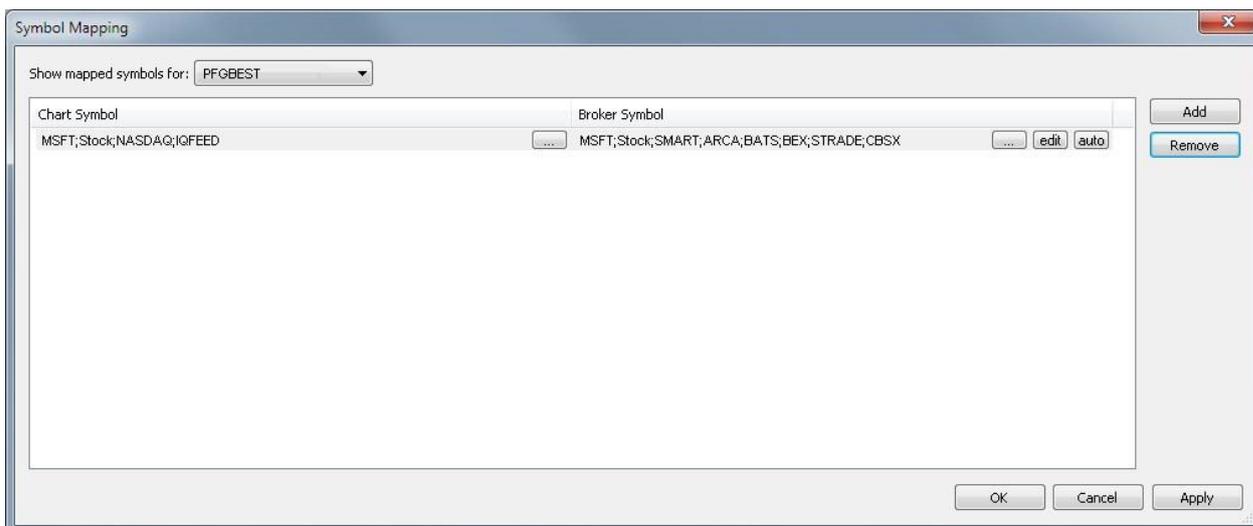


Click the Lookup button in the Broker Symbol column to select the correct symbol.



Symbol Mapping Example #2

Chart symbol is MSFT from IQFeed. The broker is Interactive Brokers. Correct Symbol Mapping configuration:



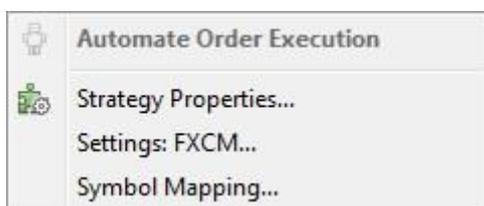
When you select the Chart Symbol and the Broker Symbol they can have different exchange settings.

In this example, SMART is the exchange where MultiCharts sends orders. The rest of the exchanges are potential exchanges where the order can be executed. Order statuses are received from one of the exchanges in the Broker Symbol column.

Configuring Symbol Mapping

To configure Symbol Mapping

- Access Symbol Mapping Settings Window by one of the following methods:
- In the main menu select File, then point to Broker Profiles and click Symbol Mapping...
- Right-click on one of the Broker Profiles on the Trade Bar to see the shortcut menu and click Symbol Mapping...
- Right-click on the DOM at the right or at the left of the price ladder to see the shortcut menu and click Symbol Mapping...
- Right-click on the Chart Trading Panel to see the shortcut menu and click Symbol Mapping...
- Click on the arrow at the left of the SA/AA button **SA** to call context menu and click Symbol Mapping...



- Choose the broker profile in the Broker Profile box (ссылка на Broker Profiles)
- To add a new line in the Symbol Mapping window click Add.
- To delete an existing line from the Symbol Mapping window click Remove

Note: Symbol mapping lines can be deleted and will not re-appear if there are no plotted charts, opened DOM windows with the same symbols, the symbol is not entered in the trade bar and there are no open position on the symbols at broker end.

Configure Chart Symbol

Chart Symbol column on the left side of the Symbol Mapping window allows managing data source symbols.

To choose the Chart Symbol:

- Click on the Lookup button  in the Chart Symbol column.
- Select a data feed from the Data Source drop-down list box.
- Select a symbol from the list of available symbols in All Instruments tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. Double-click the symbol, or click OK to select the symbol.
- If there is no instrument you are looking for in the list, click the Add button. Insert Symbol Into Portfolio window will be opened. It is important to add instrument From Data Source with predefined correct settings. If the data vendor doesn't support wizard for adding symbols, a warning message "Please run QuoteManager to add the symbol manually." pops up. To find out more about adding instruments, see Adding symbols to database.

Configure Broker Symbol

Broker Symbol column on the right side of the Symbol Mapping window allows to choose a symbol at the broker.

To choose the Broker symbol:

- Click on the Lookup button  in the Broker Symbol column.
- Select a symbol from the list of available symbols in All Instruments tab, or use the category tabs to list only a particular category of symbols; the list can be sorted by any column, in ascending or descending order, by clicking on the column header. Double-click the symbol, or click OK to select the symbol.
- If there is no instrument you are looking for in the list, click the Add button. Insert Symbol Into Portfolio window will be opened. It is important to add instrument From Data Source with predefined correct settings. If the data vendor doesn't support wizard for adding symbols, a warning message "Please run QuoteManager to add the symbol manually." pops up. To find out more about adding instruments, see Adding symbols to database.
- To edit a broker symbol click the Edit button  on the right side of the Broker Symbol column.
- Broker Symbol can be configured automatically using the Chart Symbol settings in the Quote Manager by clicking the Auto button  on the right side of the Broker Symbol column.

Note: Automatic configuration should be enough when data feed and broker are the same, but may require some modification if data source and broker are different. If you use Interactive Brokers, or Trading Technologies as your broker make sure that you add symbols From Data Source in Quote Manager (see Operating Symbol List).

- To save your symbol mapping configuration you should click Apply or OK.

Backtesting

Backtesting vs Live Trading

Understanding Backtesting limitations

Backtesting (strategy calculation on historical data) is an essential tool for a certain type of strategies. However, it has some limitations as every simulator has.

When you are trading live, the market always responds to your actions. Your trades and submitted orders always have impact regardless of how small your trade size is. The orders that you submit change market depth and you can see these changes in real-time. This can never be simulated in backtesting as no algorithm is able to recreate market reaction on market depth change.

Moreover, there is always broker latency (exchange latency, internet connection latency). This latency is a dynamic constantly changing value. It can be 400 milliseconds in one moment of time and 1 millisecond 10 seconds later. Consequently, it cannot be compensated in backtesting by setting a fixed latency time (e.g. 400 milliseconds).

It is important to understand that every trading strategy type needs different simulation: scalping strategies require one simulation type, position trading needs another one etc.

Example: A scalping strategy with average profit per trade = 1 pip (strategy 1) will produce less realistic results in backtesting than a position strategy with 300 pips average profit per trade (strategy 2) as 1 or 2 pip variations between backtesting and real trades will make a little impact on strategy 2 while strategy 1 backtesting performance may be completely different from live trading due to these variations.

Broker latency can be negligible for position trading while it should be taken into consideration when the position holding time is relatively small.

Example : Strategy 1 average position holding time is 30 minutes. Strategy 2 average position holding time is several seconds (scalping). In the first case latency factor is negligible, so strategy 1 backtesting results will be more or less the same as live trading performance. However, in case of strategy 2, broker latency can change live trading performance dramatically compared to backtesting.

Generally, the higher average profit per position and average position holding time are, the more accurate backtesting results are.

Backtesting vs Live Trading

Here are the potential reasons why you may see orders not filled in real-time strategy calculation or real-time strategy trading compared to Backtesting results.

Live Trading	Backtesting
In real-time trading the order is filled according to market dynamics on Bid and Ask prices taking Volume into account. The order may not be filled in real-time trading because of insufficient volume at the broker.	In Backtesting and real-time strategy calculation (real-time simulation or data playback) the order is filled on the main data series price without taking Volume into account. In order to calculate order execution in Backtesting at Ask and Bid prices Precise Backtesting option should be used
In real-time trading, a strategy will monitor and respond to real-time data on tick-by-tick basis.	Historical data available for backtesting will, in most cases, be in the form of time-based bars (minute, daily etc.) based on a group of ticks, with only Open, High, Low, and Close prices available. While it is not possible to get information on the actual price movement within each bar from these four values, in MultiCharts Backtesting accuracy is improved by incorporating Intra-bar Price Movement Assumptions logic.
As real-time and historical data comes from different servers (even if the same data vendor is used) there can be differences in real-time data and historical data that affect the strategy calculation results.	A single tick difference between real-time and historical backfilled data can generate completely different looking charts. This in turn would impact the calculations of your strategy.
	The difference between real-time and historical calculation is especially seen on certain chart types (e.g. Point and Figure) than others due to their inherent nature in bar formation (see Intra-Bar Order Generation, Bar Magnifier on Non-Standard Chart Types).

Backtesting Options

Backtesting provides you with a general idea of how your strategy can behave. This information is not to be solely relied on for making decisions. The features to bring your Backtesting results closer to the real-time strategy behavior are:

- Precise Backtesting
- Intra-Bar Order Generation
- Bar Magnifier

Note: Different backtesting and strategy calculation methods can be selected which will produce different results.

Backtesting, optimization, and forward testing (real-time simulation) provide an insight into potential performance of your strategy in “ideal world”. This information should be analyzed to get a range of possible scenarios. It is up to trader to decide if this range is acceptable for live trading or not.

Bar Magnifier

The Bar Magnifier backtest feature is important for precise backtesting. Bar magnifier can be considered as a replay of the way a bar was formed. The user can choose a replay frequency that is based on number of ticks or number of minutes.

There is a tradeoff between the level of precision in a replay and memory requirements. Tick-by-tick replay is the most precise, but it also requires the most memory. If the strategy does not require high precision, then replays based on n-ticks or n-minutes may be sufficient.

For example, Bar Magnifier is helpful when both the profit target and stop loss occurred on the same bar. In this situation, it is unclear whether the profit target or the stop loss occurred first. With Bar Magnifier, MultiCharts is able to see how the bar was formed to determine whether the profit target or the stop loss occurred first.

Note: We suggest to use tick because most precise To use the feature:

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a **Hand** , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.

3. Click **Properties** button to open the **Strategy Properties** window.

2. Select the **Backtesting** tab.

3. In the **Backtesting Precision** section, select the **Use Bar Magnifier** checkbox.

Bar Magnifier

4. MultiCharts will break down each bar into a series of lower resolution bars so that it can look to see how the bar was formed:

- Select the **Tick** radio button if the chart has tick-based resolution. Enter the number of ticks for the lower resolution bars. The number of ticks must be at a lower resolution than the chart resolution, or
- Select the **Intra-day** radio button if the chart has minute resolution or daily resolution. Enter the number of minutes for the lower resolution bars. The number of minutes must be at a lower resolution than the resolution of the chart, or
- Select the **Daily** radio button if the chart has weekly resolution or higher. MultiCharts will break down each bar into daily bars to see how the bar was formed.

5. Check the **Skip ticks with identical prices** checkbox for faster backtesting. MultiCharts will skip ticks with identical prices when it constructs the lower resolution bars.

6. Check the **Enable access to intra-bar time for calculation in Intra-Bar Order Generation mode** checkbox to make intra-bar time available from PowerLanguage script (Date, Time and Time_s keywords).

Note: If a strategy is based volume, then selecting this box may disrupt the volume calculations.

Intra-Bar Price Movement Assumptions

Strategy Backtesting on historical data often requires making assumptions about price movement within bars.

In real-time trading, a strategy will monitor and respond to a data feed on tick-by-tick basis. However, the historical data available for backtesting will, in most cases, be in the form of bars based on a group of ticks, with only Open, High, Low, and Close prices available.

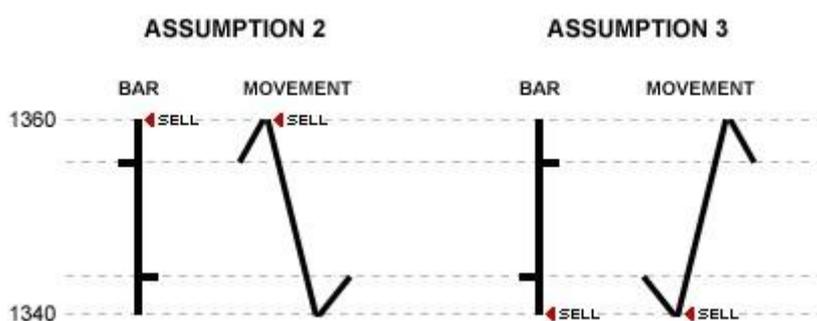
While it is not possible from these four values to infer the actual price movement within each bar, the Backtesting Engine improves the backtesting accuracy by incorporating intra-bar price movement assumption logic:

1. An order could be executed at every valid price level throughout the entire range of the bar.
2. If the opening price is closer to the high of the bar than to the low, the intra-bar price movement is assumed to be in the order of Open-High-Low-Close.
3. If the opening price is closer to the low of the bar than to the high, or if the opening price is exactly in between the high and the low of the bar, the intra-bar price movement is assumed to be in the order of Open-Low-High-Close.

The first assumption implies that a Stop or a Limit order will execute at the Stop or the Limit price.

The second and third assumptions are significant when there are multiple orders active at the same time. If both a Stop Loss and a Profit Target prices are reached within the same bar, the order of price movement within the bar will determine which one of these orders will be executed.

For example, with a Stop Loss at 1340 and a Profit Target at 1360:



Intra-bar Price Movement Assumptions

- In a bar with an Open of 1355, a High of 1360, a Low of 1340, and a Close of 1345, the Profit Target will be assumed to have executed first (Assumption 2).
- In a bar with an Open of 1345, a High of 1360, a Low of 1340, and a Close of 1355, the Stop Loss will be assumed to have executed first (Assumption 3).

Limit Order Execution Assumptions

Limit orders are filled at a specific price or better (for long better = lower, for short better = higher). In backtesting MultiCharts works:

- Either with all prices between Open, High, Low, Close of a bar, assuming that all these prices are real;
- Or with specific prices only, when 1 tick resolution is chosen or Bar Magnifier is used.

Limit order execution behavior for backtesting can be modified in the **Backtesting** tab of **Strategy Properties** window.

There are 4 different variants:

1. Chart resolution is 1 tick or Bar Magnifier of any resolution is enabled. Backtesting Assumptions is set to **Fill limit order when trade takes place at limit price or better**. Example: Generated order: sellshort limit @ 121; available prices: 120, 122, 125, ...; order is filled @ 122.

2. Chart resolution is 1 tick or Bar Magnifier of any resolution is enabled. Backtesting Assumptions is set to **Fill limit order when trade price goes beyond limit price by 3 points**. **Example:** Generated order: sellshort limit @ 121 ; available prices: 120, 122, 125, ...; order is filled @ 125.

1. Chart resolution is **not** 1 tick and Bar Magnifier is not enabled. Backtesting Assumptions is set to **Fill limit order when trade takes place at limit price or better**. **Example:** Generated order: sellshort limit @ 121; order is filled @ 121 or better if 121 (or better) is between High and Low of the bar.

2. Chart resolution is **not** 1 tick and Bar Magnifier is not enabled. Backtesting Assumptions is set to **Fill limit order when trade price goes beyond limit price by 3 points**.

Example: Generated order: sellshort limit @ 121; order is filled @ 121 if 124 price is between High and Low; order is not filled at all if there is not 124 price between High and Low of the bar.

Order Linking

Order Linking

Strategy signals are visually shown on the chart using arrows. If a strategy uses several different entry signals, then it can be difficult to see clearly which entry signal was exited.

Order Linking draws a line from the entry signal to the exit signal so that it is possible to visually match an entry signal with its exit signal.

Order linking also makes it clear which trades are profitable or not profitable on the chart.

The lines are color coded. The default colors for the lines are as follows:

Green: profitable trade

Red: unprofitable trade

To change the settings:

1. Open the **Format Signal** window. To open the **Format Signal** window, position the mouse pointer over one of the signal's Arrows, Ticks, or Labels; double-click once the **Pointer**  changes into a **Hand**  ; in the **Format Objects** window that appears, select a signal and click the **Format** button.

The **Format Signal** window can also be opened by one of the following methods: -

Position the mouse pointer over one of the signal's Arrows, Ticks, or Labels;

once the **Pointer**  changes into a **Hand**  , right-click and then click **Format Signals**; in the **Format Objects** window that appears, select a signal and click the **Format** button

- Open the **Format Objects** window; in the **Signals** tab, select a signal and click the **Format** button.

Note: The **Format Signal** window for the signal being inserted will open automatically if the **Format** check box in the **Insert Study** window is checked.

2. Select the **Signal** tab.

3. Select the strategy and select the **Format** button. A window to format the strategy will appear.

4. Select the **Connecting Line** tab.

5. Check the Show Connecting Line checkbox to show the connecting lines.

6. In the drop-down lists, select the setting for the **Line Style**, **Line Weight**, **Profitable Line Color**, and **Unprofitable Line Color**.

7. Select the **OK** button.

Precise Backtesting

Understanding Precise Backtesting

Depending on the strategy, Precise Strategy Back Testing can give the user a more realistic emulation during back testing. To back test high frequency strategies like statistical arbitrage, the user may need take into account the historical bid/ask data in addition to the historical trade data.

With Precise Back Testing, the user can load the historical bid data series and the historical ask data series into MultiCharts. MultiCharts will use the ask data series to fill buy market orders and buy stop orders. Similarly, MultiCharts will use the bid data series to fill sell market orders and sell stop orders.

Consider a situation where a market order to buy 1 contract and a market order to sell 1 contract are submitted at the same time at the close of a bar. If the user only uses the trade data series, then there is only one price for the close. The back test will show that these two orders were filled at the same price, and the profit/loss is zero. In reality, there's a bid/ask spread. If the price quote doesn't move suddenly, then these two orders will undoubtedly generate an instantaneous loss due to the bid/ask spread. That's why it's more precise to back test with a bid data series and an ask data series.

Consider another situation where the trade price doesn't occur on either the bid or the ask. Due to liquidity or other reasons, the historical data series may show that the trade price was either in between or outside the bid/ask. In this situation, the user may want to be conservative and assume fills at the bid/ask instead of at the trade price.

Consider a third situation where there is sufficient liquidity and the trades do occur on the bid/ask. The strategy uses 10 minute bars. The strategy buys 1 contract at 10:00am and exits the position at 11:00am. The PowerLanguage code for such a strategy is as follows:

```
If Time=1000 Then Buy 1 Contract This Bar on Close;  
<br>If Time=1100 Then Sell 1 Contract This Bar on Close;
```

If this strategy was back tested on simply a data series of historical trade prices, then the back test will assume that the trades were filled at the close prices of the bars. However, it's unclear whether the trades would have been filled at the close prices, because the close prices could have been on either the bid or the ask.

If the close price was an ask price and the strategy was buying, then the fill price was realistic. However, if the close price was a bid price and the strategy was buying, then the fill price was unrealistic.

If the close price was a bid price and the strategy was selling, then the fill price was realistic. However, if the close price was an ask price and the strategy was selling, then the fill price was unrealistic.

With Precise Back Testing, users can load two separate data series onto the chart. The first data series is for historical bid prices. The second data series is for historical ask prices. MultiCharts will use these two data series to determine realistic fill prices. The bar's close will have a bid and an ask price associated with it. MultiCharts will use the ask price to fill a market buy order and the bid price to fill a market sell order.

Using Precise Backtesting

To use Precise Strategy Back Testing:

1. Make sure the symbol contains historical bid and ask data.
2. Add the symbol into a chart window.
3. Designate this chart as the **Ask** data series:

1. Open the **Format Instrument** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Quote Field** drop-down list, select **Ask**.
 4. Select **OK**.
 4. Add the same symbol into the same chart window. The chart window now has two charts.
 5. Designate this chart (the second chart) as the **Bid** data series:

1. Open the **Format Instrument** window. To open the **Format Instruments** window, click the **Format Instruments**  icon on the main toolbar; if the **Format Objects** window appears, select the symbol and click the **Format** button. The **Format Instruments** window can also be opened by one of the following methods:

- Position the mouse pointer over the symbol's data series; double-click once the **Pointer**  changes into a **Hand**  ;
 - Position the mouse pointer over the symbol's data series; once the **Pointer**  changes into a **Hand**  right-click and then click **Format Symbol Name**;
 - Right-click on an empty area of the chart and then click **Format Instruments**; if the **Format Objects** window appears, select the symbol and click the **Format** button;
 - Select **Format** in the main menu and click **Instrument**; if the **Format Objects** window appears, select the symbol and click the **Format** button.
2. Select the **Settings** tab.
 3. In the **Quote Field** drop-down list, select **Bid**.
 4. Select **OK**.
 6. Apply the strategy to the **Ask** data series, which is the first chart. It does not matter if the strategy is applied to the **Ask** data series or the **Bid** data series. It only matters that the strategy is applied to the first chart.

1. Open the **Strategy Properties** window.

To open the **Strategy Properties** window:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes

into a **Hand**  , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click **Properties** to open the **Strategy Properties** window.
2. Select the **Backtesting** tab.
3. Select the **Extended. The strategy backtesting engine emulation based on bid & ask series data** radio button.
4. In **Use for ask series data**, select the ask series data.
5. In **Use for bid series data**, select the bid series data.
6. Click **OK**.

Understanding Backtesting

A strategy is a set of Signals applied to a chart. Each signal is a mechanical technical analysis tool, used to systematically specify market entry or exit points according to a set of trading rules implemented in the signal's algorithm.

Note: A strategy has separate Properties, separate from signals' settings.

Once a strategy is applied to a chart, the backtesting process starts. During the backtesting process, the strategy places trades where they would have occurred the past, according to the set of rules applied. The trades are placed throughout the entire available period of historical data. If strategy is applied to real-time chart, the strategy continues to place new trades as the real-time data is received.

A Performance Report can be generated, based on the trades placed by the strategy and containing statistics and performance measurements.

Note: New trades, placed by the strategy after the performance report has already been generated, will not be added to the performance report in real time. To incorporate the new trades into the performance report should be generated again.

Understanding Report-Chart Synchronization

MultiCharts allows the user to visually match the trades from a Strategy Performance Report with their signals on the chart. For strategies that have hundreds of trades over a long data series, it may be cumbersome to manually match a trade in the Strategy Performance Report to the chart.

The user would have to use the scroll button to find the trade in the data series. Report-Chart Synchronization simplifies this process. Trades on the chart are automatically highlighted when the user hovers his mouse over a trade in the Strategy Performance Report.

To learn more about this feature, see [Setting Display Properties](#)

Understanding Intra-Bar Orders Calculations

Strategy Order Calculation in Real-Time

Each time a new real-time tick is received, MultiCharts evaluates the data to determine if entry or exit order conditions of the strategy are met on that tick. If the conditions are met, the appropriate order is issued. In some

cases it may be possible that both the entry and the exit orders will be executed based on the same tick. For a detailed description see Order Execution Priority

Strategy Order Calculation for Historical Data

Historical data available for backtesting will, in most cases, be in the form of bars based on a group of ticks, with only Open, High, Low, and Close prices available.

While it is not possible from these four values to infer the actual price movement within each bar, the Backtesting Engine improves the backtesting accuracy by incorporating intra-bar price movement assumption logic.

For a detailed description of the movement assumption logic, see Intra-Bar Price Movement Assumptions

In some cases it may be possible that both the entry and the exit orders will be executed based on the same bar.

For a detailed description see Order Execution Priority

Using Performance Report

Basing on the trades placed in the chart the performance report can be calculated to comprehensively analyze the strategy performance measures as well as trades list and statistics. There over 100 performance indices are available for analysis including about 30 charts.

Attention: The new trades occurred are not being included in the Strategy Performance Report in realtime. To include the new trades occurred the performance report should be re-opened again.

Attention: In case signals were added or deleted the Strategy Performance Report should be re-opened again.

Note: Only one performance report can be opened at a time.

Accessing Performance Report

To access a Strategy Performance Report:

1. Apply a strategy to a chart.
2. In the main menu select **View** then click **Strategy Performance Report**.

To access a Trading Performance Report:

1. Connect a Broker Profile.
2. Make sure that there historical trades on the chart.
3. In the mainenu select **View** then click **Trading Performance Report**.

Viewing Performance Report

In MultiCharts the Performance Report features a tri-panel design.

Left panel is a navigation structure while the upper right one displays performance data.

Tip: Upon left-clicking on any performance index its description will appear in the lower right panel.

Viewing Performance Indices

To view performance indices:

1. In the left panel select a performance indices section  to review.

2. In the right side move cursor on a performance index required. The cursor will change into **Description**  cursor then left-click.
3. In the lower right panel a text description will appear. Click **Close**  button to close the description panel.
4. Use **Back**  and **Forward**  toolbar buttons to move between the Performance Report sections.

Viewing Performance Charts

To view performance charts:

1. In the left panel select a performance char  to review.
2. Click **Zoom In**  or **Zoom Out**  toolbar buttons for zooming charts in an out respectively. Click **Reset Zooming**  to reset a zoomed chart.
3. Use **Pan**  or **Cross**  cursor modes for moving charts or precise reviewing chart values respectively.
4. Use **Back**  and **Forward**  toolbar buttons to move between the Performance Report sections.

Understanding Report-Chart Synchronization

MultiCharts allows the user to visually match the trades from a Strategy Performance Report with their signals on the chart.

For strategies that have hundreds of trades over a long data series, it may be cumbersome to manually match a trade in the Strategy Performance Report to the chart.

The user would have to use the scroll button to find the trade in the data series.

Report-Chart Synchronization simplifies this process. Trades on the chart are automatically highlighted when the user hovers his mouse over a trade in the Strategy Performance Report. To learn more about this feature, see [Setting Display Properties](#)

Setting Performance Report Properties

It is possible in MultiCharts to set financial and display settings for the Performance Report.

Financial settings allow to better analyze the strategy performance with different costs, statistic and risk level settings.

Display settings allow to configure visual setting for the report. It is possible to display the report figures in dollars or in a regional currency, set number of decimals to use and smoothing for charts. It is also possible to display trades with partial exits basing on entries or on exits.

Setting Financial Properties

To set financial properties:

1. In the Strategy Performance Report window click **Settings**  toolbar button.
2. Select the **Financial** tab.
3. Set appropriate properties or click **Default** to set back to the default settings.

More Information:

Point value – review Big Point Value definition.

Initial capital - Initial capital to start strategy performance calculations with.

Commission - the amount supposed to be paid to broker for trades execution. The commission can be set on "per contract" or on "per trade" basis.

With **Per Contract** option, the **Commission** value is multiplied for the each trade by the double number of contracts in the trade (i.e. for Entry and Exit).

With **Per Trade** option, the **Commission** value value is multiplied for each trade by the 2 (i.e. for Entry and Exit).

The default **Commission** value is zero.

Slippage - the amount reserved for differences between the expected and actual order execution price. The commission can be set on "per contract" or on "per trade" basis.

With **Per Contract** option, the **Slippage** value is multiplied for the each trade by the double number of contracts in the trade (i.e. for Entry and Exit).

With **Per Trade** option, the **Slippage** value is multiplied for each trade by the 2 (i.e. for Entry and Exit).

The default **Slippage** value is zero.

Margin per contract - the amount to be borrowed when trading on a margin account. This number is used in some report indices calculation.

Interest rate - the rate used in some report indices calculation. Usually the Treasury Bill rate is used.

No. of standard deviations – the number of standard deviations is used in some report indices calculation. The default is 1.

Minimal acceptable rate of return – reference point for Sortino Ratio (See "Performance Ratios" section in the Performance report)

Degree of risk aversion of the investor - reference point for Fouse Ratio (See "Performance Ratios" section in the Performance report)

4. Click **OK**.

Setting Display Properties

To set display properties:

1. In the Strategy Performance Report window, click the **Settings**  toolbar button.
2. Select the **Display** tab.
3. Select **USD** to display the report in U.S. dollars or select **Regional Currency** to display the report in another currency. If **Regional Currency** is selected, enter the exchange rate in the **USD/\$ rate** textbox.
4. Set **No. of digits after decimal** to the required precision level.
5. In the **Performance & Quality** section, select the appropriate smoothing.
6. Select the **Enable Strategy Performance Report – Chart Synchronization** check box to visually match the trades in the performance report to the signals in the chart.

Two additional options become available if this checkbox is selected:

- Select the **Entry-based** radio button to match the trade in the performance report to its entry signal in the chart.
- Select the **Exit-based** radio button to match the trade in the performance report to its exit signal in the chart.

To use this feature, in the Strategy Performance Report:

1. Expand **Trade Analysis** in the tree view pane.
2. Select **List of Trades**.
3. Hover the mouse pointer over any trade on the list. The trade on the list will be matched with the signal for this trade in the chart. The signal on the chart will be highlighted.

2. Select **Recalculate the Report on each new order** checkbox to update the Strategy Performance Report in real-time with each new trade. If a new trade is made while the Strategy Performance Report is open, the Strategy Performance Report will be updated immediately with the new trade.

If this checkbox is unchecked, then the Strategy Performance Report will be updated with the new trade only after closing and reopening the Strategy Performance Report.

3. Click **OK**.

Saving Performance Report

To save the Performance Report:

1. In the Strategy Performance Report window click **Save**  toolbar button.
2. In the **Save As** dialog window appeared navigate to the required file location.
3. In the **File Name** field type in the file name.

Note: The file name with symbol name included in it is supplied automatically.

4. In the **Type** field select the file type. There are 2 types available: *.XLS (MS Excel) and *.XML (XML RINA).
5. Click **Save**.

Attention: To save data in an .XLS format a full version of Microsoft Excel must be installed on the computer. Once saved the .XLS file may be read by any Excel compatible application.

Note: In the *.XLS file the entire report will be saved (including charts).

Printing Performance Report

It is possible in the Performance Report to print a selected section or chart.

To print a selected section or chart:

1. In the left panel of the Strategy Performance Report select a section or a chart to be printed.
2. Click **Print**  toolbar button.
3. The standard print dialog will appear.
4. Click **OK**.

or

1. In the left panel of the **Strategy Performance Report** select a section or a chart to be printed.
2. Click **Print Preview**  toolbar button. The **Print Preview** dialog will appear.
3. Use **Magnify Mode**  or **Whole Page**  toolbar buttons to preview the page.
4. Click **Print**  toolbar button to access the print dialog.
5. Click **Close** button to close the window.

Optimization

Performing Optimization

Once a strategy has been applied to a chart, strategy optimization can be performed.

Running Exhaustive Search

Optimization is performed from the **Format Objects** window:

To perform Exhaustive Search optimization:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click the **Optimize** button.
4. In the **Select Optimization Method** dialog box that appears, select **Exhaustive Search**.
5. In the **Exhaustive Search Properties** window that opens, select the **Optimizable Inputs** tab.
6. Check/uncheck the check box to the left of the signal name and input name to enable/disable optimization for this input or check the check box to the left of the **Signal Name** column heading to enable optimization for all inputs (at least one input should be selected to perform optimization).
7. The **Current Value** column shows input values that are currently selected for the signals applied on the chart.
8. In the **Start Value** column, enter the desired starting values for each of the inputs.
9. In the **End Value** column, enter the desired ending values for each of the inputs.
10. In the **Step** column, enter the desired step size, for each of the inputs.
11. The **Step Count** column shows current amount of steps for an input.
12. Select the **Optimization Criteria** tab.
13. Select the **Use Limitation** checkbox to limit the output to a defined number of the best results; unselect the checkbox to list all the results in the optimization report.
14. When **Use Limitation** checkbox is checked Optimization dialog window shows current best results for selected criteria during optimization.
15. Enter the desired number of best results in the **Show N best results** box.
16. Select the best results criteria in the **best results for** list box.
17. Select criteria:

1. Select **Standard Criteria**.
2. Select the criteria from the drop-down list. Read more about Standard Criteria. or:
 1. Select **Custom Criteria**.
 2. Click **Edit...** button.
 3. Write the script for the custom criteria. Read more about Custom Criteria.
 4. Click **OK**.
18. Select **Ascending** or **Descending** option to sort the output in ascending or descending order, respectively.
19. Click **OK** to run the optimization and generate the Optimization Report.

Running Genetic Algorithm Search

Note: For detailed information on Genetic Algorithm properties, see [Understanding Genetic Algorithm Optimization](#)

Optimization is performed from the **Format Objects** window:

To perform Genetic Algorithm optimization:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab.
3. Click the **Optimize** button.
4. In the **Select Optimization Method** dialog box that appears, select **Genetic Algorithm**.
5. In the **Genetic Algorithm Properties** window that opens, select the **Optimizable Inputs** tab.
6. Check/uncheck the check box to the left of the signal name and input name to enable/disable optimization for this input or check the check box to the left of the **Signal Name** column heading to enable optimization for all inputs (at least one input should be selected to perform optimization).
7. The **Current Value** column shows input values that are currently selected for the signals applied on the chart.
8. In the **Start Value** column, enter the desired starting values for each of the inputs.
9. In the **End Value** column, enter the desired ending values for each of the inputs.
10. In the **Step** column, enter the desired step size, for each of the inputs.
11. The **Step Count** column shows current amount of steps for an input.
12. Select the **Algorithm-specific Properties** tab.
13. Select criteria:
 1. Select **Standard Criteria**.
 2. Select the criteria from the drop-down list. Read more about Standard Criteria. or:
 1. Select **Custom Criteria**.
 2. Click **Edit...** button.
 3. Write the script for the custom criteria. Read more about Custom Criteria.

4. Click **OK**.
14. Select **Ascending** or **Descending** option to sort the output in ascending or descending order, respectively.
15. An optimum population size value is automatically placed into the **Population Size** box; if a different value is desired, enter the value into the box.
16. In the **Crossover Probability** box, enter the desired crossover probability; value range is 0.95-0.99, with a default of 0.95.
17. In the **Mutation Probability** box, enter the desired mutation probability; value range is 0.01-0.05, with a default of 0.05.
18. In the **Convergence Type** drop-down list, select **Number of Generations** or **Proximal Convergence**.
19. In the **Maximum Number of Generations** box, enter the desired maximum number of generations.
20. If Proximal Convergence was selected, enter the desired minimum number of generations and convergence rate into the respective boxes. A value, approaching 1 is usually selected for the convergence rate; the default value is 0.990000.
21. In the **Genetic Algorithm Subtype** drop-down list, select **Basic** or **Incremental** algorithm subtype.
22. If Basic algorithm subtype was selected, select **Yes** or **No** for **Use Elitism** option.
23. If Incremental algorithm subtype was selected, select the **Replacement Scheme** and **Offspring Number** (number of “children”).
24. Click **OK** to run the optimization and generate the Optimization Report.
25. Optimization dialogue window shows Average fitness value for current population during optimization.

Standard Criteria

Standard Criteria lets the user select a criterion from a pre-defined list.

For example, if the user selects Net Profit, the optimization will find the parameters that generate the highest Net Profit.

Custom Criteria

Custom Criteria lets the user create his own criteria. Instead of choosing from a pre-defined list like in Standard Criteria, the user can script his own criteria. E.g., suppose the user wants to find the parameters that maximize the Net Profit / Max Drawdown ratio. This ratio isn't pre-defined under Standard Criteria, so it won't be in the drop-down list. However, this ratio can be created using Custom Criteria.

It is also possible to add additional criteria such as number of trades and winning percentage.

E.g., it is possible to specify: ***the result have more than 300 trades and a winning percentage that's greater than 50%.***

The scripting language is **JavaScript**.

Code Example

The code below creates the Net Profit / Max Drawdown ratio:

```
if (StrategyPerformance.MaxStrategyDrawDown != 0) {
return StrategyPerformance.NetProfit / (- StrategyPerformance.MaxStrategyDrawDown);
}
```

Besides NetProfit and MaxStrategyDrawdown, there are many other properties that can be referenced. The table below shows the available properties.

For example, to reference the number of trades, simply use StrategyPerformance.TotalTrades. To reference winning percentage, simply use StrategyPerformance.PercentProfitable.

Name of property in the object StrategyPerformance	Description	Available in MultiCharts	Available in Portfolio Optimization
NetProfit	Net Profit	Yes	Yes
GrossProfit	Gross Profit	Yes	Yes
Gross Loss	Gross Loss	Yes	Yes
TotalTrades	Total Trades	Yes	Yes
Percent Profitable	% Profitable	Yes	Yes
Winning Trades	Winning Trades	Yes	Yes
LosingTrades	Losing Trades	Yes	Yes
AvgTrade	Avg Trade	Yes	No
AvgWinningTrade	Avg Winning Trade	Yes	No
AvgLosingTrade	Avg Losing Trade	Yes	No
WinLossRatio	Win/Loss Ratio	Yes	No
MaxConsecWinners	Max Consecutive Winners	Yes	No
MaxConsecLosers	Max Consecutive Losers	Yes	No
AvgBarsInWinningTrades	Avg Bars in Winner	Yes	No
AvgBarsInLosingTrades	Avg Bars in Loser	Yes	No
MaxStrategyDrawDown	Max Intraday Drawdown	Yes	Yes
ProfitFactor	Profit Factor	Yes	No
ReturnOnAccount	Return on Account	Yes	No

Understanding Optimization

A strategy is created by implementing trading concepts, ideas, and observations of historical market behavior, into a trading system. The very idea of a trading system implies a degree of optimization to market behavior.

The process of strategy optimization further enhances and automates this process. Strategy optimization is the search for the set of optimum parameters for the defined criteria. By testing a range of signal input values, optimization aids in selecting the values that correspond, based on historical data, to the best strategy performance. Optimization aids in better understanding of strategy's characteristics and in creating new criteria for entries and exits.

Different traders use different criteria to define strategy performance. Some traders use the highest net profit, while other traders use the lowest drawdown. MultiCharts lets the trader define his own criteria.

Optimization can have detrimental effects if the user searches for the combination of inputs based solely on the best performance over a period of historical data and focuses too much on market conditions that may never occur again. This approach is known as over-optimization or curve-fitting. Performance will not be the same in real trading, since historical patterns are highly unlikely to be repeated.

Optimization Methods

There are two optimization methods: Exhaustive Search and Genetic Algorithm.

Understanding Exhaustive Search Optimization

Exhaustive, also called **Brute-Force**, optimization systematically goes through all the potential combinations in search for the best solution. The advantage of this approach is every single combination will be checked and the absolute optimum solution identified.

The length of time required for Exhaustive optimization is proportional to the total number of all possible solutions. The drawback of this approach is that, unless relatively few parameters are involved, the period of time required to reach a solution may turn out to be unacceptably long. Thus, exhaustive optimization may only be suitable when there is a limited number of possible solutions.

Understanding Genetic Algorithm Optimization

Genetic Algorithms optimization evaluates only the more promising combinations, finding near-optimum solutions in a fraction of time that would be required by the brute-force approach, making Genetic Algorithms optimization powerful enough to analyze strategies with hundreds of parameters. Genetic Optimizer settings add flexibility to this technique.

GA-based search algorithms utilize methods that mimic a biological evolution. The algorithms start by testing a number of random combinations, select the combinations with the most potential, and then further combine and modify them to finally arrive at the best input combinations. Instead of mechanically checking every conceivable combination, genetic algorithms quickly narrow down the number of potential winners, finding and focusing on the areas that are most profitable and most stable. Thus, genetic algorithms avoid superfluous calculations in the lowest net profit potential zones. GA approach is well known and accepted in many fields where optimization is required.

The drawback of the GA approach is that the solution found will be a solution approaching the absolute optimum solution, but not necessarily the absolute optimum solution itself. This drawback, however, is handsomely offset by the processing power and time savings in cases with a large number of possible solutions.

In general, GA's work is primarily about two abstracts: an Individual (or Genome) and an Algorithm (i.e. Genetic Algorithm itself). Each Genome instance represents a single unique inputs combination, while GA itself defines how the evolution should take place. The GA uses a given trading strategy to determine how 'fit' a genome is for survival, e.g. how much Net Profit does an inputs combination generate in case Net Profit was selected as an Optimization Criteria.

Here are some GA definitions that help in understanding the process:

Fitness - the overall performance of an individual (e.g. Net Profit).

Genome (Individual) - a unique combination of strategy input values.

Gene - one of the input variables of a given strategy.

Chromosome - a set of genes, usually related in function.

Crossover - a procedure for generating a "child" from two "parent" genomes. Crossover involves multiple genomes.

Mutation - a process when a gene is changed and receives a value that is neither from the "mother" or the "father". Mutation involves only a single genome each time.

Generation (Population) - a group of individuals (genomes), all "born" at about the same time.

Convergence - the extent of improvement in the average fitness between two consecutive generations; as the degree of improvement is decreasing, the generations are said to be converging.

In brief, the optimization process works as follows:

- Based on a multitude of inputs combinations provided, a population of genomes is created.
- The fitness of each individual is evaluated.
- The fittest members are retained, and the least fit members gradually discarded.
- A new population of individuals is generated from the remaining members of the previous population by applying the crossover and mutation operations, as well as selection and/or replacement strategies (built into the GA).
- The fitness of these new individuals is evaluated, the fittest members retained, and the least fit members gradually discarded
- The process is repeated, until the specified degree of convergence or generation number is reached (depends on GA setting selected).

Detailed Description of GA Process

In detail, the optimization process works as follows:

1. After a number of all possible combinations is determined, an optimal number of individuals is selected.
2. Each individual is selected at random. These individuals form the first Generation. The optimal number of individuals is automatically placed in **Population Size** field and can be changed manually. Tip: An excessively large Population Size value will result in an increase in calculation time, while an overly small Population Size value will result in a decrease in calculation accuracy.

Note: MultiCharts' GA support artificially exclusive population. This means that identical individuals cannot exist inside the same population, and thus the population size can not exceed the total number of input combinations. The population size is constant for each generation.

3. The fitness of each individual is evaluated and the least fit individuals discarded.
4. A new population of individuals is generated from the remaining members of the previous population by applying the crossover and mutation operations, as well as selection and/or replacement strategies that depend on the GA subtype:

Crossover and Mutation

MultiCharts uses the so-called Array Uniform Crossover. With this Crossover type, each of the child's genes can come from each of the parents with equal probability.

In the **Crossover Probability** field, the probability of a crossover for each individual is specified; the usual value range is 0.95-0.99, with the default value of 0.95.

MultiCharts uses the so-called Random Flip Mutation. With this Mutation type, each gene can be replaced with any other possible gene on random basis.

In the **Mutation Probability** field, the probability of a mutation for each individual is specified; the usual value range is 0.01-0.05, with the default value of 0.05.

Tip: An excessively large Mutation Probability value will cause the search to become a primitive random search.

GA Subtypes and Replacement Schemas

GA subtype defines the way that GA creates new individuals and replaces old individuals when creating next generations.

GA subtype can be set in the **Genetic Algorithm Subtype** drop-down list.

Two GA subtypes are available: **Basic** and **Incremental**.

Basic subtype is the standard so-called "simple genetic algorithm". This algorithm uses non-overlapping generations and Elitism mode (optional). For each generation, the algorithm creates an entirely new population of individuals (if the **Elitism** option is selected, the most fit individuals move on to the next generation).

Elitism

Elitism mode, available for the Basic GA subtype only, allows the fittest individuals to survive and produce "children" over a span of multiple generations.

Incremental subtype does not create an entirely new population for each generation. It simply adds only one or two children to the population each time the next generation is created. These one or two children replace one or two individuals in the previous generation. The individuals to be replaced by the children are chosen according to the Replacement Schemas used.

Replacement Schemas

Replacement Schemas are available for Incremental subtype only. Schemas define how a new generation should be integrated into the population. There are three schemas available: **Worst**, **Parent**, and **Random**.

Worst – least fit individuals are replaced

Parent – parent individuals are replaced

Random – individuals are replaced randomly

Offspring Number

Offspring Number is the number of children to be added each time that a new generation is created. **One** or **Two** children can be added.

5. The fitness of each individual is evaluated and the least fit individuals discarded.

6. The process is repeated, until the specified degree of convergence or generation number is reached (depends on GA setting selected).

GA Convergence Type

Genetic Algorithms optimization process has no implicit final result and thus can proceed forever. Therefore, an "ending-point" must be specified, indicating when the optimization process must come to an end.

Two GA optimization "ending-point" criteria types can be selected: **Terminate-Upon-Generation** and **Terminate-Upon-Convergence**.

Terminate-Upon-Generation will stop the optimization process once the specified **Maximum Number of Generations** is reached.

Terminate-Upon-Convergence will stop the optimization process once the defined **Convergence Rate** is reached, or once the defined **Maximum Number of Generations** is reached.

GA optimization "ending-point" criterion is selected in the **Conversion Type** drop-down list.

The desired Maximum Number of Generations, Minimum Number of Generations, and Conversion Rate can be set in the corresponding text boxes.

Convergence Rate

Convergence Rate of generations is the ratio between the Convergence value of the two most recent generations and the Convergence value of the current generation and the generation N generations ago.

GA calculation is stopped after meeting $C[x - N] / C[x] \geq P$ condition where : x – ordinal number of the current generation;

C[x] – convergence value of the two most recent generations;

N – defined minimal number of the generations;

P - convergence rate; values used are usually close to 1, with the default value of 0.99.

Note: Convergence Rate is not calculated for generations that have an ordinal number less than the defined minimal number of the generations.

Further Reading

This is only a brief introduction to genetic algorithms. We recommend that you learn more about GA on the Internet, e.g. [Wikipedia](#).

Using Optimization Report

After an optimization process is complete then a detailed Strategy Optimization Report is available for reviewing.

The Strategy Optimization Report allows to review the results of all the test combinations tested (in tabular view).

Columns represent 18 strategy performance fields as well as all the inputs which were optimized during the current run for each inputs combination tested.

Each row represents a set of test results for a given inputs combination.

Tip: The data in any column can be selected as the optimization criteria.

Note: The Strategy Optimization Report contains the results of the last optimization run only.

Note: Only one optimization report can be opened at a time.

Accessing Optimization Report

To access a Strategy Optimization Report:

1. Apply a strategy to a chart.
2. Run an optimization.
3. In the menu select **View** then click **Strategy Optimization Report**.

Strategy Optimization Report Fields

The list of performance indices available is as following:

Net Profit

Gross Profit

Gross Loss

Total Trades

% Profitable

Winning Trades
Losing Trades
Avg Trade
Avg Winning Trade
Avg Losing Trade
Win/Loss ratio
Max Consecutive Wins
Max Consecutive Losses
Avg # of Bars in Winners
Avg # of Bars in Losers
Maximum Intraday Drawdown
Profit Factor
Return on Account
Input Values

Note: The performance indices are identical to those in the Performance Report.

Using Optimization Report

Sorting the Strategy Optimization Report

It is possible to sort out the Optimization Report by any combination of 3 main criteria in either Descending or Ascending order.

To modify the sorting order:

1. In the Optimization Report set the criterion and sorting order from the **Sort by** drop-down list.
2. Repeat for the second drop-down list.
3. Repeat for the third drop-down list.

Applying an Inputs Combination to a Chart

It is possible to apply the inputs combination that produced the best results during the current optimization run to the strategy.

To apply the best inputs combination:

1. Double-click required row in the report.
2. Click **Yes** in the confirmation window appeared.

Saving the Strategy Optimization Report

To store optimization report data for every chart through any chart copy or workspace save operations after being generated, click **Preferences**, select the **Workspaces** tab and check the **Store Optimization Report** check box.

Note: **Store Optimization Report** option may consume considerable amount of resources and is disabled by default.

Exporting the Strategy Optimization Report

It is possible to export the Optimization Report to a comma-separated file, which is preferred for importing into a spreadsheet application for further analysis.

To export the Optimization Report:

1. In the Optimization Report click **Export...** button.
2. In the **Save As** dialog window appeared navigate to the required file location.
3. In the **File Name** field type in the file name.

Note: By default the file name includes date and time information.

4. Click **Save**.

Note: The entire report information will be saved to the file.

Walk Forward Optimization

Walk Forward Optimization is an optimization process that addresses the issue of curve fitting in strategy development.

Walk Forward Optimization segregates the data series into multiple segments, and each segment is divided into an in-sample (IS) portion and an out-of-sample (OOS) portion.

Parameter optimization for the strategy is performed using the IS portion of the first segment. The same parameters are then used to back test the strategy on the OOS portion of the same segment. The process is repeated for the remaining segments.

The OOS performance results from each of the segments are considered "real" instead of "curve-fit" because the parameters that produced the OOS results were generated from IS data.

Walk Forward Optimization (not anchored)

Suppose a data series has 220 bars, and it is divided into five segments of 100 bars per segment.

The first 70 bars of each segment are the IS portion and the remaining 30 bars are the OOS portion.

The table below shows the segmentation details.

	Segment		# of Bars per Segment
	IS	OOS	
Segment 1	1-70	71-100	100
Segment 2	31-100	101-130	100
Segment 3	61-130	131-160	100
Segment 4	91-160	161-190	100
Segment 5	121-190	191-220	100

Step 1: Parameter optimization is performed using Segment 1's IS data. These parameters are then used to back test the strategy on Segment 1's OOS data.

Step 2: Parameter optimization is performed using Segment 2's IS data. These parameters are then used to back test the strategy on Segment 2's OOS data.

Step 3: Parameter optimization is performed using Segment 3's IS data. These parameters are then used to back test the strategy on Segment 3's OOS data.

Step 4: Parameter optimization is performed using Segment 4's IS data. These parameters are then used to back test the strategy on Segment 4's OOS data.

Step 5: Parameter optimization is performed using Segment 5's IS data. These parameters are then used to back test the strategy on Segment 5's OOS data. The walk forward optimization is complete.

There are OOS performance results for bars 71-220. Walk Forward Optimization considers the OOS performance results "real" instead of "curve-fit" because the parameters that produced the OOS results were generated from IS data.

As shown, the starting point of each subsequent segment begins 30 bars after the starting point of the previous segment. The starting point of each segment steps forward. Hence, this type of walk forward optimization is said to be not anchored. The reason the step is 30 bars is because that's the length of the OOS portion.

Walk Forward Optimization

Note: The significance of OOS results from Walk Forward Optimization is debatable. For more information, please see additional literature about this subject.

Walk Forward Optimization (anchored)

Anchoring means the starting point of all segments is the same as the starting point of the first segment.

The starting points do not step forward. Hence, this type of walk forward optimization is said to be anchored.

The effect is that the IS portion of each subsequent segment is longer than IS portion of the previous segment, and therefore the total length of each subsequent segment is also longer than the total length of the previous segment.

The table below shows the segmentation details.

	Segment		# of Bars per Segment
	IS	OOS	
Segment 1	1-70	71-100	100
Segment 2	1-100	101-130	130
Segment 3	1-130	131-160	160
Segment 4	1-160	161-190	190
Segment 5	1-190	191-220	220

The rest of the anchored walk forward optimization process is the same as not-anchored walk forward optimization.

Using Walk Forward Optimization

To use Walk forward Optimization:

1. Open the **Format Objects** window. To open the **Format Objects** window, right-click on an empty area of the chart and then click **Format Signals**.

The **Format Objects** window can also be opened by one of the following methods:

- Select **Format** in the main menu and click **Signal**.
- Double-click any one of the signal's labels on the chart.
- Position the mouse pointer over any one of the signal's labels on the chart; once the **Pointer**  changes into a

Hand , right-click the label and then click **Format Signals**.

2. Select the **Signals** tab and select the signal in the box.
3. Click the **Optimize** button. The **Select Optimization Method** box will appear.
4. Select either **Exhaustive** or **Genetic** radio button for the type of optimization. (Both will work with **Walk Forward Optimization**.)
5. Select the **Walk Forward** check box.
6. Enter the number of bars/days for the IS portion of a segment into the **IS** textbox.
7. Enter the number of bars/days for the OOS portion of a segment into the **OOS** textbox.
8. Check the **Anchored** checkbox to use anchoring. Uncheck the **Anchored** checkbox to not use anchoring.
9. Click the **OK** button.
10. Select the **Optimizable Inputs** tab. Input start and end values for the inputs.
11. If performing an **Exhaustive** optimization, select the **Optimization Criteria** tab and complete inputs. If performing a **Genetic** optimization, select the **Algorithm-specific Properties** tab and complete inputs. For more information, see [Performing Optimization](#)
12. Click the **OK** button.

Data Playback

Understanding Data Playback

Data Playback is a useful tool for traders wishing to stream data step-by-step data backward and forward in order to see how their strategy would behave in real-time. It allows playback of market data with the specified speed and resolution.

Playback in MultiCharts has a number of distinctive features making it a unique simulation tool:

- Jump to Bar Mode allowing you to set the start point with just one click.
- Possibility to choose Playback Resolution: tick by tick, second by second, minute by minute etc.
- Flexible Playback Speed: per bar (as is) or x updates per second.
- Step Backward/Forward allowing you to move forward or backward on the time scale without losing indicators/signals values.

Data Playback on the Chart

1. Set the starting point of Data Playback by one of the following methods:

- Click on the **Jump To Bar** button  on the **Data Playback Toolbar** and click on the chart; or
- Set the date and time in the **Playback Start Date/Time** box and click the **Jump To Time** button  on the **Data Playback Toolbar**.

2. Set the Playback Resolution (As is – bar per bar, tick by tick etc.) by one of the following methods:

- Select the resolution from the **Playback Resolution** list on the **Data Playback Toolbar**; or:

- In the main menu select **Format**, then point to **Data Playback, Playback Resolution** and select the resolution.

3. Set playback speed using the **Playback Speed** slider  on the **Data Playback toolbar**.

4. Start Data Playback by one of the following methods:

- Click the **Pause/Resume Playback** button  on the **Data Playback toolbar**; or:
- In the main menu select **Format**, then point to **Data Playback** and click **Play**.

To terminate Data Playback:

- Click the **Go To Realtime** button  on **Data Playback toolbar**; or:
- In the main menu select **Format**, then point to **Data Playback** and choose **Go To Realtime**

Note: If you try to place a manual order during data playback when a broker profile is connected, the order will be sent to the broker with the current market price. That is not possible to place simulated orders during the data playback for testing purposes. All orders are sent to the currently connected broker.

Data Playback in Market Scanner

Playback Start Date/Time box allows choosing the starting point for Data Playback in the market scanner.

To set starting time and date, input the necessary date and time into **Playback Start**

Date/Time box and click the **Jump To Date** button DP_jump_to_time_btn on the **Data Playback** toolbar. When the starting point is set, the playback is set to **Pause** mode by default.

Note: Not all Data Playback resolutions are available for market scanner (See [Data Playback Limitations](#))

Step Backward/Forward Playback

Step Backward/Forward feature allows step-by-step playback of the data without losing indicators/signals values. Click the **Step Backward** or **Forward Playback** button to move backward or forward on the time scale.

Set the step size by one of the following methods:

- Click the arrow near the **Step Backward**  or **Forward Playback** button  and then select the step size from the list; or:
- In the main menu select **Format**, then point to **Data Playback**, point to **Step Forward/ Step Backward** and choose the step size.

Data Playback Modes

Data Playback has two modes: **Local** and **Global**

When the **Local** mode is selected, the bars are played independently on each chart or scanner window, where the Data Playback feature has been enabled. Each window will have its own starting point of the playback. When the playback is enabled on one window, other windows with Data Playback disabled will receive the real-time data from the data source.

Data Playback

When the **Global** mode is selected, all the data series on all opened windows of all the workspaces of one MultiCharts instance will be played. In this case the starting point of the playback will be the same for all charts and scanner windows.

Note: In the **Global** mode, all the charts are played back within their own time zone.

If the time zones of the charts differ, the time of the playback starting points for those charts will still be the same.

Select **Global** playback mode by one of the following methods:

- Click the **Global mode** button; or:
- In the main menu select **Format**, then point to **Data Playback** and click **Global mode** in the list.

Note: If **Global** mode is not selected, **Local** mode is used.

Data Playback Limitations

Only the following playback resolutions are available on the chart with multiple data series, in market scanner and in the Global mode:

- Second by Second
- Minute by Minute;
- Hour by Hour;

- Day by Day.

Note: If the playback resolution is lower than the resolution of the data series on the chart, additional detailed data will be downloaded from the data source. In this case status line indicates “Waiting for Detailed Data”.

Data series, indicators and strategies markers will disappear at the right side of the playback starting point. They will appear once Data Playback starts.

All the drawings remain in their original place. They can disappear when the starting point is set. When the playback reaches the place where the drawing was put, the drawing appears.

If a study require more data for calculation than there are at the starting point, the calculation will start when the playback reaches the required bars number.

The real-time data is downloaded and collected while Data Playback is active.

When the playback reaches its end, real-time data is displayed on the chart

Keyboard Shortcuts

Keyboard Shortcuts allow configuring custom key combinations to execute frequently used commands.

Editing Keyboard Shortcuts

To edit Keyboard Shortcuts:

1. Select **File** in the **Main menu** and click **Keyboard Shortcuts...**
2. Select shortcuts category from the **Category** list.
3. Double-click on the command.
4. Press desired key combination. If this combination is already in use the associated command will be displayed in the **Shortcut currently used by:** field.
5. Click **Assign**.
6. Click **OK**.

To delete the shortcut for the selected command click **Clear**.

Click **Reset to Defaults** to revert custom changes.

Custom Commands

Trading.Custom category allows to create custom orders and assign custom key combinations to them.

Click <<**Click for New Custom Order**>> to setup a custom order, click **OK** and follow the steps to edit a Keyboard Shortcut.

Charting.Custom and **Scanner.Custom** categories allow to assign custom key combinations to a particular study applied to a chart or scanner window.

Click <<**Click for New CustInsert Study**>> to select a study, click **OK** and follow the steps to edit a Keyboard Shortcut.

Note: Custom key combinations should consist of Shift and/or Ctrl and/or Alt key plus a letter key, a number key or a function key (F1, F2 etc.) Other keys that can be used are: Insert, Home, Page Up, Delete, End, Page Down and function keys (F1, F2 etc.).

Order Confirmation

To enable/disable order confirmation window for orders placed/cancelled using Keyboard Shortcuts select **File** in the main menu, click **Preferences**, select the **Trading** tab and check/uncheck the **Show order confirmation dialog when placing/cancelling orders using keyboard shortcuts** check box.

Real-Time Market Scanner

Understanding real-Time Market Scanner

The Real-Time Market Scanner (also known as "Screener" or "Quote Window") is a data grid (quote sheet) which can display quotes, market data, and indicator data in spreadsheet format.

The Scanner is indispensable for monitoring, screening, searching, and organizing many symbols according to user defined criteria. The Scanner can accept symbols from different data feeds.

The Scanner can also plot charts automatically without having to manually add the chart via a new chart window. Symbols can also be sorted by user-defined criteria.

The Scanner is used to:

- Monitor real-time market data in different resolutions (ticks, minutes, days, etc)
 - Find trading opportunities based on customizable criteria and sorting
 - Plot studies that are either newly built or imported from other sources
- Scanner features:
- 5,000 symbols per Scanner window
 - 200+ built-in studies
 - Multiple-core and multiple CPU support
 - Symbol sorting either on a per-second basis or based on a timer
 - Ability to mix different data feeds within the same Scanner window
 - Ability to use different resolutions for each symbol
 - Ability to use all resolutions available in MultiCharts
 - Ability to handle both real-time and end-of-day data
 - Access to locally stored data
 - Ability to handle different custom sessions for different symbols
 - Ability to link symbols within a Scanner to a chart
 - Ability to create a chart directly from the Scanner with a mouse click
 - Ability to choose the number of bars/days back for study calculations
 - Visual, audio, and e-mail alerts
 - Direct access to PowerLanguage Editor to view and modify study scripts
 - Script-driven text generation in the Scanner cells
 - Customizable text and background colors
 - Dedicated market trend histogram

Working with Scanner Windows

A Scanner window with all the settings is always created and then being saved in a Workspace.

Note: When the window position is detached it can be visually located outside of the Workspace.

The number of windows that can be added to workspaces is limited only by computer's hardware configuration.

To create a new Scanner window:

1. Click on the **New Scanner Window**  icon on the Main Toolbar, or
2. Select **File** in the main menu, then point to **New** and click on **New Scanner Window**, or
3. Use CTRL+SHIFT+INSERT hot key combination, or
4. Right-click on the empty area of the workspace and select **Scanner Window**.

You can copy a symbol or symbols from the Real-Time Market Scanner or from some other source and then paste it into the Real-Time Market Scanner.

To copy and paste symbols within the Real-Time Market Scanner:

1. Highlight a symbol or symbols that you need with the help of CTRL or/and SHIFT buttons on your keyboard
2. Right click on the highlighted space and select **Copy** from the dropbox below, or
3. Press CTRL+C to copy selected symbols
4. Right click on the cell where you want to paste it and select **Paste** from the dropbox below, or
5. Press CTRL+V to paste selected symbols.

To create a Group of symbols in the Real-Time Market Scanner:

1. Right click on the cell in the Real-Time Market Scanner where you want to create it
2. Select **Insert Group** from the dropbox below, or
3. Go to the main menu of MultiCharts **Insert**
4. Select **Group**, or
5. Press **F8** on your keyboard.

To rename Group:

1. Right click on the Group line
2. Select **Rename**
3. Enter the name of the group
4. Click **Enter**.

To hide/extend the symbols in Group:

1. Right click on the Group line
2. Select **Toggle**, or
3. Click on "+" / "-".

Working with Grid

The Scanner is a data grid that can display quotes, market data, and indicator data in spreadsheet format. Each row always includes the following columns:

Symbol (first column)

Resolution (second column)

Trend (third column)

The positions of the columns above are fixed and cannot be moved.

Ten additional data columns can be added. Each data column can have ten sub-columns.

For example, the **Data** column counts as one data column with seven sub-columns.

Selecting an Active Cell within the Scanner Window

It is possible to use the mouse or the keyboard to navigate an active cell within the Scanner window:

Using the mouse:

1. Select the cell to make it active.
2. Use the scroll bars located at the bottom and the right side of the Scanner window for viewing the cells that extend outside the visible range of the window.

Using the keyboard:

- Arrow Keys - moves the cursor in the direction of the arrow key
- HOME – returns the active cell position to beginning of the row
- END – returns the active cell position to the end of the row • PAGEUP – moves the active cell position one page down
- PAGEDOWN – moves the active cell position one page up
- CTRL+HOME – returns the active cell position to the top left corner
- CTRL+END – returns the active cell position to the bottom right corner
- F2 – edits the current cell
- F7 – Insert Study
- TAB - moves the cursor to the next column

Making Column Width Fit to Text

To fit column width to text:

1. Move a mouse pointer to the right border of a column header (e.g. Study title or Plot title).
2. Double click when the pointer shape is changed to **Horizontal Resize** <http://www.multicharts.com/img/wiki/cursors/HResize.gif>. The column width will be fitted to the text in the column.

Moving Study Columns Position

To move a Study column:

1. Drag this Study header to a new location.

Note: Symbol, Resolution, and Trend columns cannot be moved.

Creating Chart Directly from a Scanner Window

To plot a chart directly from a Scanner window:

- Right-click on the symbol name and select **Create Chart**. A chart will be plotted in a new chart window.

or:

- Double-click on the symbol's **Trend** cell. A chart will be plotted in a new chart window.

Note: Indicators from the scanner will be applied to the new chart automatically.

Changing the Scanner Theme Colors

To change the Scanner's theme colors:

1. Select **View** from the main menu.
2. Select **Themes** to choose the theme.

To change indicators values color to the inverted background color:

1. Select **View** from the main menu.
2. Select **Themes** and check the **Invert Default Colors** check box.

Working with Studies

Studies can be added, formatted, removed, and customized.

A study script can be accessed directly from the Scanner.

It is possible to change settings for multiple studies at once.

Indicated plots of a study can be hidden or displayed when necessary. Audio, visual and E-mail alerts can be enabled.

Adding Studies

1. Open the Insert Study window.
 - Press the **F7** button, or
 - Select **Insert** in the main menu and select **Study**, or
 - Right-click on any cell in the Scanner window and select **Insert Study**.
2. Select either an individual study or multiple studies. To select multiple studies, hold down the CTRL button and select each study.

A study's color is defined in its PowerLanguage Script.

To edit the colors, use the reserved words SetPlotColor and SetPlotBGColor.

Formatting Studies

To format a study:

- Double-click on the symbol's cell in the study's column, or
- Right-click on the symbol's cell in the study's column. Select **Format Study**.

The Format Study dialog window will appear. If a study has two or more plots, then formatting will be applied to all the plots for that particular study.

Setting Inputs Values

An Input is a constant used in the study's calculations. Studies can have one or more inputs, or none at all. Each input is assigned a name.

There are three types of inputs: Numeric, True/False, and String. Studies can be modified by changing the input Values. Most, but not all, studies use input values.

Learn more about Default Studies Inputs.

One of the main advantages of using inputs is that the study's logic can be changed by simply changing the input values. Editing the study's code is not required. The inputs can be modified before and after the study has been inserted.

Setting the Symbol Properties

Study properties can be different for all symbols in the Scanner window. Study properties include **Number Format** and **Update On Every Tick** sections. To define the number of decimals to display for all the study plots of the specified symbol,

- Select **Same as Symbol** radio button to use the same number of decimals as the symbol, or
- Select **Show** radio button and enter the number of decimals.

To recalculate study on every tick, select the **Update On Every Tick** check box.

Note: Even with this check box checked, updates are still limited to two updates in one second.

Note: If the **Use as Default** check box is selected, then the current **Properties** settings will be used for every newly added symbol.

Enabling the Alerts

Visual, audio, or e-mail alerts can be sent when market conditions meet the criteria specified in the study.

To enable alerts,

1. Select the **Enable Alerts** check box under the **Alerts**.
2. In the **Alert Conditions Check** section, select whether the alerts will be triggered **On Bar Close** or **Every Tick**.

Audio Alert

To enable Audio alerts,

1. Select the **Audio Alert** check box.
2. Select the **Beep** radio button for a standard beep sound, or select the **Sound** radio button to play a custom sound.

If Sound is selected, select the .wav sound file.

3. Press the **Test** button to test the sound.
4. Select **Play Once** to play selected sound once or **Repeat** to play it continuously.

Note: The computer must be equipped with a Sound Card to support the **Audio Alert** function.

Visual Alert

To enable Visual alert:

1. Select the **Visual Alert** check box.
2. In the **Display Notify Window for** drop-down list, select the period of time for the alert message to be displayed.

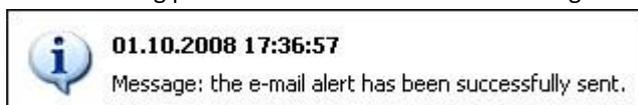
To enable E-mail alert:

1. In the **E-mail Alert** section, select the **E-mail Alert** check box.
2. Press the **Settings** button to access to the **E-mail Alert** settings window.
3. Enter the email addresses of the sender.
4. Enter the email address of the recipient. To send the email to multiple recipients, separate each email address with a semi-colon.
5. Enter the **SMTP Server Name or IP address**, and **Port** number into the textboxes. Please get this information from your email provider.

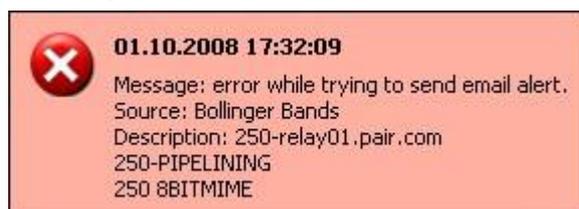
6. Check the SMTP Server authentication data checkbox if your SMTP server requires authentication to send emails. (Usually, if your email account requires a login and password, you need to check this box.) 7. Enter the **User name** and **Password**. (This is usually your email login and password.)

8. Press the **Test** button to send a test email.

If the sending process has been successful a message will appear in the pop-up window:



If the sending process has been unsuccessful a message will appear in the pop-up window:



9. Press **OK** to close the **E-mail Alert** window.

Example of Email Alert Message

01.10.2008 17:48:50 (alert time and date)

Source: Bollinger Bands (study that triggered alert)

Symbol: ESZ8 (traded symbol name)

Resolution: 1 Tick Bar (resolution used)

Price: 1157,5000 (price value at the moment when defined conditions has been met)

Message: Price crossing over lower price band (Message carrying information about the study condition that has been met)

Note: To use these alert settings as the default for all new indicators, select **Use as Default** check box.

Displaying Studies with Two or More Plots

It is possible to hide/display plots of studies, in case a study has more than one plot. To hide/display plots of a study,

1. Right-click on a cell in the study's column or on the study title.
2. Select **Show Plots**.
3. Select or deselect the plots to be displayed/hidden.

Formatting a Study for All Symbols

Formatting a Study for All Symbols makes it possible to modify settings for all symbols at the same time.

To format a Study for all symbols:

1. Right-click anywhere within the **Study's** column, excluding the header.
2. Select **Format 'Study Title' Study for All Symbols**. The Format Study window will appear.

The settings for all existing studies will be changed. However newly added symbols will not inherit these settings.

Learn more about Formatting Studies.

Removing Studies

To remove a study:

1. Right-click on any cell within the **Study's** column, excluding the header.

2. Select **Remove 'Study Title' Study**.

Accessing Scripts

To access a script from a Scanner window:

1. Right-click on any cell within the **Study's** column, excluding the header.
2. Select **Open 'Study Title' Script**. A PowerLanguage Editor window will appear.
3. Customize the study script in the PowerLanguage Editor.

Learn more about Working with Studies in PowerLanguage Editor.

Working with Symbols

In the Scanner it is possible to add, format, and remove symbols.

Symbols can be added from diverse data feeds and have different settings.

Linking of the symbols to the chart or multiple charts makes it possible to plot charts in considerably small time period.

Symbols can be sorted according to the defined criteria with possibility to use a timer.

Adding a Symbol

To add a new symbol to the Scanner window:

1. Access **Format Instruments** dialog window:
 - Press F5 key on the keyboard, or
 - Select **Symbol** in the main menu then select **Symbol**, or
 - Double-click on any cell in any empty row, or
 - Right-click on any cell and select **Insert Symbol...**
2. Select the **Symbol** tab.
3. Select a data feed in the **Data Source** drop-down list box.
4. Delete the text, if any, in the **Symbol/Description** drop-down list.

The text is used to filter available symbols. If there is text, then only symbols that contain the text will be available.

Learn more about Adding Symbols to QuoteManager Symbol List

5. Select a symbol from the list of available symbols in **All Symbols** tab.

Tip: Use the category tabs to list only a particular category of symbols.

Tip: The list can be sorted by any column. To sort, click on the column header.

It is also possible to add multiple symbols at the same time. To highlight multiple symbols use one of the following methods:

- Click on the symbol to begin with and while holding SHIFT key click on the last necessary symbol. All symbols in the range between these two will be selected; or:
- Use CTRL in combination with the mouse to select/deselect symbols one by one. While holding CTRL, a single click will select the symbol and second click on the same symbol will deselect it; or:
- While holding SHIFT use the UP ARROW and the DOWN ARROW keys to select a group of neighbor symbols; or:

- While holding CTRL, use the UP ARROW and the DOWN ARROW keys in combination with the SPACE key to select symbols.
 - Using the Ctrl+A keyboard shortcut to select all symbols.
6. Click **OK**, to create a chart with the default settings.

Read more about Formatting Symbols

Note: The order of the symbols in the scanner may be different from the order of the symbol selected in the Format Instruments window if automated sorting is turned on.

Note: The maximum number of symbols per one Scanner window is 5,000.

Tip: Symbols can also be copied and pasted from a Microsoft Excel spreadsheet or text file to the Scanner.

Formatting Symbols

To format a symbol in the Scanner window:

1. Access the **Format Instruments** dialog window using one of the following methods:
 - Select **Scanner** in the main menu and click on **Format Instruments...**, or:
 - Double-click on the necessary symbol in the symbol list, or:
 - Right-click on the necessary symbol and select **Format Instruments...**
2. Modify appropriate symbol settings if needed:

Symbols

Chart Resolution

Quote Field

Sessions

Build Volume On

Time Zone

Fractional Price Scale Format for Symbols

3. Modify Data Range settings if needed (Using Custom Data Range):
 1. Select the **Use Custom Data Range** check box to set the number of bars/days back for indicators applied to this symbol. Clear the check box to use the default bars/days back.
 2. Enter a number in the text box (from 1 to 100000) and select either **Bars Back** or **Days Back** in the drop-down list.
 3. Select the most recent date from which to calculate **Bars Back** or **Days Back** range.

Note: By default, current date is set for the initial value.
4. Click **OK**.

Formatting All Symbols

To edit resolution for all the symbols at the same time:

1. Right-click on any cell in the **Resolution** column.
2. Select **Format Resolutions for All Symbols...**
3. Format Resolution (All symbols) dialog window will appear.

Learn more about Chart Resolution.

Note: Resolution settings will be applied to all existing symbols; however newly added symbols will not inherit these settings.

To change the custom data range for all the symbols at the same time:

1. Right-click on any cell in the **Resolution** column.
2. Select **Format Resolution for All Symbols...**
3. Select the **Use Custom Data Range** check box.
4. Enter a number in the text box (from 1 to 100000) and select either **Bars Back** or **Days Back** in the drop-down list.
5. Select the most recent date from which to calculate **Bars Back** or **Days Back** range.

Note: By default, current date is set for the initial value.

Removing a Symbol

To remove a symbol from the Scanner use one of the following methods:

- Click on the symbol name and use the DELETE button, or •
Select **Edit** in the main menu and click on **Remove Symbol**,
- or
- Right-click on the symbol and select **Remove Symbol**.

Removing All Symbols

To remove all symbols from the Scanner:

1. Select **Edit** in the main menu.
2. Click on **Remove All Symbols**. A confirmation window will appear.
3. Click **Yes** to remove all symbols, or **No** to cancel.

Sorting Symbols

Sorting makes it possible to quickly locate and monitor best trading opportunities defined by customizable criteria.

The market data lines in the Scanner can be sorted based on any column.

To sort based on a single criterion:

Double-click on the column header. The market data lines will be sorted based on ascending or descending order.

Tip: Double-click on the same header will switch from the ascending to the descending order of sorting.

To sort based on multiple criteria (up to three),

1. Right-click on any market data line and select **Sort**. The Sorting Settings window will appear.
2. Select the first criteria to sort by using the **Sort by** drop-down list. Then press the **Ascending/Descending** button to sort by ascending or descending order.
3. Select the second criteria to sort by using the **Then by** drop-down list. Then press the **Ascending/Descending** button to sort by ascending or descending order.
4. Select the third criteria to sort by using the **Then by** drop-down list. Then press the **Ascending/Descending** button to sort by ascending or descending order.

To sort automatically:

Select the **Sort Data Every** check box and enter the time period in seconds.

Linking Symbols

Symbols in the Scanner can be linked to a chart plot. After linking, the selected symbol in the Scanner can be easily plotted by simply clicking on the symbol in the Scanner. The symbol will plot automatically in the chart.

To link a Scanner symbol to a chart plot:

1. Create a Chart window using any symbol.
2. Create a Scanner window within the same or different workspace.
3. Select the **Instrument Link**  button on the **Instrument** column header in the Scanner. Select a color.
4. Select the **Instrument Link**  button on the Status Line of the Chart window to be linked. Select the same color as the color chosen in the Scanner.

Note: The **Instrument Link**  button will not appear if it is hidden in the Status Line settings.

5. In the Scanner window select a cell that contains a symbol's ticker. The chart for the symbol will be plotted in the Chart window.

Note: The symbol name is linked to the Chart window. The other settings, such as Resolution of the Chart, Quote field, Time Zone, Build Volume on, and Sessions will not be affected.

To unlink a chart from the scanner:

Click the **Instrument Link**  button on the chart and change it to **Not Linked** .

Note: All studies or signals previously applied to the chart will be recalculated after linking.

Note: All manually placed drawings will stay in their original locations.

Note: Objects based on formula calculations (e.g., signal arrows, etc.) may disappear if the formula calculation on the new data series does not generate an object.

Time and Sales

Time & Sales information is used by professional traders to monitor the current price movements at its most detailed level. Time & Sales shows each individual trade as it occurs, and is displayed as a scrolling list. Time & Sales shows the exact price that each trade occurs at, and also whether the trade occurred at the bid or ask. This information shows whether there are currently more buyers or sellers, and also what prices they are buying and selling at. Also, Time & Sales shows the amount of volume that each trade includes (the number of contracts that were traded). This shows whether there are more contracts being bought or sold, and at which prices the largest amounts of volume trading.

The screenshot shows a Time & Sales window with the following components:

- 1**: Instrument selector showing "@NQ#" with a search icon.
- 2**: Status line displaying market data: "5/14/2013 20:41:48.000 B=3,000.75 A=3,001 O=2,981.25 H=3,005 L=2,971.25 C=3,000.75 Last=3,000.75 V=112,855".
- 3**: Column headers: "Date", "Time", "Price", "Volume", and "Filled at".
- 4**: A scrolling list of trades with alternating background colors (blue, green, yellow, red) for different price levels.

Date	Time	Price	Volume	Filled at
5/14/2013	21:40:44.000	3,000.25	1	Bid
5/14/2013	21:40:43.000	3,000.50	3	Ask
5/14/2013	21:40:43.000	3,000.50	1	Ask
5/14/2013	21:40:43.000	3,000.50	3	Ask
5/14/2013	21:40:43.000	3,000.50	1	Ask
5/14/2013	21:40:41.000	3,000.25	1	Bid
5/14/2013	21:40:40.000	3,000.50	1	Between Ask/Bid
5/14/2013	21:40:40.000	3,000.50	1	Bid
5/14/2013	21:40:40.000	3,000.50	1	Bid
5/14/2013	21:40:40.000	3,000.50	1	Bid
5/14/2013	21:40:40.000	3,000.50	2	Bid
5/14/2013	21:40:40.000	3,000.50	2	Bid
5/14/2013	21:40:40.000	3,000.50	1	Bid
5/14/2013	21:40:40.000	3,000.50	3	Bid
5/14/2013	21:40:40.000	3,000.25	1	Bid
5/14/2013	21:40:40.000	3,000.50	3	Above Ask
5/14/2013	21:40:40.000	3,000.50	8	Above Ask
5/14/2013	21:40:40.000	3,000.50	1	Above Ask
5/14/2013	21:40:40.000	3,000.50	4	Above Ask
5/14/2013	21:40:40.000	3,000.50	1	Above Ask

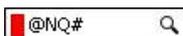
1. Time & Sales Instrument Selector, are
2. Time & Sales Status Line,
3. Time & Sales Column Header,
4. Time & Sales Scrolling List.

Creating New Time& Sales Window

Open a new Time& Sales window by one of following methods:

- Click the New Time& Sales Window icon  on the Main toolbar, or:
- In the main menu select File, then point to New and click Time& Sales Window.

Selecting Instrument



To select the instrument you want to trade with:

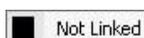
- Type the symbol name into the Instrument Selector field and press Enter; or:
- Click on the Lookup button  to select the necessary symbol from the database.

Linking Time & Sales Window

When the symbol for any one chart of the linked group is changed, the changes will automatically be applied to the rest of the linked windows (Chart, DOM window, Scanner window, Time&Sales Window).

- To link a Time & Sales Window by symbol, click the Instrument Link button on the Instrument Selector of the Time & Sales Window and select desired linking color;

- To un-link a Time & Sales Window, select **Not Linked**



Adjusting Time & Sales Window

Full and Compact Modes

Compact Mode hides Instrument Selector, Status Line and Column Header of the Time & Sales Window. To switch between Full and Compact Modes of Time & Sales Window:

1. Right click on the Time & Sales Scrolling List; 2. Select

Switch to Compact Mode or **Switch To Full Mode** Or:

1. Right click on the Time & Sales Scrolling List;
2. Select **Filter data...**;
3. Check/Uncheck **Full Mode** check box.

Formatting Columns

To adjust columns that are to be indicated on Time & Sales Window:

1. Right click on the Column Header;
2. Check/Uncheck the columns names that should be indicated;

Or:

1. Right click on the Time & Sales Scrolling List;
2. Navigate the mouse pointer to **Format Columns**; 3. Check/Uncheck the columns names that should be indicated;

To align text in columns:

1. Right click on the Time & Sales Scrolling List;



2. Navigate the mouse pointer to **Format Columns**;
3. Navigate the mouse pointer to **Alignment**;
4. Select one of three types of alignment:
 - Left
 - Center
 - Right

Formatting Time & Sales Window Appearance

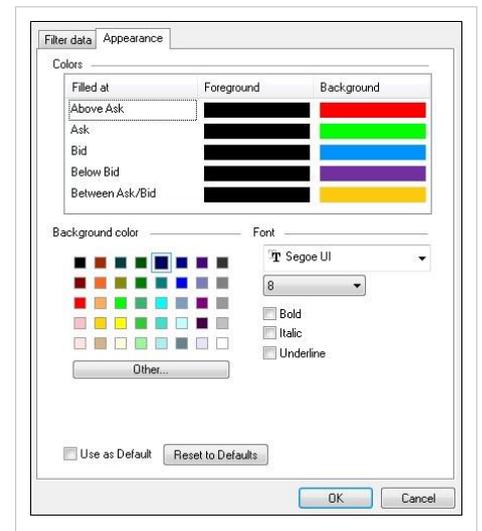
Appearance of Time & Sales Window can be adjusted in **Appearance** settings window. To open **Appearance** settings window:

1. Right click on the Time & Sales Scrolling List;
2. Select **Appearance...**

Changing Colors

Colors used in Time & Sales Window can be adjusted under **Colors** section of the **Appearance** settings window.

1. **Filled At** column contains the levels where the trades were executed.
2. **Foreground** column. Select the color of the text to be used for an each level in Time & Sales Window.
3. **Background** column. Select the color of the background to be used for an each level in Time & Sales Window.



Changing Background Color

Background Color of Time & Sales Window can be adjusted under **Background color** section of the **Appearance** settings window.

Select one of 40 pre-defined colors or define a custom color by clicking the **Other...** button.

Changing Font

Font, Font Size and Font Style used in Time & Sales Window can be adjusted under **Font** section of the **Appearance** settings window.

Appearance Defaults

To save the current settings as default check **Use as Default** check box.

To reset configuration to default settings click the **Reset to Defaults** button.

Note: The configuration indicated on a screenshot nearby is pre-defined Default settings of Time & Sales Window appearance.

Filtering Time & Sales Window Data

To apply filters to the data used in Time & Sales Window:

1. Right click on the Time & Sales Scrolling List;
2. Select **Filter Data...**

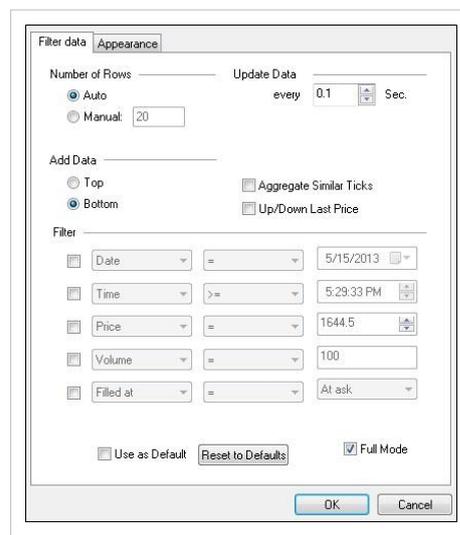
Changing Number Of Rows

Number of Rows used in Time & Sales Window can be adjusted under **Number of Rows** section of the **Filter Data** settings window:

- **Auto.** Select this mode to make the number of rows be auto-adjusted.
- **Manual.** Select this mode and set the number of rows to be fixed in Time & Sales Window.

Changing Update Time

Frequency of data updates in Time & Sales Window can be adjusted under **Update Data** section of the **Filter Data** settings window.



Note: Available time range for the updates is 0.1 - 1.0 s.

Changing Direction of Latest Updates

The latest updates of the data can be indicated on the *top* or at the *bottom* of the Time & Sales Scrolling List. Direction of the latest updates can be selected under **Add Data** section of the **Filter Data** settings window.

Aggregation of Similar Ticks

It is possible to group the ticks with the same price and make them be indicated as one line. In this case, the number of ticks with the same price will be indicated near the price in Time & Sales Scrolling List.

Aggregation of Similar Ticks can be enabled in **Filter Data** settings window.

Indication of Price Change

If the price of the current tick differs from the price of the previous one, an arrow showing direction of price change can be shown at the Time & Sales Scrolling List.

Indication of Price Change can be enabled in **Filter Data** settings window.

Filtering Time & Sales Data

Time & Sales Data can be filtered by:

- Date
- Time
- Price
- Volume
- Execution Level (Filled At)

To apply a filter to Time & Sales data:

1. Right click on the Time & Sales Scrolling List;
2. Select **Filter Data...**;
3. Check the necessary filter;
4. Set comparison condition (=, >, <, >=, <=, != (not equal));
5. Set comparison value;
6. Click OK to apply the filter.

Filter Defaults

To save the current settings as default check **Use as Default** check box.

To reset configuration to default settings click the **Reset to Defaults** button.

Note: The configuration indicated on a screenshot nearby is pre-defined Default settings of Time & Sales Window filters.

QuoteManager

Managing Data

Data Cache

The subsequent loading of previously created charts with multi-tick count-based resolutions is drastically accelerated by use of "Cache" technology.

Whenever the basic tick data is converted to a complex count-based resolution (for example, to 64-tick bars), the converted data is stored in the cache for future use.

As much of the stored data segment as possible is used when another chart with the same resolution is plotted. When a previously created chart is reloaded, the stored data is also used.

The cache can be cleared, forcing a fresh set of data to be loaded and used.

To clear the Cache:

1. Open the **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Right-click on the symbol, for which the cache must be cleared, and then click **Clear Cache**.
 3. In the dialog box that appears, click **OK** to clear the cache for that symbol, or click **Cancel** to cancel the operation.

Editing Data

This **QuoteManager** tool is necessary to review and edit data. It helps to quickly find and correct the bad ticks as well as add or delete new data.

Operating with Data

It is possible to modify data settings, add, insert, delete and find the necessary data. All these arrangements are performed in the **Edit Data** window.

Accessing Edit Data Window

There are 3 ways to access the **Edit Data** window:

1. In the **Edit** menu click **Edit Data...**
2. Right-click on the selected symbol and select **Edit Data...**
3. Use the **Ctrl+R** combination of hotkeys.

Modifying Data Settings

To load the data from the data storage one should define the data settings in the **Edit Data** window.

It is possible to select the desired resolution type, field and time zone.

One can also specify the start date/time and the end date/time for the loaded data.

When the data is loaded it is possible to change the data values.

To modify data settings:

1. In the **Data Settings** section, select the necessary resolution type from the **Resolution** drop-down list.
2. In the **Data Settings** section, select the necessary field from the **Field** drop-down list.
Note: In the field section only those fields are displayed for which the data is collected.
3. In the **Data Settings** section, select the necessary time zone from the **Time Zone** drop-down list. 3 time zones are available: Local, GMT and Exchange.
4. In the **Data Range** section, enter the necessary date in the **Start** field or use the drop-down calendar. Then enter the necessary time.

Note: The time field is available with the tick and minute resolutions only.

5. In the **Data Range** section, enter the necessary date in the **End** field or use the drop-down calendar. Then enter the necessary time.

Note: The time field is available with the tick and minute resolutions only.

6. Press the **Load** button and the loaded data will be displayed in the **Data** section.

Note: For the quotes with the tick resolution there will be displayed the Date, Time, Price and Volume values.

Note: For the quotes with the minute resolution there will be displayed the Date, Time, Open, High, Low, Close, Up Volume, Down Volume, Unchanged Volume, Total Volume, Up Ticks, Down Ticks, Unchanged Ticks and Total Ticks values.

Note: For the quotes with the day resolution there will be displayed the Date, Time, Open, High, Low, Close, Up Volume, Down Volume, Unchanged Volume, Total Volume, Up Ticks, Down Ticks, Unchanged Ticks, Total Ticks and Open Interest values.

Adding New Data

To add a new quote:

In the **Edit Data** window press the **Add** button to add a new quote. Each new quote will be added to the end of the quote list.

Note: The difference between the **Add** and **Insert** buttons is that by pressing the **Add** button a quote is added to the end of the quote list and by pressing the **Insert** button - at the beginning of the quote list.

Inserting New Data

To insert a new quote:

At the beginning of the quote list press the **Insert** button in the **Edit Data** window.

If the distance between the quotes is more than minimal increment for the given resolution type, it is possible to insert a new quote between these quotes.

Note: Only in this case, the **Insert** button becomes active.

Deleting Data

To delete a quote or several quotes:

In the **Data** section select the necessary quote or quotes and press the **Delete** button.

Finding Data

To find the necessary quote or quotes:

1. Press the **Find...** button and the **Find and Goto** window will appear.
2. Select the **Find** tab.
3. On the **Find** tab select from the 1st drop-down list according to what value the necessary quote or quotes should be found.
4. On the **Find** tab select from the 2nd drop-down list the necessary condition of the search.
5. Enter in the field (s) the necessary number (or percent) corresponding to the selected condition.
6. To find quote by quote, press the **Find** button. The **Find** button will change in the **Find Next** button, if you want to find more than one quote with the selected conditions.
7. To mark all the quotes corresponding to the selected conditions, press the **Mark All** button.
8. Press the **Close** button to close the **Find and Goto** window.

Editing Data

Going to Data

To go to the necessary quote:

1. Press the **Find...** button and the **Find and Goto** window will appear.
2. Select the **GoTo** tab.
3. On the **GoTo** tab select from the 1st drop-down list according to what value the necessary quote should be found.
4. On the **GoTo** tab in the 2nd field enter the necessary date or use the drop-down calendar.
5. On the **GoTo** tab enter the necessary time.

Note: The time field is available with the tick and minute resolutions only.

6. Press the **GoTo** button to go to the necessary quote.
7. Press the **Close** button to close the **Find and Goto** window.

Selecting All Quotes

Press the **Select All** button to mark all the quotes.

It is useful when all the quotes should be deleted.

Exporting Data

The quotes saved in the storage can be exported to a text file (ASCII) or a .qmd file (MultiCharts data format).

The program allows the user to specify the necessary data columns and their order as well as the start/end date/time.

How to export data

To export data for all instruments into an .qmd file (MultiCharts data format):

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. In QuoteManager main menu select **File**, then point to **Export Data** and click **Export All Instruments...** ;or Click the Export Data  icon on the toolbar.
 3. Select necessary options
 4. Click **Next**
 5. Enter the name of the *.qmd file and choose the path where it will be located.
 6. Click **Next**
 7. Click **Finish**.

To export data for a particular instrument / group of instruments into an .qmd file (MultiCharts data format):

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select a symbol (see Selecting Symbol(s) in Symbol list section). The program always uses the symbol's Price Scale when exporting.
 3. In QuoteManager main menu select **File**, then point to **Export Data** and click **Export Instruments...** ;or Click the Export Data  icon on the toolbar.
 4. Select necessary options
 5. Click **Next**
 6. Enter the name of the *.qmd file and choose the path where it will be located.
 7. Click **Next**
 8. Click **Finish**.

Exporting Data

To export data into an ASCII file:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:

- in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select a symbol (see Selecting Symbol(s) in Symbol list section). The program always uses the symbol's Price Scale when exporting.
 3. On the **File** menu, click **Export Data**, or click the **Export Data**  icon on the toolbar.
 4. Select **ASCII** or press **Ctrl+E**.
 5. Select the **Resolution** and **Field**.
 6. In the **Time Expressed** indicate the time zone for the quotes date/time.
 7. To select the time period for exporting data set the **Start Date/Start Time** and **End Date/End Time**.
 8. To change column order, click the header and keep down the left mouse button as you drag the column to its desired place.

Import Symbol List

Import Symbol List enables the user to import a text file that contains a list of symbols and their parameters.

The feature allows the user to import a list of symbols into QuoteManager quickly instead of manually adding the symbols one by one.

Preparing the Text File

The text file should contain four fields per row: Symbol Name, Description, Exchange, and Category. Of the four fields, only the Symbol field is required. QuoteManager will prompt the user for the missing information during the import process. The missing fields can also be entered manually into QuoteManager one by one after the symbol is imported.

Each field should be separated by a delimiter. The delimiter can be a comma, semi-colon, space, tab, or other character.

An example of the contents of a text file is shown below:

Symbol Name, Description, Exchange, Category

XYZ, XYZ Corporation, NYSE, Stocks

ABC, ABC Company, NASDAQ, Stocks

ESU9, S&P E-mini, GLOBEX, Futures

...

The order of the columns do not matter. However, each column must contain the same type of data.

In the example above, the second field of every row must be the "Description" field. The third field of every row must be the "Exchange" field.

Import Symbol List

Importing a Symbol List

To import a list of symbols:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select **File** in the main menu and then select **Import Symbol List**. The Import Symbols Wizard window will appear.
 3. Use the **Browse** button to select the text file. Select **Next**.
 4. In the **Start Import at Row** number box, enter the row number to start the import. Select **Next**.
For example, if the first row of the text file contains header names instead of symbol data, then start the import at row 2.
 5. In **Set Data Delimiters**, select the type of delimiter used in the text file.
 6. Select the **Treat Consecutive Delimiters as One** checkbox to consider consecutive delimiters the same as one delimiter. If this box is checked, consecutive delimiters will not be considered as an empty field.
 7. Choose the text qualifier from the **Text Qualifier** drop down list. Select **Next**.
For example, if a text field can have double quotes around it (e.g., "MSFT") . If the double quote text qualifier is selected, then MultiCharts will recognize that the user wishes to import MSFT without the quotes.
 8. Use the drop down lists to assign the column names to the columns in the text file. Select **Next**.
 9. In the **Select Data Source** drop down list, select the data source for the symbols.
 10. If the **Exchange** and **Category** columns were not previously assigned to a column in the text file, then use the **Exchange** and **Category** drop-down lists to specify the information.
 11. Select **Finish**. The symbols will be imported into QuoteManager.

Importing Data

Importing .qmd data (MultiCharts data format)

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. In QuoteManager main menu select **File**, then point to **Import Data** and click **Import Instruments...**
 3. Select the file location and click
 4. Click **Next**
 5. Select the instruments to import
 6. Click **Next** 7. Click **Finish**.

Importing ASCII data

The program supports importing from most known text (ASCII) files. The principal requirement for the file is a clear structure, data integrity and absence of logical errors.

See Invalid ASCII files section for information on the most common file faults.

The program is based on analyzing several hundreds of quote files, most in unique formats, which served as principles for file structure analysis. Despite successful automatic recognition of over 95% of files, there are still

situations requiring the user to interfere, mostly because of improper file structure or if the program cannot make up a conclusion on its structure.

Note: For more information on known import limitations see ASCII Import Limitations section. Be careful when importing files.

How to import ASCII data

To import data:

1. Open **QuoteManager** window
 - see how
2. Select a symbol (see Selecting Symbol(s) in Symbol list section). If the selected symbol contains quotes with the same timestamp as in the file, they'll be overwritten without warning. Make sure the symbol's price scale matches the price scale of the input data file. The program always uses the symbol's price scale when importing.
3. Make sure the file you wish to import is a 1 Tick, Minutes or 1 Day. If a file contains bars, but has no static time increment, this is a Tick\Volume Bar file and must be processed using ASCII Mapping. 4. On the **File** menu, click **Import Data**, or click the **Import Data**  icon on the toolbar.
5. Select **ASCII** or press **Ctrl+I**.
6. Indicate the **Path**. The path can be typed in, pasted from the clipboard or selected using the mouse. The selected path persists after converting the file so on next operation the previous path will be used by default. If it is necessary to move up a level, click the **Up** icon. To change the method of displaying files click the rightmost icon **Views** and select an option from the drop down menu.
7. Select the desired file from the indicated folder.
8. If the **Contents of the selected file** field the information is garbled, choose the proper encoding in the File origin.
9. Make sure the **Resolution** is valid. If the value is not correct, the possible causes may be the reason:
 - The Date field is not defined or not properly defined To set date:
 1. Click the Date column heading.
 2. Select **Date** and the corresponding template.
 3. Click **Custom** if there is no such template.
 4. Create a template. If the number of symbols in the date changes, use an asterisk * to replace the symbol, e.g. 9/9/2004 changed to 10/9/2004. The number of symbols changes from 6 to 7.
 - Allowed symbols in template for Date: **m** - month, **d** - day, **y** - year;
 - * sign means that length of chunk is undefined;**Example**: To convert date *1 Feb 2002 (2/1/2002)* type **d mmm yyyy* in the template field.
 5. Apply the created template by selecting it from the list.
 - The Time field is not defined or not properly defined To set time:
 1. Click the Time column heading.
 2. Select **Time** and the corresponding template.
 3. If the template does not exist, click **Custom**.
 4. Create a template. If the number of symbols in the date changes, use an asterisk * to replace the symbol, e.g. 8:30 changes to 10:10. The number of symbols changes from 4 to 5.
 - Allowed symbols in template for Time: **h** - hour, **m** - minute, **s** - second, **t** - time modifier AM/PM.

- * sign means that length of chunk is undefined;
- @ sign splits the whole template and time modifier PM lexem. **Example:** To convert time 9:20 PM type *h:*m tt@pm in the template field.

Note: Templates are stored in recognition engine's local settings. Time modifier can be in any language supported by current operating system.

5. Apply the created template by selecting it from the list.

- Wrong detection of the starting line of quotes

To set **Start at Row** You should indicate how many lines to skip.

After those parameters have been properly set, the program analyses the file again and sets the proper Resolution.

10. Select **Field Ask, Bid or Trade** to define what kind of data the file contains.
11. In the **Time Zone** please select the time zone of the quotes' origin.
12. If the price or volume needs to be multiplied or divided, select a proper factor in **Price Multiplier** or **Volume Multiplier**.
13. To select the time period for importing data set the **Start Date/Start Date Time** and **End Date/End Date Time**.

Invalid ASCII files

In most cases the invalid files are lacking the required fields, lacking data in some column, mixed up time and dates, irregular bar intervals. The program filters most faults and informs the user of them, but it is not possible in each and every case. Please see the analysis of typical invalid files below.

Invalid structure

Example 1. Two of the four necessary bar components are missing:

```
05-12-69 46.4 33.9
12-12-69 51.7 34.5
19-12-69 55.2 31
```

Example 2. Date is missing:

```
1.2061, 1.2065, 1.2061, 1.2065
1.2065, 1.2069, 1.2065, 1.2069
1.2069, 1.2070, 1.2066, 1.2066
```

Incomplete data

Example 1. File has a damaged string:

```
2 /28/2002 10:45 31505 31530 31480 31480 125 86 2
/28/2002 10:50 31480 31505 31480 31500 44 42
2 /28/ 20
```

Example 2. File has variable number of columns:

```
CC12-D,10/01/1995,3.51,3.53,3.5,3.5,0,2643200,,,
CC12-D,11/01/1995,3.44,3.53,3.43,3.44,0,501600,0,,
CC12-D,12/01/1995,3.45,3.5,3.41,3.45,0,1545600,0.017544,,
CC12-D,13/01/1995,3.34,3.47,3.34,3.44,0,2353600,-0.038184,,
CC12-D 16/01/1995,3.39,3.41,3.34,3.35,0,1897600,-0.023325,,
CC12-D,17/01/1995,3.47,3.5,3.38,3.41,0,7425600,-0.011461,,
CC12-D,18/01/1995,3.45,3.5,3.41,3.5,0,766400,0.002903,-3.518377,
```

Logical errors

Example 1. The file has a 60 minute interval, but with 1759 instead of 1800:

```
<TICKER>,<PER>,<DTYYYYMMDD>,<TIME>,<OPEN>,<HIGH>,<LOW>,<CLOSE>
EURUSD,I,19980420,160000,1.1005,1.1010,1.1005,1.1010
EURUSD,I,19980420,170000,1.1003,1.1003,1.1003,1.1003
EURUSD,I,19980420,175900,1.1012,1.1012,1.1012,1.1012
EURUSD,I,19980420,200000,1.1012,1.1016,1.1009,1.1015
EURUSD,I,19980420,210000,1.1017,1.1020,1.1000,1.1006
```

Example

2. Time is not ordered chronologically:

```
GBPUSD,19890627,0,2200,15457,B,N,N
GBPUSD,19890627,0,2200,15462,A,N,N GBPUSD,19890627,1,0100,15485,B,N,N
GBPUSD,19890627,1,0100,15493,A,N,N
```

ASCII Import Limitations

Important: Local data storage saves the following resolution types: 1 Tick, 1 Minute, 1 Day. All other resolutions are sampled from those.

Other data types may not be added to the database - use ASCII Mapping to process such files.

Mapping ASCII

Sometimes importing data to the database is extremely complicated or outright impossible.

In such a case ASCII mapping is the solution; there are two principal reasons for using ASCII mapping:

1. If one or several ASCII files constantly used are periodically updated. Even if there are just a few updates per day, re-importing hundreds of symbols is difficult or just not feasible;
2. If tick/volume bars must be displayed on a chart.

When mapping, the file path and format is indicated once, and every time a chart is created the program finds the file automatically, converts it into the necessary format based on the preset configuration and displays the data.

How to map ASCII files

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **File** menu, click **Map ASCII**.
 3. Click **Browse** to indicate the path containing the files to be mapped.
 4. In the **Get Symbol From** indicate **File Name** for the program to extract the symbol name from the filename. If along with quotes the file contains the symbol name as one of the columns, indicate **File's Field**.
 5. Use **Get name from to characters**, if a part of the word must be used.
 6. If the symbol name needs to be edited manually, click the corresponding cell.

7. Make sure the program has correctly defined the **Resolution** for every file you intend to map. If you see an error, click the hyperlinked file name. In the window that appears check:

- The Date field is not defined or not properly defined To

set date:

1. Click the Date column heading.

Mapping ASCII

2. Select **Date** and the corresponding template.

3. Click **Custom** if there is no such template.

4. Create a template. If the number of symbols in the date changes, use an asterisk * to replace the symbol, e.g. 9/9/2004 changed to 10/9/2004. The number of symbols changes from 6 to 7.

5. Apply the created template by selecting it from the list.

- The Time field is not defined or not properly defined To

set time:

1. Click the Time column heading.

2. Select **Time** and the corresponding template.

3. If the template does not exist, click **Custom**.

4. Create a template. If the number of symbols in the date changes, use an asterisk * to replace the symbol, e.g. 8:30 changes to 10:10. The number of symbols changes from 4 to 5.

5. To set a time template, e.g. 5:22 PM, the template must look like H:MM tt@PM, where tt means the postfix placeholder and after @ the PM value stands.

6. Apply the created template by selecting it from the list.

- Wrong detection of the starting line of quotes

To set **Start at Row** You should indicate how many lines to skip.

- Wrong sequence of columns To

change the sequence:

1. Click the column heading.

2. From the drop-down field select the correct field.

3. Repeat for all improperly defined columns.

After those parameters have been properly set, the program analyses the file again and sets the proper **Resolution**.

The program will automatically apply the edited template for all files with the same structure, so the user does not have to edit every file manually.

8. Indicate the **Category**, **Exchange**, **Field**, **TimeZone**, **Price** and **Volume Multiplier** for all symbols. If the same value is to be used in several cells, the program supports copying and multi-pasting.

9. Make sure the check box is checked for files to be mapped. If all fields are filled, the program checks the check box on the left, indicating that the file is ready for mapping.

10. Click **OK** to complete the procedure.

Online Mode Data Collection

Online Mode Data Collection

Online mode allows to collect data without any chart creating. The unlimited number of symbols can be connected to a data feed and the received quotes are stored in the database.

The symbol's connection status as well as the number of the quotes received is displayed in the **Realtime Status** column.

Connecting symbols

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select a symbol or several symbols.
Note: Use Ctrl and (or) Shift buttons to select several symbols.
3. Right-click and select **Fields to collect...** or in the menu select **Edit** and click **Fields to collect...**
or use **Ctrl + Alt + S** hotkey combination
4. In the **Settings** window select the fields and the resolution type to collect.
Note: Click the **Check all** button to select all the fields and resolution types.
5. Check the **Apply to all symbols** check box to apply these settings to all symbols.
Note: If several symbols are selected this check box will not be available.
6. Click **OK**.
7. Right-click anywhere on selected symbol(s) and select **Connect Symbol(s)** or in the menu select **Edit** and click **Connect Symbol(s)**.

Disconnecting symbols

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select the symbol(s) to be disconnected.
3. Right-click anywhere on selected symbol(s) and select **Disconnect Symbol(s)** or in the menu select **Edit** and click **Disconnect Symbol(s)**.

Setting Data Sources

Data Sources Overview

Understanding Data Sources

MultiCharts is a data feed neutral trading platform, it doesn't come with any prebuilt real-time data feed. We believe that our customers should be able to choose a data provider that suits their needs best. The only data feed available right after the installation is Free Quotes, free end-of-day historical daily data coming from Yahoo, Google and MSN (see Free Quotes). To connect to a live data feed a customer needs to have an account with any of the [supported data providers](#).

Since MultiCharts supports multiple data vendors and multiple brokers it is important to understand that in MultiCharts data feed and broker connections are separate. To establish connection to a broker one should set up the corresponding broker profile in MultiCharts (see Broker Profiles). Data feed connection settings are configured in QuoteManager.

Note: When MultiCharts and QuoteManager are launched simultaneously it is important to make sure that MultiCharts is in online mode:

In the **Main Menu** select **File**, then click **Preferences**, go to the **Data Server Mode** tab, and check **Online** check box. One is not able to receive data from a data vendor if the **Offline** mode is selected.

In the Offline mode neither MultiCharts, nor QuoteManager are able to receive data from a data source.

Operating Data Sources

This tool is used for managing data sources. It allows adding/removing data sources, editing their settings, names and abbreviations, receiving data source information, their states and versions.

Adding Data Sources

Data sources are added automatically. The system auto-adds a data source as soon as the data feed's DLL is placed in the DataFeeds folder.

This data source appears in the data sources list but it is still inactive.

To activate the data source press **Activate** button (see Activating Data Sources section).

[Contact us](#) to receive further information concerning the API for developers.

Activating Data Sources

Activation/deactivation is used to set the list of daily used data sources or for activating a newly added data source.

For full access the data source must be activated. If the data source is present in the list but marked in red, this data source must be activated.

To activate a Data Source:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click **Activate**. The data source is now marked in green and the Settings, Name and Abbr parameters can now be edited.

Deactivating Data Sources

If a data source is not used, it can be deactivated. In this case, it will not be displayed in the list of available data sources when a symbol is added; if necessary, the data source can be reactivated later.

To deactivate a data source:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click **Deactivate**. The data source is now marked in red and the Settings, Name and Abbr parameters cannot be edited.

Configuring Data Sources

Most data sources have unique parameters, e.g. server IP address, port, user name/login information, etc. See the Built-in Data Sources section for more detailed descriptions.

All the parameters for the integrated data sources are described there.

To edit a data source's settings:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click the **Settings** button.

Cloning Data Sources

To use a data source with different sets of settings it must be cloned. Cloning creates a virtual copy of the data source with modified parameters.

For instance, to receive data from several DDE data vendors one needs to have several DDE templates.

In this case for every DDE data feed a unique data source must be created. If there are two DDE data feeds, Universal DDE and Universal DDE 2 must be created and a DDE template selected for each.

To clone a data source:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click the **Clone** button.
 4. Enter a **Data Source Name** (up to 3 characters).
 5. Enter a **Data Source Abbr** (up to 3 characters).

Note: Only Universal DDE data source can be cloned with different from original Universal DDE settings. All other data vendors will be simply duplicated and use the same connection settings.

Editing Data Sources

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click the **Edit** button.

Deleting Data Sources

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Data Sources**, or click the **Data Sources**  icon on the toolbar.
 3. Select the data source using the keyboard or mouse and click the **Delete** button.

Adding Symbol(s) to Symbol List

To start working with a symbol, the symbol must be added to the symbol list. Adding can be done manually or from a list, downloaded from the data vendor.

Adding symbols manually is appropriate when the exact symbol name is known and the list of symbols is not available from the data vendor. For instance, with DDE there is no way to download a list, and the user is supposed to know the exact name for the query.

In all other cases, adding symbols manually is *not recommended*, as parameters in addition to the symbol name may be required by the *data vendor*. When a symbol is added from a list, provided by the data vendor, all required parameters are set automatically.

For details on specific data vendor symbols, see Built-in Datafeeds

Adding Symbols in Manual Mode

To add a symbol:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Symbol** menu, select **Add Symbol**, then click **Manually**, or Click the **Add Symbol**  icon on the toolbar.
 3. Select a **Data Source** from the list. If the desired data vendor is not listed, it could be that the vendor is not installed. See Data Sources for additional information.
 4. Enter the **Symbol** name.
 5. Select the **Category** from the list.
 6. Select the **Exchange** from the list. If the desired exchange is not listed, see the Exchanges section.
 7. Click **OK**.
 8. Enter the symbol **Root**.

Tip: Stock root is the same as the stock's name.

9. Click **OK** to add symbol with current properties or set Symbol Properties.

Adding Symbol from Data Vendor Supplied List

To add a symbol:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Symbol** menu, select **Add Symbol**.
 3. Select **From Data Source**.
 4. Choose a data source from the **Data Source** list; the **Insert Symbols into Portfolio** window will open. If a data vendor is not in the list:
 - data source does not support a symbol list (the symbol must be added manually)
 - data source is currently deactivated (the data source should be activated)
 - data source is not supported (Built-in Datafeeds should be used).
 5. Select a tab, corresponding to the type of symbol to be added.
 6. Enter all or part of the symbol name into the **Symbol** box and click **Lookup**.

Note: Additional search options may be available depending on data source selected.
 7. Select the desired symbol(s).
 8. Click **Add**. A message that you have added it to your database should appear.

Note: If there is a message "You must create *** exchange first", it means that a symbol that is added has an exchange that is not in the list of exchanges in QuoteManager. All that you need to do is to add the required exchange to the list with correct corresponding abbreviation (see Setting Exchanges & ECNs).
 9. Click **Close** or continue to search for symbols.

Note: If necessary, Symbol Properties can be changed (not recommended).

Insert Symbols into Portfolio Window

Depending on the categories of instruments provided by a data vendor, the number of **Category** tabs in the **Insert Symbols Into Portfolio** window for each data source may vary.

If **Stock/Index/Future/Bond/Commodity/Spread** tab is selected, type the name of an instrument in the **Symbol/Root** field and click the **Lookup** button to find desired instrument.

If **Option/Fund** tab is selected, there is an extra field **Category** available. For options **Stock Options** or **Futures Options** can be selected. For funds **Mutual Funds** or **Money Market Funds** can be selected.

Note: It is possible to put * in search field and click the **Lookup** button to get all available instruments from server when you add instruments from: Dukascopy, eSignal, GlobalServer, IQFeed, IWBank QuickTrade, LMAX, MetaStock, Open E Cry (for Futures and Forex only), PFGBEST, Patsystems, Rithmic 01, TradeStation (for Forex only), Zen-Fire.

Unique Features of Specific Data Sources in Insert Symbols into Portfolio Window

Interactive Brokers

When adding instruments from Interactive Brokers there is **Cash** tab instead of **Forex**. Enter the first currency of the instrument to search for all pairs starting with this currency. One can also specify the second currency of the symbol in Currency field on the tab to get the specific currency pair.

When adding futures contracts from Interactive Brokers, you can check Include Expired Contracts box to get expired individual contracts to create Custom Futures in MultiCharts (see Custom Futures).

IWBank QuickTrade

When adding Instruments from IWBank QuickTrade, you should enter the symbol name in the **Symbol** field, specify **Category**, select an **Exchange** from the list and click **Search**. There is no **All Exchanges** option in the **Exchange** list for IWBank QuickTrade.

TradeStation

When adding futures contracts from TradeStation, you can check **Include Expired Contracts** box to get expired individual contracts to create Custom Futures in MultiCharts (see Custom Futures).

When adding futures contracts from TradeStation, you can check Show Electronic Contracts Only box.

When adding stocks/indexes/futures/options/funds from TradeStation, you can check select **All Countries**, **United States** or **Germany** in **Country** field.

Zen-fire/Rithmic 01

In **Search Options** field **Symbol**, **Symbol Root** or **Description** can be selected. It is also possible to specify the **Exchange**, however it is not recommended since exchange names on data source end and in MultiCharts may slightly differ.

Troubleshooting

Establishing connection and processing data requests can be reviewed in the **Event Log** window of **QuoteManager** when a chart is plotted or data is requested from **QuoteManager** or **Portfolio Backtester**.

Event Log is located at the bottom of **QuoteManager** by default. One can show/hide it by clicking **View** in **QuoteManager** main window and selecting **Event Log**.

If you experience any issues with incoming data, the first step is to check **Event Log** messages.

Built-in Data Sources

ASCII Mapping

ASCII Mapping is a useful tool to get data from a bunch of ASCII files that are constantly updated (e.g. by a third party software). See Mapping ASCII for details.

To add an instrument with **ASCII Mapping** as the data source manually, see Adding Symbol(s) to Symbol List.

AvaTrade

To Set up AvaTrade data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **AvaTrade** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:
 - Enter **Login** and **Password**.
 - Select type of connection: **demo** / **real**.

Make sure the currency of the account is specified correctly.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Barchart

To set up Barchart data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Barchart** in the list of supported data vendors and click the **Settings** button. The Barchart Data Feed Configuration window will open.
3. In the opened up window:

- Authority section.

Enter **Login** and **Password**.

- Connectivity section.

Default Settings are recommended to be used. If Barchart provided specific custom settings, click the **Custom Settings** button. **Price**, **Port** and **Historical URL** fields become active.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

CQG

To connect MultiCharts to CQG data feed, it is necessary to have CQG API installed on the computer. Also, please make sure that your PC meets CQG requirements and technical specifications <http://www.cqg.com/Docs/CQGTraderSystemSpecs.pdf>

If there are any CQG applications installed on your PC, it is required to delete them prior to installing the supported version of CQG API:

1. **Windows Start** menu
2. **Control Panel**
3. **Uninstall a program / Programs and Features**
4. Select each of the following applications and uninstall all of them:
 - **CQG Trader**
 - **CQG Auto Upgrade Service**
 - **CQG Trader API**
 - **CQNet**
 - **MultiCharts API** (with CQG icon)
5. Not all versions of CQG software are supported.

If you are using MultiCharts 8.5 Release or Release Candidate, install the following version of CQG API:

https://dl.dropbox.com/u/95112551/Multicharts_COMAPI_en-US_production_V4.05.101_Install.msi

If you are using MultiCharts 8.0 Release or any previous version, install the following version of CQG API: https://dl.dropbox.com/u/95112551/Multicharts_COMAPI_en-US_production_V4.04.542_Install.msi

At the moment it is not possible to use multiple CQG/AMP accounts in MultiCharts. Only one and the same account should be used for getting data and trading. If different logins and passwords are entered in data source configuration and CQG broker profile, connection to data source will work, the broker profile will not.

AMP accounts originally created for a different software will not work in MultiCharts. Customers need to contact AMP directly to setup their accounts for MultiCharts or request a demo account here: [1]

Indexes are available in MultiCharts 8.5 beta 1 or higher. Indexes data is available for Live CQG/AMP accounts only. At the moment only real-time data is available for CQG Indexes, no historical backfill from data source. To learn how to store real-time data locally, read this article.

To set up CQG data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources** window. Select **CQG** in the list of all supported data vendors and click the **Settings** button.
2. In the opened up window enter **Login** and **Password**.

Note: By default demo mode is turned on. Uncheck the CQG demo box to turn it off. Demo mode is **required to be on** for demo accounts. If you have real account, the box is **required to be off**.

Note 2: It is recommended to launch MultiCharts by making a right-click on the icon -> Run as administrator. A popup dialogue message will appear where you need to allow CQG API to connect to the Internet (That

should be done upon first connection after API installation. You can start MultiCharts in regular mode after that)

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

CSI

To connect MultiCharts to CSI data feed, it is necessary to have their software installed and launched on the computer.

In order to receive data in MultiCharts, the data should be loaded first in CSI software.

To download CSI software, please, contact CSI directly: http://www.csidata.com/?page_id=21

To set up CSI data feed connection, in the **QuoteManager** main menu select **Tools** and then click **Data Sources**.

Select **CSI** in the list of all supported data vendors and make sure that is active.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Dukascopy

FIX API is used for connection between MultiCharts and Dukascopy. *Jforex API is not supported in MultiCharts.*

Limitation: does not provide historical data.

It is important to make sure that Dukascopy is informed FIX API is required when subscribe to their service. A customer needs to provide Dukascopy with his/her *IP address* to register it on their servers.

Note: To receive data and trade with Dukascopy in MultiCharts, a customer needs to open an account, but since FIX API is used, such type of account can be opened only if the balance is more than \$100 000.

To set up Dukascopy data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Dukascopy** in the list of all supported data vendors and click the **Settings** button. The Dukascopy Data Feed Configuration window is opened.
3. In the opened up window enter information provided by Dukascopy:

- Server IP section.

Server IP.

- Order Connection Settings section.

Login, Password, Port number, SenderCompID and TargetCompID. • Price Connection Settings section.

Login, Password, Port number, SenderCompID and TargetCompID.

- Reconnection Settings section.

Configure timer to reconnect if link to Dukascopy is lost.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

ESignal

To connect MultiCharts to eSignal data feed, it is necessary to have eSignal software (Data Manager) installed and launched on the computer.

When the connection is set up correctly, MultiCharts brings up eSignal software automatically when data is requested.

To download the latest version of eSignal software, follow this link: <http://www.esignal.com/products/download.aspx>

To set up eSignal data feed connection in the **QuoteManager** main menu select **Tools** and then click **Data Sources**, find **eSignal** in the list of all supported data vendors and make sure that is active.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

FreeQuotes

Free Quotes data feed is configured correctly by default and one can plot a chart using a number of prebuilt symbols from Free Quotes. That is free end-of-day historical daily bars coming from Yahoo, Google and MSN. Only Stocks and Indexes are available from this data source in MultiCharts.

To set up Free Quotes data feed connection

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**, find **Free Quotes** in the list of all supported data vendors and click the **Settings** button. The Free Quotes Data Feed Configuration window is opened.
2. In the opened up window:
 - One can check/uncheck **Yahoo**, **Google** and **MSN** servers to receive data from.
 - One can move **Yahoo**, **Google** and **MSN** servers by selecting any of them and clicking the **Up** and **Down** buttons to change the priority of receiving data.
 - One can disable **Yahoo**, **Google** and **MSN** servers by selecting any of them clicking the **Disable** button.
 - One can edit number and timeout of attempts to request data from **Yahoo**, **Google** and **MSN** servers by editing **Retry** and **Timeout** columns for corresponding server.

To add an instrument manually, see Adding Symbol(s) to Symbol List.

GlobalServer

MultiCharts provides seamless integration with Global Server (Global Server is used as an external database) meaning that you will see every tick from your Global Server in MultiCharts. This can be a very useful solution for longtime users of TradeStation 2000i.

To connect MultiCharts to Global Server (TradeStation 2000i) data feed, it is necessary to have Global Server installed and launched on the computer.

When the connection is set up correctly, MultiCharts brings up Global Server software automatically when data is requested.

To set up Global Server (TradeStation 2000i) data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**. Select **Global Server** in the list of all supported data vendors and click the **Settings** button. The Global Server Data Feed Configuration window is opened.

2. In the opened up window:

- Data Vendor section.

Global Server **Program Directory** and **Vendor DLL** are specified automatically.

- Settings section.

Uncheck the **Get data from local GlobalServer** box – for users of TSDataHub as an adapter that is used for Global Server on multiple computers.

- To save data from Global Server in MultiCharts database check the **Save data to local database** box.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Interactive Brokers

To connect MultiCharts to Interactive Brokers (IB) data feed, it is necessary to have IB software installed and launched on the computer.

When the connection is set up correctly, MultiCharts brings up IB software automatically when data is requested. IB has 2 applications that can be used for connection MultiCharts to IB:

1. IB Trader Workstation. (requires 1 logout per 24 hours)
2. IB Gateway.

Note: Java version 7 is strongly recommended for IB software to work correctly.

Though there is choice between web-based and standalone version, standalone version is recommended to use.

To download IB Trader Workstation and IB Gateway, follow this link: http://individuals.interactivebrokers.com/en/control/systemstandalone.php?os=win&ib_entity=llc

To set up connection in Interactive Brokers Trader WorkStation:

Enable Active X and Socket Clients box should be checked in IB TWS settings:

1. Click on **Configure** in main TWS window.
2. Click on **API** section. Select **Settings**.
3. Check **Enable Active X and Socket Clients** box.

Note: By default both in IB TWS and IB data source in QuoteManager **Port (Socket port)** number is **7496**.

4. It is recommended to add **127.0.0.1** to **Trusted IP Addresses**.

To set up connection in Interactive Brokers Gateway:

IB API should be selected when one logins to IB Gateway.

1. Click on **Configure** in main TWS window.
2. Click on **API** section. Select **Settings**.

Note: By default in IB Gateway **Socket port** number is **4001**. In IB data source in QuoteManager default **Port (Socket port)** number is **7496**. The ports should be the same.

It is recommended to add **127.0.0.1** to Trusted IP Addresses.

To set up Interactive Brokers data feed connection:

1. In the **QuoteManager** main menu select **Tools**, then click **Data Sources** and click on **Interactive Brokers**.
2. In the popped up window choose whether you have a **standalone** installed on your PC version of IB TWS / IB Gateway or a **web-based one**. *Standalone version is recommended to use.*
3. Click **Ok**.
4. Once you clicked Ok, the Interactive Brokers Data Feed Configuration window is opened. It is recommended to use default settings.

- Connectivity section.

Make sure the **Server IP Address** and **Port** numbers are correct.

IB TWS can be launched automatically by MultiCharts on attempt to add a symbol from IB data source; once a chart, DOM, Market Scanner window with IB instrument is open. To enable this option check **Launch Trader Workstation at start** box.

- Historical data section.

There is no need to reconfigure settings in this section. It is set up by default. ==Advanced users can check/uncheck the following options.==

- Download historical data.===
- **Regular Trading Hours**. Check the box to have standard trading session for daily-based charts.
- **Do not request ticks for intervals that has no minute data**.

If the box is checked, MultiCharts assumes that the interval that has no minute data from server also doesn't have tick data.

- **Filter bars with zero volume box**.
- **Filter bars with zero price box**.
- **TWS bar timestamp**.

It is not recommended to check this function to avoid possible problems with mixing session settings and missing bars on chart.

- **Simultaneous loading of Historical Data across all symbols/charts**.

If the box is checked the data is requested for all symbols simultaneously, not in a particular order.

- **Utilization of cache for real-time price data.Example:** historical minutes are requested as minutes from server up to the latest one. The latest historical is plotted from ticks up to the present moment. All the data that is collected in real-time (ticks) is used to build minutes

- **Plot ticks** either **from 1 second** snapshots or **5 second** snapshots from server.
- **Plot minutes** either **from 1 minute** snapshots or **15 minute** snapshots bars.
- Real-Time section.

There is no need to reconfigure it. It is set up by default.

- **Use server timestamps**.

Time of Trades is taken from IB servers. Does not apply to Ask and Bid data for Forex symbols. It is not recommended to check this function to avoid potential problems with session settings and missing bars on chart.

- **Generate a new tick if total volume changes.**

Turn on this function if you need total volume for the session. By default it is turned off. When turn on, the Trade Tick Volume = current TotalVolume – previous TotalVolume. This option also helps to avoid spikes coming from IB API in real-time feed.

- Click the **Reset** button to restore default settings.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

IQFeed

To connect MultiCharts to IQFeed data, it is necessary to have IQFeed software installed and launched on the computer. When the connection is set up correctly, MultiCharts brings up IQFeed software automatically when data is requested. To download the latest version of IQFeed client [click here](#).

To set up IQFeed data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**. Select **IQFeed** in the list of all supported data vendors and click the **Settings** button. The IQFeed Data Feed Configuration window is opened.

2. In the opened up window:

- Authority section.

Enter **Login** and **Password**.

- Historical Data section.

Check the **Build minute and daily bars based on tick data** box to request only tick data from IQfeed server and build all other resolution charts out of tick data.

Note: IQFeed provide less tick data comparing to minute or daily data.

- Real-Time section.

Check the **Generate a new Ask/Bid tick if Trade changes** box to make snapshots of Ask/Bid streams and show them in MultiCharts only at the moment when a new Trade comes.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

IWBank Quick Trade

To connect MultiCharts to IWBank QuickTrade data feed, it is necessary to have IWBank software installed and launched on the computer.

When the connection is set up correctly, MultiCharts brings up IWBank QuickTrade software automatically when data is requested.

To download the latest version of IW Quick Trade, follow this link: <http://www.iwbank.it/piattaforma-professionale-iwquicktrade-trader.html>

To set up IWBank QuickTrade data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.

2. Select **IWBank QuickTrade** in the list of all supported data vendors and click the **Settings** button.

3. In the opened up window enter your **User ID** and click **Ok**.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

LMAX

To Set up LMAX data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **LMAX** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:
 - Select type of connection: **demo / real**.

According to your type of connection URL is set up automatically.

- Enter **Login** and **Password**.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Since MultiCharts 8.7 beta 1 it is possible to cache historical data downloaded from LMAX to speed up data backfilling. To enable caching downloaded data:

1. Open QuoteManager,
2. Click **Tools** in main menu,
3. Select **Data Sources**,
4. Highlight LMAX,
5. Click **Settings**,
6. Check *Cache downloaded quote files*,
7. Click OK to apply the settings.MB Trading.

MB Trading

To connect MultiCharts to MB Trading data feed, it is necessary to have their software installed on the computer.

1. To download the latest version of MBT Desktop, follow this link: <http://www.mbtrading.com/mbtDesktop.aspx>.
2. To get latest version of MBT Desktop PRO, follow this link: <http://www.mbtrading.com/mbtDesktopPro.aspx>

Note: MB Trading software and MultiCharts should not be launched simultaneously.

To set up MB Trading data feed connection:

1. On the **QuoteManager** main menu select **Tools** and then click **Data Sources** window. Select **MB Trading** in the list of all supported data vendors and click the **Settings** button.
2. In the opened up window enter your **Login**, **Password** and click **Ok**.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

MCFX (MultiCharts Forex Data)

This data feed provides FOREX data from FXCM. In MultiCharts FXCM data is available only through our servers.

Note: Only **Ask** and **Bid** quote field is provided. No **Trade** quote field data.

We provide MultiCharts Forex Data (up to 10 years of FXCM data) for \$99 per month. This subscription is separate from MC license. MCFX data feed is not installed automatically with MultiCharts. To install this data vendor and find out more about subscription, please contact our support. To set up MCFX data feed connection:

1. Contact our support to install the data source for MultiCharts.
2. In the Data Sources window select **MCFX** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window enter your **User Name**, **Password** in Authority section.
4. In the Connectivity section make sure that the **Server** is **74.200.223.66** and **Port** is **10000** and click **OK**.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Metastock

To connect MultiCharts to Metastock data feed, it is necessary to have their database files on the computer. Limitation: 65000 bars per symbol limitation To set up Metastock data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources** window. Select **Metastock** in the list of all supported data vendors and click the **Settings** button.
2. In the opened up window locate the path to **Metastock files** by clicking the **Add...** button. You can also delete the location by clicking the **Delete** button. **Up** and **Down** buttons can be used to change the priority of requests to the file locations.
3. Specify the **time zone** of data in Metastock files.
4. There are 2 options for Resolution Detection:
 - **Automatic.**
 - **Manual.**

One can specify the resolution types in the files to build greater resolutions in MultiCharts from them: minute and daily bars.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

MIG Bank

To set up MIG Bank data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources** window. Select **MIG Bank** in the list of all supported data vendors and click the **Settings** button. The MIG Bank Data Feed Configuration window is opened.

2. In the opened up window:

- Session Settings section.

Server IP, Username, Password, Port number, SenderCompID and TargetCompID.

- Reconnection Settings section.

Configure timer to reconnect if connection to Mig Bank is lost.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Open E Cry

Does not provide expired futures contracts.

Since **MultiCharts 8.0 beta 3** UUID connection type has been implemented. **UUID** connection greatly improves reliability using OEC Trader and MultiCharts at same time with same username.

Important Information: Existing OEC customers need to enable third party software at [Open E Cry web page](#) .

Introducing brokers (such as Global Futures) clients should use this link: [Open E Cry Portal web page](#).

If MultiCharts is not enabled on Open E Cry web page, the connection will not be established.

To set up Open E Cry data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.

2. Select **Open E Cry** in the list of all supported data vendors and click the **Settings** button.

3. In the opened up window:

- Authority section.

Enter **Login** and **Password**.

- Connectivity section.

Make sure that the **Server Name** and **Port** number are correct.

- Historical Data section.

- **Simultaneous loading of Historical Data across all symbols/charts.**

If the box is checked the data is requested for all symbols simultaneously, not in a particular order.

- **Utilization of cache for real-time price data.Example:** Historical minutes are requested as minutes from server up to the latest one. The latest historical is plotted from ticks up to the present moment. All the data that is collected in real-time (ticks) is used to build minutes.

- Real-time Data section.

Generate a new tick if total volume changes.

Turn on this function if you need total volume for the session. By default it is turned off. When turn on, the Trade Tick Volume = current TotalVolume – previous TotalVolume.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Patsystems

To set up Patsystems data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Patsystems** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:
 - Common Settings section.

The **Demo Mode** box: check it to enable Patsystems data feed demo mode. In this mode Internet connection is not required, the data is generated randomly and orders are not sent to the broker.

Enter **Login** and **Password**.

License (default value is FBD653F002), **Environment**, **Application ID** and **Application Version** fields are filled by default; however if the broker provides different settings, enter them into these fields.

- Transport Settings section.

Enter **Trade Server**, **Data Server** and **Port** numbers.

- SSL section.

To use SSL certificate provided by Patsystems, check the **Use SLL** and enter its name.

- Advance Settings section.

Configure timer to reconnect if link to Patsystems is lost in Reconnection Settings section.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Rithmic 01

To set up Rithmic 01 data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Rithmic 01** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:
 - Authority section.
 - Enter **Login** and **Password**.

SSL certificates path is set up by default.

- Connectivity section.

Make sure that the selected deployment is **Rithmic 01** if you have real account. If you have simulation account, select **Zen-Fire/Rithmic Server Sim**.

Do not change default connection settings in this section.

The **Reset** button nearby **Deployment** is to restore correct connection settings.

- Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

TradeNode

FIX API is used for connection between MultiCharts and TradeNode. To connect MultiCharts to TradeNode data feed, it is necessary to have TradeNode Gateway installed and launched on the computer. More about installation

TradeNode software follow this link: <http://support.tradenode.com>

To download the latest version of TradeNode software, follow this link: <http://support.tradenode.com>

To set up TradeNode data feed connection in the **QuoteManager** main menu select **Tools** and then click **Data Sources**, find **TradeNode** in the list of all supported data vendors and make sure that is active.

For More Information about TradeNode follow this link <http://tradenode.com> To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

TradeStation

Tradestation

To connect MultiCharts to TradeStation data feed, it is necessary to have their software installed and launched on the computer.

If the connection is set up correctly, MultiCharts brings up TradeStation software automatically when data is requested.

To download the latest version of TradeStation, follow the link and login to TradeStation Client Center: <https://clientcenter.tradestation.com>

To set up TradeStation data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **TradeStation** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:

- Data Vendor section.

Select the version of TradeStation installed on your computer from the **TradeStation versions** list.

- Settings section.

Check the **Save data to database** box if you want to store the data in QuoteManager and not to request it from TradeStation next time you plot the same instrument.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Trading Technologies

FIX API is used for connection between MultiCharts and Trading Technologies.

Limitation: does not provide historical data.

To set up Trading Technologies data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Trading Technologies** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window enter:

- Order Connection Settings section.

Server IP, Password, Port number, **SenderCompID** and **TargetCompID**.

- Price Connection Settings section.

Server IP, Password, Port number, **SenderCompID** and **TargetCompID**.

- Reconnection Settings section.

Configure timer to reconnect if connection to Trading Technologies is lost.

If your account is provided by Advantage Futures, check the **Treat Gateways As Exchanges (for Advantage Futures)** box.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Universal DDE

DDE (Dynamic Data Exchange) is a widely used protocol for exchanging data between applications in the MS Windows environment.

Please see the [Developer's website](#) for more detailed information on DDE.

Features and limitations

Features

- User-definable DDE Server/Topic/Item for Trade Price, Trade Volume, Bid Price, Bid Size, Ask Price, Ask Size
- Rapid creation, editing and application of DDE Templates
- Testing the functionality of a DDE server or a newly created template
- Support for various server types. Some DDE servers contradict the Microsoft specifications.

For maximal user convenience the program has a set of deeply customizable options (not described here).

- Automatic reconnection in case the connection to the DDE server is lost

Limitations

- Presently the following field types are not supported: Time, Open, High, Low, Close, Total Volume, Change
- The program receives ticks only and assigns the current system time to them. Sometimes the tick's real time may differ from the assigned one due to delay
- The Status Bar is not displayed on the chart as there aren't enough fields to chart it

Setting up

1. On the **Tools** menu, click **Data Sources**.
2. Select **Universal DDE** and click **Settings**.
3. Indicate a template name in **Template** (up to 20 characters long).
4. Indicate the DDE Links in the corresponding sections (the sections include **Trade**, **Bid** and **Ask**. The **Price** and **Volume/Size** must be indicated in each section; if **Volume/Size** cannot be used (e.g for Forex), indicate **Price** instead. Since for every price the program queries for a volume, this field will never be empty as the program will be waiting for volume data to form a new tick.

5. Before creating DDE links in **Universal DDE** make sure they are functional in Excel.

After that, copy the link to the corresponding field in **Universal DDE** and replace the static symbol name with the asterisk symbol *.

For instance, replace =WINROS|LAST!MSFT with =WINROS|LAST!*. After that the program will automatically use the symbol name for which the given template is used. Do the same for all fields.

6. To make sure that the created template is functional, click **Test**. Enter the symbol name in **Symbol** and click **OK**. If the DDE Server is running, the template is properly created and the queried symbol is accessible, you'll see the current value for each field and the number of updates. If quotes do not arrive, check the template and symbol name.

If fixing them does not resolve the problem, please send an e-mail to support@tssupport.com ^[2] and indicate the DDE Server, symbol and template names, confirm that an identical template functions in Excel and share any other information you deem important.

To create a symbol using Universal DDE as the Data Source see Adding Symbol(s) to Symbol list section for more detailed information.

To use several DDE servers at once You should clone the Universal DDE and assign new settings.

See Cloning Data Sources section for more detailed information.

ZenFire

Zen-Fire provides a very limited amount of historical data; historical tick data is only available for the current session, though minute data is available over a somewhat longer time span. To set up Zen-Fire data feed connection:

1. In the **QuoteManager** main menu select **Tools** and then click **Data Sources**.
2. Select **Zen-Fire** in the list of all supported data vendors and click the **Settings** button.
3. In the opened up window:

- Authority section.

Enter **Login** and **Password**.

SSL certificates path is set up by default.

- Connectivity section.

Make sure that the selected **Deployment** is **Zen-Fire** if you have real account. If you have simulation account, select **Zen-Fire/Rithmic Server Sim**.

Do not change default connection settings in this section.

The **Reset** button nearby **Deployment** is to restore correct settings.

- Reconnection Settings section.

Configure timer to reconnect if connection to Rithmic is lost.

To add an instrument manually or from data source, see Adding Symbol(s) to Symbol List.

Setting Exchanges

Setting Exchanges & ECNs

This tool allows adding/removing Exchanges/ECNs and editing their parameters.

The Exchanges/ECNs parameters are inherited by the symbols, so the better are the Exchanges/ECNs tuned in, the higher will be the overall quality of the system performance.

Sometimes the Exchange/ECN settings aren't the same for all the symbols traded on a given Exchange/ECN.

So the user is able to edit settings on a symbol-by-symbol basis, although in the majority of cases the Exchange/ECN settings are exactly the same as the individual symbol settings.

Adding an Exchange/ECN

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Exchanges & ECNs**, or click the **Exchanges & ECNs**  icon on the toolbar.
 3. Click **Add**.
 4. Enter the **Exchange/ECN name**. This name must be informative for convenience and consist of the full exchange name, up to 50 characters long. This full name will not be used on the Symbol list and in the symbol settings.
 5. Enter the **Abbr**. This short name, up to 7 characters long will be used for exchange identification, use the standard abbreviations as they will be used for symbol searches.
 6. Select the **Holiday List**. See Holidays section for more information; if you do not want to use the Holiday List, select **None**.
 7. Select a **Price Scale** corresponding to most symbols traded at the selected Exchange/ECN.
 8. Enter the **Daily Limit**.
 9. Enter the **Min. Movement**.
 10. Enter **Big Point Value**.
- Setting Exchanges & ECNs
11. Add the sessions in the **Sessions** section. Use the **Add/Delete** buttons to add or remove them; *the sessions must be set in the local time of the corresponding exchange*.

12. On the **Time Zone** tab set the exchange's time zone. This can be done either using **From System Options** or **Custom** options. Selecting **From System Options** will set the OS time zone settings, which is usually correct; you might have to set the time zone and daylight savings settings by using **Custom**.

Removing the Exchange/ECN

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Exchanges & ECNs**, or click the **Exchanges & ECNs**  icon on the toolbar.
3. Click **Delete**.

Editing the Exchange/ECN

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Exchanges & ECNs**, or click the **Exchanges & ECNs**  icon on the toolbar.
3. Click **Edit**.

Cloning the Exchange/ECN

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Exchanges & ECNs**, or click the **Exchanges & ECNs**  icon on the toolbar.
3. Select the Exchange/ECN the settings of which you'd like to clone.
4. Click the **Clone** button.
5. Adjust the necessary settings.

Example: If you need to add NASD exchange, you can simply clone NASDAQ exchange settings and change the abbreviation (Abbr) to NASD.

Setting Holidays

This tool is used to indicate the days when the exchanges do not work to avoid gaps on the charts.

The holidays are divided into holiday lists so one select holidays by nation or other parameter.

Adding Holidays

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Holidays**, or click the **Holidays**  icon on the toolbar.
 3. Select the desired holiday list from the *Holiday List*' list.
 4. Click the **Add...** button.
 5. Enter the holiday name in the **Description** field, select the date and click **Ok**.

Editing Holidays

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Holidays**, or click the **Holidays**  icon on the toolbar.
 3. Select the desired holiday list from the *Holiday List*' list.
 4. Select the holiday you want to edit.
 5. Click the **Edit...** button.
 6. Change the holiday name in the **Description** field, select the date and click **Ok**.

Removing Holidays

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Holidays**, or click the **Holidays**  icon on the toolbar.
 3. Select the desired holiday list from the *Holiday List*' list.
 4. Select the holiday you want to delete.
 5. Click the **Delete** button.

Note: Check **Do not use holidays** check box to disable holidays for all exchanges.

Setting Symbols

Operating Symbol List

Symbol List is a list of commonly used financial instruments. Modern-day investors need easy access to any of the trading vehicles.

QM has been developed based on those needs, the basic requirements being:

- The program must function with numbers of symbols in tens of thousands
- Rapid data access, which means powerful search, sorting, and selection capabilities
- Convenient adding and editing of data
- Simple data backup and restore
- Minimal setup and maintenance effort

Adding Symbol(s) to Symbol List

To start working with a symbol, the symbol must be added to the symbol list. Adding can be done manually or from a list, downloaded from the data vendor.

Adding symbols manually is appropriate when the exact symbol name is known and the list of symbols is not available from the data vendor. For instance, with DDE there is no way to download a list, and the user is supposed to know the exact name for the query.

In all other cases, adding symbols manually is *not recommended*, as parameters in addition to the symbol name may be required by the *data vendor*. When a symbol is added from a list, provided by the data vendor, all required parameters are set automatically.

For details on specific data vendor symbols, see Built-in Datafeeds

Adding Symbols in Manual Mode

To add a symbol:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Symbol** menu, select **Add Symbol**, then click **Manually**, or Click the **Add Symbol**  icon on the toolbar.
 3. Select a **Data Source** from the list. If the desired data vendor is not listed, it could be that the vendor is not installed. See Data Sources for additional information.
 4. Enter the **Symbol** name.
 5. Select the **Category** from the list.

6. Select the **Exchange** from the list. If the desired exchange is not listed, see the Exchanges section.
7. Click **OK**.
8. Enter the symbol **Root**.

Tip: Stock root is the same as the stock's name.

9. Click **OK** to add symbol with current properties or set Symbol Properties.

Adding Symbol from Data Vendor Supplied List

To add a symbol:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Symbol** menu, select **Add Symbol**.
 3. Select **From Data Source**.
 4. Choose a data source from the **Data Source** list; the **Insert Symbols into Portfolio** window will open. If a data vendor is not in the list:
 - data source does not support a symbol list (the symbol must be added manually)
 - data source is currently deactivated (the data source should be activated)
 - data source is not supported (Built-in Datafeeds should be used).
 5. Select a tab, corresponding to the type of symbol to be added.
 6. Enter all or part of the symbol name into the **Symbol** box and click **Lookup**.

Note: Additional search options may be available depending on data source selected.
 7. Select the desired symbol(s).
 8. Click **Add**. A message that you have added it to your database should appear.

Note: If there is a message "You must create *** exchange first", it means that a symbol that is added has an exchange that is not in the list of exchanges in QuoteManager. All that you need to do is to add the required exchange to the list with correct corresponding abbreviation (see Setting Exchanges & ECNs).

9. Click **Close** or continue to search for symbols.

Note: If necessary, Symbol Properties can be changed (not recommended).

Selecting Symbol(s) in Symbol List

Symbols can be selected by using the keyboard or a mouse.

Using the keyboard, move the selection pointer to the line containing the symbol. If the selection is not visible, press the **Down Arrow** button twice, the selection will be visible on the uppermost symbol; selection with the mouse is simpler and can be achieved by left-clicking the line once.

To select several sequential symbols at once keep **Shift** pressed and select with **Up** or **Down Arrow** buttons.

To select several sequential symbols at once with the mouse keep **Shift** pressed, scroll using the **Vertical Scroll Bar** to the required position, and click it.

To select many sequential symbols at once, select the starting symbol, keep **Ctrl** pressed and move the selection with the **Home/End** or **Page Up/Page Down** buttons, then release **Ctrl**, press **Shift** and press **Up/Down** arrow buttons depending on the direction of selecting.

To select many sequential symbols at once with the mouse keep **Ctrl** pressed and click the symbols.

If you need to select several non-sequential symbols using the keyboard, start on the first symbol, press and keep down **Ctrl** and move the selection border to the desired position using the **Up/Down Arrows**, **Home/End** or **Page Up/Page Down**, then press **Space**. To perform such selection with the mouse keep **Ctrl** pressed and click the symbols to be selected.

Note: To select all symbols, select **Edit** in the main menu and then click **Select All**, or use the **Ctrl+A** keyboard shortcut.

Deleting Symbol(s) from the Symbol List

To delete one or more symbols:

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Select the symbols to be deleted.
 3. Selected symbols can be deleted by one of the following methods:
 - Click the **Delete Symbol**  icon on the toolbar
 - Right-clicking on the selected symbols and then clicking **Delete Symbol**
 - Selecting **Symbol** on the main menu and then clicking **Delete Symbol**
 - Pressing the **Delete** key on the keyboard

Sorting the Symbol List

The list is sorted based on the contents of one of the available columns. For example, text data is sorted alphabetically, but months in calendar order.

For sorting:

1. On the **View** menu, click **Sort By**.
2. Select the column to sort by, i.e. **Symbol**.
3. Select the sorting direction - **Sort Ascending** or **Sort Descending**.

or:

1. Click the corresponding column heading to sort by that column.
2. The arrow on the heading indicates the sorting direction; click the column to reverse the sorting direction.
3. Right-click a column heading to call up a context menu with sorting options. See *Selecting Symbol(s) in Symbol List* section.

Finding Symbol(s) in Symbol List

Two types of a search can be performed: an Incremental search and a Full String search.

An *Incremental* search locates a symbol as the symbol name is typed. Please note that an incremental search can be performed by the signal name only, and not by any other attributes.

To perform an *Incremental* search:

1. Select *All Symbols* in the left panel to search a list of all symbols, or select a particular symbol category.
2. Click on any symbol in the right panel.

3. Start typing the symbol name; as the name is being typed, the selection will move between symbols seeking for a match.

Note: Each consecutive character in a symbol name must be typed with an interval of no more than one second; if you pause for more than one second, a new search will be started, for a symbol name beginning with the first character that was typed after a pause of more than a second.

To start a new search without waiting for the second to be over, simply press the ESC key.

Example: To search for AMD, type **a m d** with an interval of less than a second between each character; if you pause for more than a second after typing **a**, once you type **m**, the first symbol, beginning with the character "m", will be located instead.

A *Full String* search can be used to find multiple symbols that satisfy the search criteria. To perform a *Full String* search:

1. Select *All Symbols* in the left panel to search a list of all symbols, or select a particular symbol category.
2. Select **Edit** in the main menu, and then click **Find**, or use the CTRL+F keyboard shortcut; a **Find** dialog box will open.
3. In the **Find what** text box, enter a string to search for.
4. In the **In column** list box, select the column to search in.
5. Click **Find Next** to begin the search.
6. To continue the search, click **Find Next** again.

A previously performed search can be repeated by simply pressing the F3 key, without opening the **Find** dialog box.

Customizing the Symbol List

The program supports workspace customization. The user can select the data columns and set their widths, including: Symbol, Description, Exchange Listed, Data Source, Contract Month, Price Scale, CUSIP, Root, Margin, Contract Year, Expiration Date, Expiration Rule, Expiration Status, Daily Limit, Min. Movement, Big Point Value, Strike Price, and Option Type.

To customize the Symbol List:

1. On the **View** menu, click **Columns**.
2. Select the checkboxes, corresponding to the columns to be displayed.
3. Use the **Move Up** and the **Move Down** buttons to change the order in which the columns are displayed.
4. Enter the desired width, in pixels, in to the **The selected column should be N pixels** box.

Note: Column width can also be resized by using the mouse.

Setting Custom Session Templates

This tool allows creating templates for rapid access to the session configurations.

This is especially useful for non-standard sessions used with several symbols.

Create a template once and activate it for the desired symbol with just a few clicks.

Adding Session Templates

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Session Templates**, or click the **Session Templates**  icon on the toolbar.
 3. Click **Add**.
 4. Enter the **Description** (up to 50 characters long).
 5. Select **Session Time**. This option indicates the time used for setting sessions.
 6. Use the **Add/Delete** buttons to add or delete sessions.

Setting Custom Session Templates

Editing Session Templates

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Session Templates**, or click the **Session Templates**  icon on the toolbar.
 3. Click **Edit**.

Deleting Session Templates

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Session Templates**, or click the **Session Templates**  icon on the toolbar.
 3. Click **Delete**.

Setting Expiration Rules

This tool is used to set the rule that will indicate the last day that an options or futures contract is valid.

Due to the fact that MultiCharts supports multiple brokers and exchanges, expiration rules may vary for different contracts.

Adding Expiration Rule

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Expiration Rules**, or click the **Expiration Rules**  icon on the toolbar.
 3. Click the **Add...** button.
 4. Enter the Expiration Rule name in the **Name** field;
 5. Select the number and type of the days that the contracts come into effect; 6. Select the rule that will set the benchmark date for the contract expiry;
 7. Click the **OK" button to save the changes.**

Editing Expiration Rule

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Expiration Rules**, or click the **Expiration Rules**  icon on the toolbar.
 3. Select the Expiration Rule you want to edit.
 4. Click the **Edit...** button.
 5. Change the number and type of the days that the contracts come into effect; 6. Change the rule that will set the benchmark date for the contract expiry;
 7. Click the **OK" button to save the changes.**
- Setting Expiration Rules

Removing Expiration Rule

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. On the **Tools** menu, click **Expiration Rules**, or click the **Expiration Rules**  icon on the toolbar.
 3. Select the Expiration Rule you want to delete.
 4. Click the **Delete** button.

Note: Expiration Rule is IMPORTANT for custom futures contracts construction.

Settings Properties

It is possible to modify symbol properties in QuoteManager. Every symbol has a set of properties. Data Source, Category, Exchange & ECN, Symbol Name and Symbol Root are the mandatory properties.

In case the symbol was added from a list supplied by data vendor all mandatory and most optional properties are already set according to data vendor requirements.

It is possible to modify properties only after the symbol is already added to the symbol list.

In case the symbol was added manually all mandatory (except **Symbol Root**) and some optional properties are already set.

It is possible to modify properties while creating a symbol as well as after the symbol is already added to the symbol list.

Important: This information can be obtained from the exchanges where the symbol is listed or from a brokerage firm.

The properties are edited in the **Edit Symbol** window:

Editing an existing symbol properties

1. In **QuoteManager** double-click the necessary symbol in the symbol list.
2. Select appropriate tab in the **Edit Symbol** window opened.

Note: First tab name dynamically changes according to the symbol category set.

3. Set necessary properties.

or

1. In **QuoteManager** select the necessary symbol (see Selecting Symbol(s) in Symbol list section).
2. Click the **Edit Symbol**  icon on the toolbar.
3. Select appropriate tab in the **Edit Symbol** window opened.

Note: First tab name dynamically changes according to the symbol category set.

4. Set necessary properties.

or

1. In **QuoteManager** select the necessary symbol (see Selecting Symbol(s) in Symbol list section).
2. Under menu select **Symbol** and click **Edit Symbol...**
3. Select appropriate tab in the **Edit Symbol** window opened.

Note: First tab name dynamically changes according to the symbol category set.

4. Set necessary properties.

or

1. In **QuoteManager** right-click on necessary symbol and select **Edit Symbol...**
2. Select appropriate tab in the **Edit Symbol** window opened.

Note: First tab name dynamically changes according to the symbol category set.

3. Set necessary properties.

Editing a new symbol properties

After filling information in the **Add Symbol** window the **Edit Symbol** window appears automatically making possible setting properties.

Important: The **Category** property can not be changed for a symbol.

Important: It is required to set the **Symbol Root** property.

Tip: **Symbol Root** for stocks is the same as the **Symbol Root** property.

Daily Limit	Settings	All	The maximum price movement allowed during a session (currently is not used in MultiCharts).
Min. Movement	Settings	All	<p>Returns a numeric expression representing the minimum movement allowed for a particular symbol.</p> <p>The MinMove value is represented by a whole number. For example: the MinMove of the E-Mini S&P is 25, which represents the minimum price move of the E-Mini S&P which is .25. Any stock would have a MinMove of 1, which represents the minimum price move of any stock which is .01 MinMove</p> <p>Examples MinMove / PriceScale returns the smallest increment between trades. $\langle bt \rangle \text{MinMove} / \text{PriceScale} * \text{BigPointValue}$ returns the dollar value of the smallest change in price.</p>
Big Point Value	Settings	All	The dollar value represented by a full point of price movement. In the case of stocks, the Big Point Value is usually 1, in that 1 point of movement represents 1 dollar, however it may vary. For example, the Big Point Value for the S&P Futures is 250, where 1 point of price movement represents 250 dollars. The Big Point Value for a stock such as JDSU is 1, where 1 point of movement represents 1 dollar.
Session setting	Sessions	All	Learn more about Custom Session Templates .

Property	Tab	Category Applicable	Description
Data Source*	Category	All	Data source to receive the data for the symbol from. It is possible to have several symbols with the same underlying asset (name) fed from different data source.
Symbol Name*	Category	All	Symbol name is the abbreviation of the underlying asset name i.e. ticker name. Symbol names may vary for different data source. The same underlying asset may have quite different symbol names for different data sources.
Symbol Root*	Category	All	Symbol root is a abbreviation of underlying' name. The same underlying asset may have quite different symbol names for different data sources.
Description	Category	All	Description is the full name for the asset. Usually it is a name of the corporation, financial entity or instrument that the symbol is based on.
CUSIP	Category	Mutual Funds & Stocks	CUSIP (Committee on Uniform Securities Identification Procedures) is a unique nine-character identification number, for each class of security approved for trading in the U.S., to facilitate clearing and settlement.
Margin	Category	Futures	Amount of money exchange requires to reserve as a deposit for futures trading.
Contract Month	Category	Bonds, Futures & Options	Delivery/expiration month of a security.
Contract Year	Category	Bonds, Futures & Options	Delivery/expiration year of a security.
Expiration Date	Category	Futures & Options	Date future or option contract expires.
Expiration Rule	Category	Futures & Options	Expiration rules are quite different for different types of futures and options.
Expiration Status	Category	Futures & Options	Status displays if the contract is expired or not.
Strike Price	Category	Options	Option strike price.
Option Type	Category	Options	Option type (Call or Put).

Price Scale

Returns a numeric expression representing the fractional portion of a full point move for a particular symbol. The PriceScale value is represented by a whole number. E.g. the PriceScale of the E-Mini S&P is 100, which represents the fractional portion

of a full point move for the E-Mini S&P. Any stock would also have a PriceScale of 100. $1 / \text{PriceScale} = \text{Minimum price increment}$. **Examples**

MinMove / PriceScale returns the smallest increment between trades.

MinMove / PriceScale * BigPointValue returns the dollar value of the smallest change in price.

Tip: MultiCharts can display prices in both decimal and fractional format.

Displaying prices in decimal format

1. Double click on the symbol in QuoteManager. The **Edit Symbol** window will appear.
2. Select the **Settings** tab.Or:

1. In the **Settings Details** section, select the appropriate **Price Scale** from the drop-down list. Double click on the symbol in QuoteManager. The **Edit Symbol** window will appear.
2. Select the **Settings** tab.
3. In the **Settings Details** section, select the appropriate **Price Scale** from the drop-down list.

The numerator of the fraction may have a decimal:

The "10th", "j", and "S" markings have special meaning.

Their definitions are laid out in the table below:

Marking	Decimal representation in numerator	Fractional Equivalent
10th	0, 0.1, 0.2, ... 0.9	1/10
j	0, 0.25, 0.5, 0.75	1/4
S	0, 0.5	1/2

As shown,

"10th" means the decimal in the numerator can be in increments of 0.1.

"j" means the decimal in the numerator can be in increments of 0.25.

"S" means the decimal in the numerator can be in increments of 0.5.

In a user defined price scale range, it is also possible to input numbers in fractional format into the **Maximum** and **Minimum** fields. The numbers will be converted to decimal format when the dialog box is closed.

However, the price scale on chart will still be in fractional format.

Note: If the price scale of the symbol is already in decimal format and it is changed to fractional format, the chart must be reloaded for the fractional format to appear.

Symbol Dictionary for Futures

The Symbol Dictionary in QuoteManager contains a list of futures symbol roots with pre-defined contract specifications and session times.

The user can use these pre-defined settings to add new symbols quickly without needing to manually complete each field.

For example, if the user wants to add the ES #F symbol from eSignal and the Symbol Dictionary has the ES symbol root defined, then QuoteManager will recognize the ES root symbol and automatically fill in the contract specifications.

The contract specifications are important because the specifications are used to plot the chart and calculate dollar amounts.

If the contract specifications are not correct, then the chart may not plot properly and the strategy may not function properly.

It is also possible to add new symbol roots into Symbol Dictionary and edit existing symbol roots. Symbol Dictionary contains symbol roots for most futures contracts. However, it is not possible for the list to be 100% complete, and contract specifications may change.

Adding a Symbol Root to Symbol Dictionary

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Click **Tools** in the main menu and select **Symbol Dictionary**, or click the **Symbol Dictionary**  icon on the toolbar.
 3. Click the **Add** button. The **New – Edit Root Settings** window will appear.
 4. Complete the **Settings** and **Sessions** sections on the form.
 5. Click the **OK** button.

Editing a Symbol Root in Symbol Dictionary

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Click **Tools** in the main menu and select **Symbol Dictionary**, or click the **Symbol Dictionary**  icon on the toolbar.
 3. Select the symbol root to edit. Click the **Edit** button. The Edit Root Settings window will appear.
 4. Edit the fields.
 5. Click the **OK** button.

Symbol Dictionary for Futures

Using the Symbol Root in Symbol Dictionary

1. Open **QuoteManager** window

To open **QuoteManager**:

- click the **New QuoteManager Window**  icon on the **Main** toolbar; or:
 - in the **Main** menu select **File**, then point to **New** and click **New QuoteManager Window**
2. Add a new symbol into QuoteManager. Make sure the new symbol's root is the same as the symbol root in Symbol Dictionary. See Adding Symbol(s) to Symbol List for more information.
 3. Open the Edit Symbol Window.

Opening Edit Symbol Window:

1. Double-click the symbol in the symbol list, or
2. Select the symbol in the symbol list, then select **Symbol** in the main menu and select **Edit Symbol**, or
3. Right-click on the symbol and select **Edit Symbol**.

Note: Edit Symbol window is already open in Step 1. It is possible to leave it open and continue working with it.

4. Select the **Settings** tab in the Edit Symbol window.

5. In the **Settings Source** section, select the **Use Symbol Dictionary Settings** radio button to use the symbol root's contract specifications in Symbol Dictionary.
6. Select the **Sessions** tab in the Edit Symbol window.
7. In the **Sessions Source** section, select the **Use Symbol Dictionary Sessions** radio button to use the symbol root's sessions information in Symbol Dictionary.

Multiplier for Trading Technologies Symbols

Understanding Multiplier for Trading Technologies Symbols

MultiCharts works with many data vendors and brokers, so it is important that the software is capable to work with different data. In some cases price formats of data of the same symbol provided by 2 separate sources may differ and this can cause some issues:

Example: Trading Technologies doesn't provide historical data into MultiCharts due to the nature of its implementation in the software. In this case if a customer requires historical backfill, he or she may be interested in using **Merge** function (see Merging Data Sources into a Single Chart) to have historical data from IQFeed and real-time data from Trading Technologies on ES chart. It may lead to significant price spike on the chart, since the price format of most data sources for ES symbol has 4 digits before the decimal part: **1234.50**; when the same symbol from Trading Technologies shows different containing only integer part format: **123450**.

Example 2: Strategy is applied to your chart that is fed not with Trading Technologies data and the price for orders is taken according to chart price format: **1234.50**; that is not acceptable for Trading Technologies broker that has **123450** price on ES.

To make possible combining Trading Technologies data feed with another one or trade using Trading Technologies as broker if you have any other data feed, the Multiplier feature has been added.

How to set up Multiplier

1. Open Symbol Root settings for the symbol. (see Editing a Symbol Root in Symbol Dictionary)
2. Add the multiplier rate to the description of the root manually (with asterisk in front, no spaces): ***XXX**
Note: No other symbol setting should be changed.**Example:** To get 4 integer and 2 decimal digits price format for ES symbol from Trading Technologies, add ***0.01**.
3. Save the changes by clicking **Ok**.
4. Close MultiCharts and make sure all its processes are ended (see MultiCharts Processes).
5. After restart of MultiCharts new data coming from Trading Technologies should have the required price format.
Note: After the Multiplier feature has been used it is important to manually remap the symbol in Symbol Mapping window (see Symbol Mapping) , otherwise the Multiplier won't affect trading and orders will be sent with incorrect prices.
Note 2: Multiplier feature affects only the data collected in real-time. All previously collected data will still have the same price format even if the Multiplier feature is used. If a customer is interested in converting old data price format, he or she should export the data into ASCII file from the symbol in QuoteManager (see Exporting Data) to import it back from the file into QuoteManager, using multiplier on import (see How to import ASCII data).

Collecting Data

The program provides optimal performance with various data feeds. Its behavior depends on the data feed connected; there exist three kinds of data feeds - data feeds that provide real-time only, data feeds that provide both history and real-time and data feeds that provide history only.

See the Built-In Data Sources table for more detailed information on data feeds.

The program's behavior depending on the data feed type is described below:

Data feed provides real-time only

Most brokers do not provide history data. In this case the program receives only real-time data and stores it in the local database. The data is saved immediately, at the same time as it is charted and may be used in the future. The program creates 1 minute and 1 day resolutions automatically and stores them in the database along with ticks.

All other resolutions are generated from stored data. I.e. if we need a 100 tick chart, the program automatically builds it from existing ticks. If a 2 minute chart is required, the program builds it from 1 minute data. In case of gaps in data 1 tick, 1 minute or 1 day must be imported correspondingly.

See the Importing Data section for more detailed information.

Data feed provides both history and real-time

Most professional data vendors as well as a number of advanced brokers provide history data for the ultimate trader convenience.

The amount and quality of data provided varies from vendor to vendor, though; see the Built-In Data Sources table for a general overview of history data feeds.

MultiCharts demonstrates the best performance with such data vendors, freeing the user from the need to download missing data manually.

The history data is stored in the local database and needs minimal effort for reuse, as only missing data has to be downloaded instead of the entire period. Besides, as data is stored locally, it is accessible even when vendor servers are not; all real-time data from the vendor is stored in the database as well, so no repeated queries must be sent when charts are created again. This cuts down on the Internet traffic and accelerates work. 1 tick, 1 minute and 1 day resolutions are stored in the database.

Data feed provides only history data

There exists a multitude of End-of-Day and intraday historical data vendors. Data from such vendors is used by in-depth analysis by experienced traders or for filling gaps in data from other vendors. When this data is used on its own, without requiring combination with data from other vendors, we insist on importing data into symbols of real-time only vendors, such as Universal DDE.

This guarantees that the data will not be mixed up with already existing data and will be charted exactly the way it was downloaded. The program saves to the database 1 tick, 1 minute and 1 day resolutions and generates all others from them. When data is imported, existing data in the database will be overwritten by the data from the file if the timestamps are the same.

Custom Futures

Understanding Custom Futures

Not all data sources provide continuous data. If continuous futures data is not provided by your data feed you can create continuous symbols within MultiCharts.

Custom Futures is a symbol combined from the individual futures contracts. The data series of Custom Futures is created by rolling over the data of the individual contracts added to the QuoteManager.

Custom Futures are useful for backtesting and charting purposes due to short operation time of individual futures contracts. The rollover is performed only on the session end near to the moment of current contract expiration using the rollover rules based on time and activity.

Custom Futures chart is plotted using the data available for individual contracts added in the QuoteManager.

If there is no data for the symbol in the database – the data will be requested from the data feed, similar to plotting regular contracts charts.

“No data” message in the status line of the chart can be displayed if all the requested contracts have no data in the data base and this data cannot be downloaded from the data feed.

Custom Futures limitations:

- The resolutions available for Custom Futures are 1 Day and lower (tick, point, contract, change, second, minute).
- Only the Regular Chart type is available for custom futures.
- Bar Magnifier Mode is not available for Custom Futures.
- DataPlayback for Custom Futures can be used in “As Is” mode only.

Creating Custom Futures symbol

The procedure of creating a Custom Futures symbol consists of multiple steps.

Adding symbols to the data base

Individual futures contracts should be added to the database prior to creating a Custom Futures symbol. Creating a Custom Futures will not add the necessary individual futures contracts. See Adding Symbol(s) to Symbol List section for more information

Adding expired contracts to the database

Some data feeds provide data for expired contracts. Expired contracts may not be available through the lookup window, such contracts should be added manually.

See Adding Symbol(s) to Symbol List section for more information

Note: Custom Futures and symbols (individual futures) should have the same data provider, exchange and Symbol Root.

Adding symbol roots to the dictionary

For every data provider, not presented in the Symbol Dictionary list in the QuoteManager symbol roots should be added to the Default symbol dictionary.

See Symbol Dictionary for Futures section for more information

Note: The symbol root expiration rule directly affects the symbol expiration date.

Creating a Custom Futures symbol

A new custom futures symbol can be created by using the Add Custom Futures window or by entering the Custom Futures symbol parameters into the Command Line toolbar.

If the custom futures symbol name is known, the simplest way to create a new chart is to enter the symbol name and all known symbol parameters into the command line.

Any omitted symbol parameters will automatically be selected, and the symbol plotted.

Creating Custom Futures Using the Add Custom Futures Window

To create a Custom Futures symbol:

1. In the main MultiCharts menu select **File**, then point to **New** and click **QuoteManager Window**.
2. Select **Instrument**.
3. Then click **Add custom futures**.
4. Select the data source.
5. Input the symbol name.
6. Select the symbol root.
7. Select contracts to use (if they are specified incorrectly in Symbol Dictionary Settings) by clicking on the check boxes.
8. Build continuous futures contract on.

To define the serial number of the contract on which the Custom Futures series is based select one of the available options in the box: Nearest contract, 2nd nearest contract, N nearest contract.

While building a Custom Futures “N” Nearest contract will be taken for each moment of time. Algorithm of choosing the rollover date

Event (Volume and/or Open Interest)

When day (Event) rollover is selected, e.g. the next contract’s Daily bar volume (Days of Higher) was higher than the Volume of previous bar for the specified amount of days (1-9).

To select the event condition click **Event**

To define the rollover condition, select one of the available options in the **Days of Higher** box: Volume, Open interest, Open Interest or Volume, Open Interest and Volume.

Time (certain date)

When Time rollover is selected – the transition from the previous contract to the next contract is done on the day defined by displacement into the past from the expiration date for the specified value 0 – 99 of trading days (Trading Days Prior to Expiration Date). An additional displacement can be set for the value up to 9 months into the past using the Offset, i.e. the rollover date is the date obtained by displacement into the past from the Expiration Date for Offset of months and prior trading days.

To select time condition click **Time**. In the **Offset by Months prior** box, enter an amount of months.

9. Back adjustment mode

To define the back adjustment mode, in the **Back Adjustment Mode** box select one of the available options: no adjustment, absolute difference, ratio.

- **No Adjustment** - the bars of each series in use are not changed.
- **Absolute Difference** - constant ($C = C_{next} - C_{prev}$; where C_{prev} – close of the last bar before the rollover point) is added to all data prior to the rollover date. The data of the last series is not corrected as there was no rollover for it yet.

If the N contracts are rolled over then the data of the first contract is corrected N-1 times.

- **Ratio adjustment** - all data prior to the rollover point is multiplied on the ratio ($C = C_{next} / C_{prev}$). If the N contracts are rolled over then the data of the first contract is corrected N-1 times.

10. "Symbol Code" field

Displays rollover encoded in a line. The encoding is done automatically if the information on the Custom Futures tab is changed. The symbol code can be copied, but cannot be modified.

"Symbol Code" can be used in Real-time market scanner or Command Line to plot a Custom Futures chart bypassing the dialogue window.

11. Set the Settings and Sessions tabs of Custom Futures up the same way as for individual contracts.

See Setting Properties section for more information

Creating Custom Futures charts

See Creating Charts for more information

Additional information regarding the Symbol Root

The data series of Custom Futures can be created only from the individual contracts present in the Database and named according to the basic template: `<Root><space><AbbrMonth><space><Year><suffix>`. **Definitions:**

`<Root>` - all symbols;

`<AbbrMonth>` - letters F, G, H, J, K, M, N, Q, U, V, X, Z, or abbreviations JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OKT, NOV, DEC; 01,...,12

`<Year>` - 1, 2 or 4 digits indicating the year;

`<empty space>` - any quantity of empty spaces;

`<suffix>` - any sequence of two or more symbols, starting from '/' or '-'; []

- everything that is in the [] brackets can be omitted.

Note: If the necessary symbol is missing from the database data series will be created without it.

Custom Futures that cannot be created in MultiCharts

The root name should not contain following symbols `<;>` `<:>` `<=>` `<!>` `<_>` `<">`. Custom Futures cannot be created for such symbols.

If the symbol name does not satisfy the basic template, Custom Futures cannot be created for this symbol.

Troubleshooting

While Plotting a Custom Futures chart you may see yellow alert messages: "To construct Custom Futures please add the following contracts".

These alerts appear because Custom futures requests data prior and following the symbols already in the database based on the selected rollover conditions and data request.

Custom Futures chart can be plotted without adding these symbols, if there are other individual contracts with data in QuoteManager.



<Date><Time>

Message: To construct Custom Futures please add the following:
<month letter1> contract for <Root>root for <4 year digits1>
<month letter2> contract for <Root>root for <4 year digits2>
<month letters3> contract for <Root>root for <4 year digit3>
...
Instrument: <Name>
Resolution: <Resolution Count> <Resolution Name>

If there are no futures symbols in the data base for creating a Custom Futures, the following alert message will appear:



<Date><Time>

Message: To construct Custom Futures please add contracts with the following properties: <ES> root, <CME> exchange, <eSignal> datafeed.
Instrument: <Name>
Resolution: <Resolution Count> <Resolution Name>

Up, Down and Total Volume

There are three ways to get volume values for data series into MultiCharts:

- Historical volume is provided by data vendor.
- Volume is imported from ASCII file.
- Volume is calculated in real-time by MultiCharts.

Historical Volume Provided by Data Vendor

Historical volume provided by a supported data vendor in MultiCharts is displayed depending on the type of data (see Tick, Minute and Daily Data):

- Historical tick volume.

In most cases supported data sources in MultiCharts provide only historical **total** tick volume, no up and down volume. For tick-based resolutions all historical total volume is divided by 2 and allocated to up and down volume.

- Historical minute and daily volume.

In most cases supported data sources in MultiCharts provide only historical **total** tick volume, no up and down volume. For minute-based and daily-based resolutions all historical total volume is recorded to the data base as total volume and is also recorded as up volume. Down volume is empty.

Volume is imported from ASCII file

When data is imported from ASCII a customer has opportunity to import all kinds of volume: up, down and total volume.

Volume is calculated in real-time by MultiCharts

MultiCharts calculates volume in real-time and allocate it into up and down according to the following logic:

- If a new tick comes with higher than previous price, the volume is recorded as up volume.
- If a new tick comes with lower than previous price, the volume is recorded as down volume.

If a new tick comes with the same as previous price, the volume is recorded either to up or to down volume depending on what was the last recorded volume. **Example:** If a new tick comes with higher than previous price and volume is recorded as up volume, and then another tick comes with the same as previous price, the volume is recorded also to up volume.

PowerLanguage

Language Elements

PowerLanguage is a system of expressing financial instrument trading rules in a systematic and logical way that can be executed by a computer.

A well-thought-out trading strategy, properly expressed in PowerLanguage, will be carried out with a far greater speed, accuracy, and persistence than could ever be possible for a human trader.

Implementing trading strategies in PowerLanguage requires familiarity with the basic rules and structure of the language, outlined below, as well as with the keywords described in the keyword section of this reference guide.

PowerLanguage Studies and Statements

A complete PowerLanguage "program" is called a **Script**. An example of a script would be a Strategy, a study that issues trading orders, an Indicator, a study that draws plots on a chart to assist in making trading decisions, or a Function, an independent procedure (subroutine) that can be called from another script to carry out a specific task.

PowerLanguage scripts consist of at least one, but usually more, **statements**. A statement is a complete instruction, and ends with a semi-column (;).

An example of a statement (and of a one-line script):

```
Buy Next Bar At Open;
```

Statements are evaluated from left to right, and scripts are evaluated from top to bottom.

Price Charts

A data series consists of groups of price data points, based on a defined interval and arranged in a chronological order.

The most popular format for visually presenting a data series is a Bar Chart. Each bar, based on a group of price data points, is a vertical line connecting the High and the Low price points, and graphically represents the range of an instrument's price movement over a defined interval. The prices of the first (Open) and of the last (Close) price points of the group, on which the bar is based, are indicated on the line by marks known as the bar's Open and Close components.

PowerLanguage handles price data "packaged" in the form of bars. While bars can be based on a variety of resolutions, the point of reference is always a "bar".

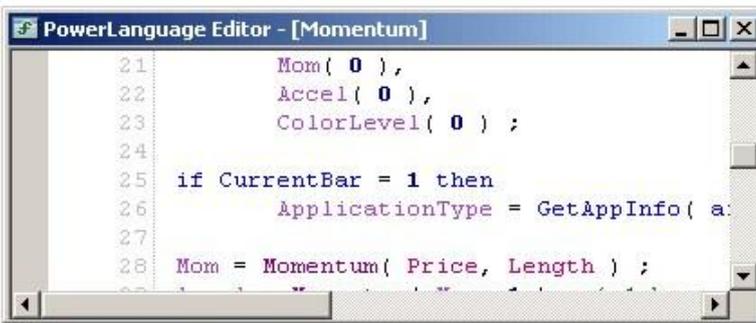
For example, the following statement places a Buy order at the Open price of the next bar if the previous bar's High was less than the current bar's Close:

```
If High 1 Bar Ago < Close Then Buy Next Bar At Open;
```

Both time and price in the above statement are referenced in terms of bars.

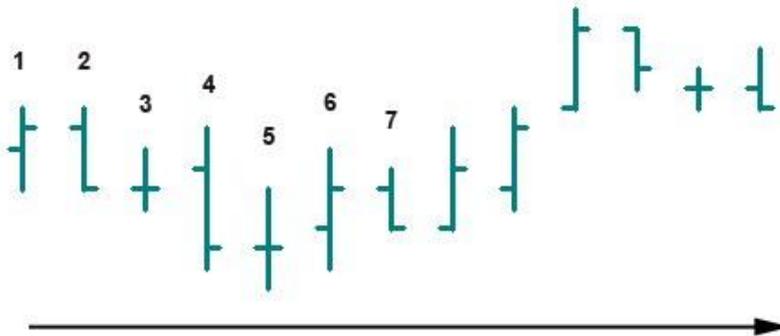
Price Chart Evaluation by PowerLanguage Studies

The study's entire script is executed from top to bottom for each and every bar



```
21 Mom( 0 ),
22 Accel( 0 ),
23 ColorLevel( 0 ) ;
24
25 if CurrentBar = 1 then
26     ApplicationType = GetAppInfo( a:
27
28 Mom = Momentum( Price, Length ) ;
```

A study evaluates bars one-by-one, starting with the very first (oldest) bar on the chart (1, 2, 3...n)



A PowerLanguage script evaluates a chart on bar-by-bar basis, starting with the very first (oldest) bar on the chart. The exact same script is executed for every bar.

After the entire script is executed for the first bar, the second bar is evaluated, and so on to the last bar on the chart. The bar being currently evaluated by the study is defined as the current bar, and the previous bar is the 1 Bar Ago. The current bar becomes the 1 Bar Ago once the study moves on to the next bar.

This is a basic overview is intended to give the initial understanding of how PowerLanguage studies function.

A more detailed description of how a chart is evaluated is presented in the How Scripts Work section.

PowerLanguage

Power language allows a combination of keywords, constants, variables, mathematical and logical operators, and punctuation to be used to express trading rules and bring about both conditional as well as unconditional actions and output.

There are tools to accomplish a variety of tasks, from the very basic, such as:

```
Print("My name is Joe");
```

All the way to array functions available in the advanced programming languages.

Each category of PowerLanguage components is discussed below:

Keywords

Most of the keywords are the instructions, "action words", of PowerLanguage.

Keywords instruct to buy or sell, plot or erase, compare or convert.

Some of the keywords are also "nouns", and return specific values or characteristics.

A list of keywords with detailed descriptions and examples is available in the Keyword Reference

Skip Words

Skip words are the interjections of PowerLanguage. They actually do nothing, and are skipped during code execution, but they make PowerLanguage easier to read.

In PowerLanguage Editor, skip words appear in red. A list of these words is available in the Skip Words section of this guide.

Operators

There are four types of operators: Mathematical, Relational, Logical, and String.

Mathematical operators are used to perform mathematical operations. There are five available mathematical operators:

+	Addition
-	Subtraction
*	Multiplication
/	Division
()	Parentheses

Relational operators are used to make comparisons. There are six relational operators:

<	Less than
>	Greater than
<=	Less than or equal to
=>	Greater than or equal to
=	Equal to
<>	Not equal to

Logical operators are used to perform logical (Boolean) operations. There are two available logical operators: AND and OR.

There is only one string operator, the plus sign (+), is used as follows to combine multiple string expressions in to one:

"String expression one" + "and string expression two"

The resulting string expression will be:

"String expression one and string expression two"

Referencing previous bars

Previous bars' values can be referenced by using the statement N Bars Ago, or by using the bar offset notation that consists of a numerical expression enclosed in square brackets:

High 2 Bars Ago or High [2]

Time and Date

Time values in PowerLanguage are specified in the 24-hour HHmm or HHmmss formats, where 1300 = 1:00 PM and 130000 = 1:00:00 PM, respectively.

Dates in PowerLanguage are specified in the YYYYMMdd format, where YYY is the number of years since 1900, MM is the month, and dd is the day of the month.

This format is also known as the "EL Date" format.

Variables

Variables are used to store numerical, string, or logical (true/false) values. The value stored in a variable can be referenced throughout a script by the variable's name, and can be modified by the script at any time. Variables must be declared before use.

For more information see [Variable](#)

Arrays

Arrays are multiple-element variables.

How Scripts Work

PowerLanguage studies can be used with the charts created by the MultiCharts trading platform and with the Portfolio Backtester.

PowerLanguage studies operate on price data, organized as a series of data points, based on a defined interval and arranged in a chronological order. Each data point is a summary of a group of price points (ticks) that includes the price values of the first and of the last tick, as well as the range of price movement over the defined interval. Data points also include additional data, such as date and time of the last tick and trade volume.

The most popular format for visually presenting a data point is a bar. References to bars in this guide actually refer to data points. Any other visual formats for presenting data points, such as candlesticks, points, lines, etc., can equally well be substituted.

In this guide, references to charts are used as a visualization tool to aid in understanding how the PowerLanguage scripting works.

PowerLanguage studies are divided in to two main types: Indicators and Signals.

An **Indicator** is a visual technical analysis tool, used to analyze market conditions and identify and forecast trends and market patterns. An indicator is a visualization of a mathematical formula, and consists of one or more **Plots** – lines, histograms, series of points or crosses, highs and lows, left and right ticks, or a combination of the above, displayed on a chart. Indicators are computed using only price, volume, and (occasionally) open interest data.

A **Signal** is a mechanical technical analysis tool, used to systematically specify market entry or exit points according to a set of trading rules implemented in the signal's algorithm. The trade points are indicated on a chart by ticks and arrows. Strategies can easily be constructed by combining a number of signals. Market entry or exit points, specified by the signals, can be used to send orders electronically directly to a broker, fully automating the trading process.

Due to the differences in their intended purposes, Indicators and Signals evaluate price data series somewhat differently, and will be discussed separately.

Indicators

The purpose of indicators is to plot visualizations of mathematical formulas on a chart. The plots are created based on one or more price data series.

When applied to a chart, an indicator script first evaluates all the completed bars one-by-one, starting with the very first (oldest) bar on the chart.

The entire script is executed once for each completed bar. On each bar, based on the results of the evaluation, an indicator script can generate output - graph, text, plot color change, audio alert, etc.

If indicator script contains references to previous bars' values, indicator can begin generating output starting with the first bar that follows the Maximum number of bars a study will reference.

Once all the completed bars on the chart have been evaluated, an indicator script will proceed to evaluate the last bar on the chart on tick-by-tick basis, without waiting for the bar to be completed. An incomplete bar is a summary of all ticks received since the previous bar was completed.

Each time a new tick is received, the entire script will be executed for that bar, until the bar is completed and the next bar is started. Indicator scripts treat incomplete bars the same way as the bars that are completed, and can take action each time an incomplete bar is evaluated.

Please note that only the last, incomplete, bar is re-evaluated on every new tick, and not the whole series.

The process of evaluation of a bar by an indicator is called a recalculation or an update.

Indicator update on every tick is enabled by default. However, in some instances it may be undesirable for indicators to be recalculated every time a new tick is received; updating a large number of complex indicators on every tick will require substantial system resources.

Update on Every Tick option can be turned off in the MultiCharts settings.

Completed Bars (Indicators)

A bar is considered completed when it is closed and no additional ticks can be added to it.

- For time-based charts, the bar is closed once the first tick with a time stamp past the bar's interval is received, or if no additional ticks are received for a period of three seconds.
- For tick-based charts, the bar is closed once the defined number of ticks has been reached.
- For range-based charts, the bar is closed once the tick with a price outside of the original bar's range has been received.
- For volume-based charts, the bar is closed once a tick, bringing the current bar's total to the defined number of contracts, has been received.
- For change-based charts, the bar is closed once a tick with a price, bringing the current bar's total number of price changes to the defined number, has been received.

The Maximum number of bars a study will reference (Indicators)

A study's script can refer to the values of previous bars for use in evaluation of the current bar.

When a value of a bar **N** bars ago is referenced in a script, the study can only be visualized starting with the **N + 1** bar.

The number of previous bars that must be available for a script in order to start performing calculations is called **Maximum number of bars a study will reference**, or **MaxBarsBack**.

The **MaxBarsBack** value can be selected to be detected automatically or set manually.

When detected automatically, **MaxBarsBack** will initially be set to the value of the largest data offset in the study; however, if a variable data offset is used in the script, the initial **MaxBarsBack** value may prove to be too small.

In such a case, the **MaxBarsBack** value will automatically be increased by 5 or by a factor of 1.618, whichever yields a higher value, and the study recalculated.

The process of automatic **MaxBarsBack** detection may cause some functions to be executed repeatedly for the first few bars of a chart when a study is first applied; this can be avoided by setting the **MaxBarsBack** value manually.

To select the smallest **MaxBarsBack** value sufficient for a particular study, set the value manually. The recommended initial **MaxBarsBack** value is 50.

Signals

Signals are the basic building blocks of strategies. Signals are substantially more complex than indicators and take in to account a far greater number of factors.

Signals compile strategy performance data and support backtesting and Automated Trade Execution.

When applied to a chart, a signal script first evaluates all the completed bars one-by-one, starting with the very first (oldest) bar on the chart. The entire script is executed once for each completed bar. On each bar, based on the results of the evaluation, a signal script may generate one or more trading orders. Orders are indicated by an arrow or a mark on the chart, by a visual or an audio alert, etc. If signal script contains references to previous bars' values, signal can begin generating orders starting with the first bar that follows the Maximum number of bars a study will reference.

By default, once all the completed bars on a chart are evaluated, the execution of a signal script is paused until a new bar is completed (a bar is completed once an interval, defined for each bar, is over), and then the entire script is executed again for the new bar.

This signal script execution method can be modified by selecting intra-bar order generation. With intra-bar order generation enabled, the signal script will evaluate the last bar without waiting for the bar to be completed. Each time a new tick is received, the last bar will be re-evaluated, until the bar is completed and the next bar is started. Incomplete bar is a summary of all ticks received since the previous bar was completed. In intra-bar order generation mode, signal scripts treat incomplete bars the same way as the bars that are completed, and can take actions based on evaluation of incomplete bars.

Please note that only the last, incomplete bar is re-evaluated on every new tick, and not the whole series.

Completed Bars (Signals)

A bar is considered completed when it is closed and no additional ticks can be added to it.

- For time-based charts, the bar is closed once the first tick with a time stamp past the bar's interval is received, or if no additional ticks are received for a period of three seconds.
- For tick-based charts, the bar is closed once the defined number of ticks has been reached.
- For range-based charts, the bar is closed once the tick with a price outside of the original bar's range has been received.
- For volume-based charts, the bar is closed once a tick, bringing the current bar's total to the defined number of contracts, has been received.
- For change-based charts, the bar is closed once a tick with a price, bringing the current bar's total number of price changes to the defined number, has been received.

The Maximum number of bars a study will reference (Signals)

A study's script can refer to the values of previous bars for use in evaluation of the current bar.

When a value of a bar **N** bars ago is referenced in a script, the study can only be visualized starting with the **N + 1** bar.

The number of previous bars that must be available for a script in order to start performing calculations is called **Maximum number of bars a study will reference**, or **MaxBarsBack**. The **MaxBarsBack** value can be selected to be detected automatically or set manually.

When detected automatically, **MaxBarsBack** will initially be set to the value of the largest data offset in the study; however, if a variable data offset is used in the script, the initial **MaxBarsBack** value may prove to be too small.

In such a case, the **MaxBarsBack** value will automatically be increased by 5 or by a factor of 1.618, whichever yields a higher value, and the study recalculated.

The process of automatic **MaxBarsBack** detection may cause some functions to be executed repeatedly for the first few bars of a chart when a study is first applied; this can be avoided by setting the **MaxBarsBack** value manually.

To select the smallest **MaxBarsBack** value sufficient for a particular study, set the value manually. The recommended initial **MaxBarsBack** value is 50.

Learn more about setting **MaxBarsBack** values for Signals

Order Execution Priority

A signal can place multiple orders based on evaluation of a single bar. The orders may be generated by the same or different statement types.

The orders are executed in three groups, based on the type of statement that generated the order:

Order group execution sequence:

1. Orders generated by This Bar [On] Close statements.
2. Orders generated by Next Bar [At] Market and Next Bar [At] Open statements.
3. Orders generated by Next Bar [At] Price Limit and Next Bar [At] Price Stop statements.

The orders generated within each order group are sorted by priority based on the current position:

Order Execution Priority Table			
Higher value indicates greater priority			
Position	Flat	Long	Short
Long Entry	1	1	2
Short Entry	1	2	1
Long Exit	-	1	-
Short Exit	-	-	1

Multiple same-direction orders are assigned priority relative to each other based on the order in which the order statements are listed in the signal script.

When multiple signals are combined to create a strategy, same-direction orders generated by different signals are assigned priority relative to each other based on the order that the signals appear under the **Signals** tab in the **Format Objects** window.

Once the orders are sorted, the order that has the highest priority is executed. It is important to note that an entry order in the direction, opposite to the current position, will not simply cover the position, but actually reverse it.

For example, a Long 1 order, executed for a Short 1 position, will result in a Long 1 and not in a Flat position.

Taking into account the change in position, resulting from execution of the order, the remaining orders are sorted again, and the order that has the highest priority is executed.

This procedure is repeated until all the orders are executed, or until none of the orders left can be executed – for example, only Exit orders are left and the position is flat.

If the only Entry orders left are in the same direction as the current position, these orders will only be executed if **Pyramiding** is enabled.

Pyramiding settings allow the number of entries in the same direction to be limited to a set number.

Any orders left that could not be executed are discarded.

Order Execution Priority example:

Multiple orders are generated, in the following order: Short Exit, Short Entry, Long Entry, Long Exit, and Long Entry.

The current position is **Short**.

1. The orders are sorted by priority (in descending order): Long entry, Long entry, Short exit, Short entry (Long exit could not be executed).	SX SE LE LX LE
2. Long entry is executed; the position is now Long.	SX SE V LX LE
3. The orders are sorted by priority (in descending order): Short entry, Long entry, Long exit (Short exit could not be executed).	
4. Short entry is executed; the position is now Short.	SX V V LX LE
5. The orders are sorted by priority (in descending order): Long entry, Short exit (Long exit could not be executed).	
6. Long entry is executed; the position is now Long.	SX V V LX V
7. The orders are sorted by priority (in descending order): Long exit (Short exit could not be executed).	
8. Long exit is executed; the position is now Flat.	SX V V V V
9. The only order left, Short exit, can not be executed and is discarded.	SX V V V V

The net result of executing the above orders, from a Short position, will be a Flat position.

Additional Information Sources

MultiCharts' PowerLanguage is highly compatible with TradeStation EasyLanguage, so you can use EL guides to help you learn PL.

- [TradeStation EasyLanguage Extension Software Development Kit \(SDK\)](#) provides users with the ability to write code in a programming language that allows for the creation of DLLs (for example, C++, Pascal, Delphi, or Visual Basic) and call that code from within an EasyLanguage analysis technique.
- [The essential EasyLanguage programming guide](#) allows you to quickly look up usage and syntax concepts and examples for the most commonly used features of EasyLanguage.

- [The EasyLanguage Functions & Reserved Words Reference](#) is a complete reference listing of every EasyLanguage reserved word and EasyLanguage function. This comprehensive guide gives complete descriptions, usages, input declarations, and code examples for each EasyLanguage syntax element.

About EasyLanguage

EasyLanguage Resources

This page lists various EasyLanguage resources.

Free Manuals

- The [Essential EasyLanguage Programming Guide](#) allows you to quickly look up usage and syntax concepts and examples for the most commonly used features of EasyLanguage.
- The [EasyLanguage Functions & Reserved Words Reference](#) is a complete reference listing of every EasyLanguage reserved word and EasyLanguage function. This comprehensive guide gives complete descriptions, usages, input declarations, and code examples for each EasyLanguage syntax element.

Books

- [Building Winning Trading Systems with TradeStation.](#)

Internet resources

- [Official MultiCharts forum.](#)

Once per bar alert

With the Alert PowerLanguage keyword it's possible to trigger alerts every bar close or on every tick. But what if you want to trigger an alert once per bar?

Triggering an alert once per bar

The code example below will trigger an alert **once** per bar, even if the alert properties (in the Alert tab from the Format Indicator screen) are set to 'Alert Conditions Check - Every Tick'.

Variables: IntraBarPersist alertAlreadyGiven(False);

```
if (CheckAlert = True) then begin
```

```
    // Trigger an alert if the price goes higher than
```

```
    // the highest high of the previous 10 bars.
```

```
    if (alertAlreadyGiven = False) and (Close > Highest(High, 10)[1]) then begin
```

```
        Alert(Text("The price, ", NumToStr(Close, 2), ", has crossed the highest high (" ,  
        NumToStr(Highest(High, 10)[1], 2), ") of the last 10 bars."));
```

```
            // Set the boolean to true to prevent another alert
```

```
            // on this bar.
```

```
            alertAlreadyGiven = True;
```

```
        end;
```

```
        // Reset the boolean variable so that an alert can
```

```
        // be triggered during the next bar.
```

```
    if (BarStatus(1) = 2) then alertAlreadyGiven = False;
```

```
end;
```

Triggering an alert once per bar - simplified

To simplify the triggering of an alert once per bar, and not clutter your code with the code logic from the example above, consider making a function called **AlertOncePerBar** (Return type: Numeric, Function Storage: Simple), in which you'll place the following code:

```
{ AlertOncePerBar function; will generate an alert once per bar.  
}
```

Inputs:

```
AlertText(StringSimple);
```

Variables:

```
IntraBarPersist barNumOfAlert(0);
```

```
if (CurrentBar <> barNumOfAlert) then begin
```

```
Alert(AlertText);

barNumOfAlert = CurrentBar;

end;

AlertOncePerBar = 0; // dummy
```

Now, if you want to call an alert once per bar (for example, with an EMA crossover), you can call that with:

```
if (XAverage(Close, 5) crosses above XAverage(Close, 20)) then AlertOncePerBar("EMA cross alert");
```

Outputting Dates in EasyLanguage

This article gives some tips and examples for outputting dates in EasyLanguage.

Relevant EasyLanguage Date reserved words

Just as a reminder, the following Date reserved words are often used in working with dates:

- **Date**, which returns the Date of the current bar in *YYMMdd* format. This date format is always the format with which a date calculation starts.
- **CurrentDate**, returns the current computer date in *YYMMdd* format.
- **ELDateToDateTime**, converts a date in *YYmmdd* format to a date into DateTime format.

Outputting the date

The following example prints the current date to the PowerLanguage Editor log:

```
Print("The current date is: ", CurrentDate);
```

Which returns the following sentence: *The current date is: 1120127.00*.

To output the date in a more readable format, the reserved word **FormatDate** is needed. However, FormatDate requires that the date is in DateTime format, while the default Date is in YYMMdd format. So, a conversion to DateTime is needed first. This is done with the **ELDateToDateTime** reserved word.

The code example below shows in detail which steps needs to be made.

```
Variables:   dateToday(0), dateInDateTimeFormat(0), dateReadable("");
```

```
// 1. Assign the date of today to the variable 'dateToday' dateToday = CurrentDate;
Print("The current date in YYYYMMdd format is: ", dateToday, NewLine);

// 2. Now, convert the date to DateTime format
```

```
dateInDateTimeFormat = ELDateToDateTime(dateToday); Print("The current date in DateTime format is: ",
NumToStr(dateInDateTimeFormat, 5), NewLine);
```

```
// 3. Now we can print the current date in a more readable format dateReadable =
FormatDate("dd-MM-yyyy", dateInDateTimeFormat);

Print("The current date in a readable format is: ", dateReadable);
```

This returns the following:

```
The current date in YYYYMMdd format is: 1120127.00
```

```
The current date in DateTime format is: 40935.00000
```

```
The current date in a readable format is: 27-01-2012
```

Of course, not all these steps are needed. The extensive above example can be rewritten to simply:

```
Print("The current date in a readable format is: ", FormatDate("dd-MM-yyyy", ELDateToDateTime(CurrentDate)));
```

Which returns:

```
The current date in a readable format is: 27-01-2012
```

Outputting the date in different formats

The **FormatDate** reserved word has a parameter string by which different date outputs can be generated. For example, in the code above we used "dd-MM-yyyy" to return "27-1-2012".

The code example below shows some of these parameter options for FormatDate (see the **FormatDate** article for an extensive list of parameter options).

```
Variables:   dateInDateTime(0);   dateInDateTime =
```

```
ELDateToDateTime(CurrentDate); Print("Date in short version: ",
```

```
FormatDate("d-M-y", dateInDateTime), NewLine);
```

```
// Note: the output of the following statement depends on your regionale
```

```
Print("Date in abbreviations: ", FormatDate("ddd-MMM-yy", dateInDateTime),  
  
NewLine); Print("Date fully written: ", FormatDate("dddd MMMM yyyy",  
  
dateInDateTime), NewLine);  
  
Print("Date in a sentence: ", FormatDate("The current Date is dddd and the month is MMMM (which is  
month #MM). The Year is yyyy.", dateInDateTime));  
  
end;
```

This gives the following output:

```
Date in short version: 27-1-12
```

```
Date in abbreviations: vr-jan-12
```

```
Date fully written: vrijdag januari 2012 Date in a sentence: The current Date is vrijdag and the month is januari  
(which is month #01). The Year is 2012.
```

PowerLanguage Editor

Default Study Properties

Default study properties include **Input Values**, **Style**, and **Maximum Bars Back** settings.

When a study is applied to a chart, the default settings are used unless the user elects to set the study properties.

To learn more about setting study properties in MultiCharts, see [Indicator Settings](#) and [Signal Settings](#)

Setting Default Indicator Input Values

An Input is a constant used in **Indicator** calculations. Indicators can have one or more inputs, or none at all. Each input is assigned a name.

There are three types of inputs: Numeric, True/False, and String. Indicators can easily be modified by changing the input Values.

One of the main advantages of using the inputs is that basic adjustments to the indicator logic can be made by simply changing the input values, without the need to edit the indicator code.

Most, but not all, indicators use input values.

Note: Default input values cannot be set for Signals or Functions.

To set default indicator input values:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **General** tab.
3. In the **Inputs** section, in the **Value** column, click on the input that you want to assign a default value to, and enter the desired value.
4. Select the **Use as Default** check box and click **OK**.

Setting Default Indicator Style

To set properties:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **General** tab.
3. In the **Style** section, in the **Type** column, select the plot type from the drop-down list box.

4. In the **Color** column select the plot color from the drop-down palette box.
5. In the **Style** column select the plot style from the drop-down list box.
6. In the **Weight** column select the plot weight from the drop-down list box; the weight can only be selected for the solid line style.
7. Select the **Use as Default** check box, and click **OK**.
Default Study Properties

Setting Default Signal Style

To set properties:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Entries** or the **Exits** tab, to set the style of entry or exit points, respectively.
3. In each section, in the **Color** column, select a color for each of the components from the drop-down palette box.
4. In the **Style** column select the component style from the drop-down list box.
5. In the **Size** column select the component size from the drop-down list box; only the size of arrows and ticks can be set.
6. Select the **Use as Default** check box, and click **OK**.

Setting Default Maximum Bars Back

All studies based on past data use a certain number of bars for their calculations.

The number of bars is called **Maximum number of bars a study will reference**, or **Maximum Bars Back**.

Either automatic Max Bars Back value detection or a set Max Bars Back value can be specified as the default.

Setting Automatic Max Bars Back Detection

To select automatic Maximum Bars Back detection as a default:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Properties** tab.
3. In the **Max number of bars study will reference** section, click **Auto-detect**.
4. Select the **Use as Default** check box, and click **OK**.

Setting Default Max Bars Back Value

To set a default Maximum Bars Back value:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Properties** tab.
3. In the **Max number of bars study will reference** section, click **User specified**, and enter the default Max Bars Back value in to the box.
4. Select the **Use as Default** check box, and click **OK**.
Default Study Properties

Setting Default Indicator Price Scale (Axis) Type

The default type of indicator Y-Price Scale (Axis) Type can be set from the **Properties** tab of the **Properties** window:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Properties** tab.
3. In the **Axis Type** section, click **Linear** or **Semi-Log** to specify linear or semi-log scale type, respectively.
4. Enter the default Max Bars Back value in to the **User specified** box.
5. Select the **Use as Default** check box, and click **OK**.

Setting Default Indicator SubChart

By default, an indicator can be placed into a new SubChart, or into the same SubChart as the Symbol that the indicator is based on.

To set the default indicator SubChart:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:
 - Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Properties** tab.
3. Select the **Same as Symbol** check box for the indicator to be placed by default into the same SubChart as the Symbol, or clear the check box or the indicator to be placed into a new SubChart.
4. Select the **Use as Default** check box, and click **OK**.

Setting Indicator Update on Every Tick

An indicator can be recalculated every time a new tick is received, or only at the close of each bar. One or the other may be more appropriate, depending on the indicator's algorithm. Updating a large number of complex indicators on every tick will require substantial system resources To set the default indicator update rate:

1. Open the **Properties** window by one of the following methods:
 - Click the **Properties**  icon on the toolbar; or:

- Right-click within the script display window and then click **Properties**; or:
 - Select **File** in the main menu and click **Properties**.
2. Select the **Properties** tab.
 3. Clear the **Update on every tick** check box to recalculate the indicator on bar close only, or select the check box to recalculate the indicator every time a new tick is received.
 4. Select the **Use as Default** box, and click **OK**.

Editing Study Scripts

Studies are PowerLanguage scripts, expressing trading rules in a systematic and logical way that can be executed by a computer. Scripts consist of at least one, but usually more, statements. Each statement is a complete instruction.

To learn more, see PowerLanguage Elements

PowerLanguage scripts can be easily created and edited by using the PowerLanguage Editor. PowerLanguage Editor includes many advanced text editing features, built-in PowerLanguage keyword reference, and a keyword hint feature.

Before a study can be applied to a chart, the study's script must be compiled.

The code is compiled directly in the PowerLanguage editor.

The script of a study can be password protected; script of a protected study can not be viewed without the password.

Text Editing Features

The following text editing features are available:

Undoing and Re-doing Changes

Changes to the script that were made since the editor was open or the study compiled can be undone; "undone" changes can be redone again.

Changes can be undone by one of the following methods:

- Clicking the **Undo**  icon on the toolbar; or:
- Using the Ctrl+Z keyboard shortcut, or:
- Selecting **Edit** in the main menu, and clicking **Undo**.

Changes can be redone by one of the following methods:

- Clicking the **Redo**  icon on the toolbar; or:
- Using the Ctrl+Y keyboard shortcut, or:
- Selecting **Edit** in the main menu, and clicking **Redo**.

Note: Changes to the script made before the study was compiled cannot be undone.

Copying, Cutting and Pasting Code

Text can be copied, cut, and pasted within the PowerLanguage Editor and between the editor and other programs.

Text can be copied by one of the following methods:

- Using the Ctrl+C keyboard shortcut; or:
- Selecting **Edit** in the main menu, and clicking **Copy**.

Text can be cut by one of the following methods:

- Using the Ctrl+X keyboard shortcut; or:
- Selecting **Edit** in the main menu, and clicking **Cut**.

Text can be pasted by one of the following methods:

- Using the Ctrl+V keyboard shortcut; or:
- Selecting **Edit** in the main menu, and clicking **Paste**.

Finding Text

To find text:

1. Open the **Find** window by clicking the **Find**  icon on the toolbar, by using the Ctrl+F keyboard shortcut, or by selecting **Edit** on the main menu and clicking **Find**.
2. Enter the text to be found into the **Find what** box.
3. Select the **Match whole word only** check box to find whole words only.
4. Check the **Match case** check box to make the search case-sensitive.
5. In the **Direction** section, choose **Up** or **Down** to select the search direction.
6. Click **Find Next** to begin the search or to find the next instance of the text.

Replacing Text

To replace text:

1. Open the **Replace** window by clicking the **Replace**  icon on the toolbar, by using the Ctrl+H keyboard shortcut, or by selecting **Edit** on the main menu and clicking **Replace**.
2. Enter the text to be found and replaced into the **Find what** box.
3. Enter the replacement text into the **Replace with** box.
4. Select the **Match whole word only** check box to find whole words only.
5. Check the **Match case** check box to make the search case-sensitive.
6. In the **Direction** section, choose **Up** or **Down** to select the search direction.
7. Click **Find Next** to begin the search or to find the next instance of the text. Once an instance of the text to be replaced is found, the instance is highlighted.
8. Click **Replace** to replace the highlighted instance of the text.
9. Click **Replace All** to replace all instances of the text in the current study window.

Compiling Scripts

Before a study can be applied to a chart, the study's script must be compiled. In process of compilation, the correctness of code in the script is verified. If any errors are found, the compilation process stops, and the error is highlighted. The results of the compilation, and errors if any, are displayed under the **Build** tab in the lower panel.

1. To compile the script in the active window: Click the **Compile**  toolbar icon, press the F3 key, or select **Compile** in the main menu and click **Compile Study Name**.

2. To compile scripts of all opened studies: Select **Compile** in the main menu and click **All Opened**, or use the Ctrl+Shift+F2 keyboard shortcut.
3. To compile any uncompiled scripts of all open studies: Select **Compile** in the main menu and click **All Uncompiled**.
4. To compile all scripts of all studies, stored on the computer: Select **Compile** in the main menu and click **All Studies**.
5. To compile indicators and signals only: Select **Compile** in the main menu and click **All Indicators and Signals Only**.

Protecting Studies

The script of a study can be password protected; script of a protected study can not be viewed without the password.

To protect a study:

1. Select **Tools** in the main menu, and click **Protect Study**.
2. In the **Password Selection** dialog box that appears, enter a password and click **OK**.
3. Reenter the password for confirmation, and click **OK** to password-protect the study's script.

Editor Overview

An integral part of the PowerLanguage programming environment, PowerLanguage Editor is a development tool for creating and managing PowerLanguage studies.

Main functions of PowerLanguage Editor:

- Creating studies
- Importing and exporting studies
- Protecting Studies
- Editing the study code and settings
- Editing data
- Compiling studies

PowerLanguage Editor also features a built-in PowerLanguage keyword reference as well as keyword help hints.

To start PowerLanguage Editor:

- click the **Run PowerLanguage Editor**  icon on the MultiCharts **Main** toolbar, or:
- click the **PowerLanguage Editor** icon on the Quick Launch bar, or:
- click the **PowerLanguage Editor** icon on the desktop.

Editor Settings

The appearance of the PowerLanguage Editor work area can be customized.

Navigator panel, Output panel, Toolbar, and Status bar can be hidden and redisplayed.

Study Window font, font size, and background color can be selected.

The color of each type of the EasyLanguage(R) code elements and line numbers can be individually selected.

Hiding and Redisplaying Toolbars and Panels

To hide or redisplay a toolbar or panel, select **View** in the main menu and clear or select the check box next to the name of the toolbar or panel.

Toolbars can also be hidden or redisplayed from the **Editor Options** window:

1. Open the **Editor Options** window.

To open the **Editor Options** window, select **Tools** in the main menu and click **Editor Options**.

2. Select the **General** tab.
3. In the **Display** section, clear or select the check box next to the name of the toolbar or panel to hide or redisplay that toolbar or panel.

Note: Panels can also be hidden by clicking the **Close** button in the corner of the toolbar.

Setting Font and Font Size

Font type and size can be set from the **Editor Options** window:

1. Open the **Editor Options** window.

To open the **Editor Options** window, select **Tools** in the main menu and click **Editor Options**.

2. Select the **General** tab.
3. In the **Editor** section, select the font name from the drop-down list
4. Select the font size from the drop-down list.

Setting Colors

Study Window background color, and colors of each type of the EasyLanguage(R) code elements and line numbers can be selected individually.

The colors can be set from form the **Editor Options** window:

1. Open the **Editor Options** window.

To open the **Editor Options** window, select **Tools** in the main menu and click **Editor Options**.

2. Select the **Colors** tab.
3. In the **Display Items** list, select an EasyLanguage(R) code element (item).
4. In the **Item Color** palette box, select one of the standard 40 colors, or click the **More Colors** button to create custom colors; repeat for steps 3 and 4 for any additional items.
5. In the **Background Color** palette box, select one of the standard 40 colors for the background, or click the **More Colors** button to create custom colors.
6. In the **Line Numbers Color** palette box, select one of the standard 40 colors for the line numbers, or click the **More Colors** button to create custom colors.

Editor Work Area

PowerLanguage Editor work area consists of the study script display panel in the upper left part of the work area, the navigator panel at the upper right part of the work area, and the output panel at the bottom of the work area.

Navigator and output panels can be hidden by using the **View** menu.

Study Script Display Panel

Multiple studies can be opened simultaneously in the study code display panel, with each study's code displayed in a separate window.

Each window has its own tab at the top of the script display panel, with the study's name indicated on the tab. The same study cannot be displayed in more than one window. The number of windows that can be added to the display panel is limited only by your computer's hardware configuration.

Any one of the windows can be selected by clicking the window or the window tab, or by selecting **Window** in the main menu and clicking a study name.

Study windows can be moved anywhere within the study script display panel, arranged in any order, resized, maximized, minimized, and closed. Closing a study window does not delete the study.

Navigator Panel

The navigator panel can display either a list of PowerLanguage keywords, or a list of available studies.

To toggle between the keyword dictionary mode and the studies list mode, click the **Studies** tab or the **Dictionary** tab at the bottom of the navigator panel.

Dictionary Mode

A list of PowerLanguage keywords is displayed in the navigator panel.

To display the information for a particular keyword, click the keyword name in the list; the reference information will be displayed in the **Help** tab of the output panel.

Note: Help information for a keyword can also be displayed in the **Help** tab of the output panel by placing the cursor over the keyword in a study window and pressing the F1 key.

Studies Mode

Available studies are organized within three subfolders: Indicators, Signals, and Functions.

Additional folders can be created by right-clicking on a root folder or on any of the subfolders, selecting **Add**, and then clicking **New Folder**. Studies can be moved between any of the folders.

Navigator panel can be displayed or hidden by clicking **View** in the main menu and then selecting or clearing the **Navigator Bar** checkbox.

The Output Panel

The output panel contains three tabs: **Build**, **Output**, and **Help**:

- The Build tab is used to view the information about study compilation
- The Output tab is used to view the study output
- The Help tab is used to view PowerLanguage keyword help information

Output panel can be displayed or hidden by clicking **View** in the main menu and then selecting or clearing the **Output Bar** checkbox.

Arranging Study Windows

It is possible to arrange windows in any order. A study window can be positioned anywhere in the study code display panel by placing the mouse pointer over the window's title bar, holding the left mouse button, and dragging the window to the desired position. Study windows can also be arranged automatically, much the same way as in the main MultiCharts application, by selecting **Window** in the main menu and then clicking the desired option.

Switching between Windows

You can switch between study windows by using the CTRL+F6 keyboard shortcut.

Importing and Exporting Studies

In addition to supporting PowerLanguage studies, MultiCharts platform supports nearly all of EasyLanguage® studies.

MultiCharts supports Password-protected as well as Source-compiled (SEF) Study Protection.

Studies are imported and exported using the PowerLanguage Editor.

Importing Studies

In addition to MultiCharts native PLA (PowerLanguage Archive) format, studies in ELA, ELS, ELD, XML, and SEF formats can be imported. Several studies can be imported simultaneously.

Note: Read-only studies in SEF (Source-compiled) format are imported using an Import Read-Only procedure.

Importing Studies in ELA, ELS, ELD, and XML Formats

To import studies into PowerLanguage Editor:

1. Open the **Select Files** window.
To open the **Select Files** window:
 1. Click the **Import**  icon on the toolbar.
 2. The **Select Files** window can also be opened by selecting **File** in the main menu and clicking **Import**, or by using the Ctrl+I keyboard shortcut.
2. Select one or more studies files; several files can be selected at once by holding down Ctrl or/and Shift keys while making the selection, and all files can be selected by using the Ctrl+A keyboard shortcut.
3. Click **Open** or double-click the selected file.
4. In the **Import Studies** window that appears, in the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be displayed in the list.
5. Select the studies to be imported by using the checkbox to the left of the study's name, or by double-clicking the study's name; click **Select All** to select all studies, and **Clear All** to clear all selections.

6. At the bottom left of the **Import Studies** window, select the **Compile on import** checkbox to compile studies on import; to learn more, see *Compiling Studies*.
7. Click **OK** to import the selected studies

Importing Studies in SEF (Read-Only) Format

Important: Only SEF studies created with the same version number (build) of MultiCharts can be imported!

To import a read-only study into PowerLanguage Editor:

1. Open the **Select Files** window by selecting **File** in the main menu and clicking **Import Read-Only**, or by using the Ctrl+M keyboard shortcut.
2. Select a study file.
3. Click **Open** or double-click the selected file.
4. In the **Import Studies** window that appears, in the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be displayed in the list.
5. Select the studies to be imported by using the checkbox to the left of the study's name, or by double-clicking the study's name; click **Select All** to select all studies, and **Clear All** to clear all selections.
6. Click **OK** to import the selected studies.

Exporting Studies

Studies can be exported in XML or SEF (Read-only) formats.

Exporting Studies in PLA Format

To export a study in PLA format:

1. Open the **Export Studies** window.

To open the **Export Studies** window:

1. Click the **Export**  icon on the toolbar.
2. The **Export Studies** window can also be opened by selecting **File** in the main menu and clicking **Export**, or by using the Ctrl+E keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be displayed in the list.
3. Select the studies to be exported by using the checkbox to the left of the study's name, or by double-clicking the study's name; click **Select All** to select all studies, and **Clear All** to clear all selections.
4. At the bottom left of the **Export Studies** window, select the **Select dependant function(s)** checkbox to automatically select the relevant functions.
5. Click **OK** to open the **Export** window.
6. Select a path and choose the filename and type for the file to export the study or studies to, and click **Save**.

Importing and Exporting Studies

Exporting Studies in SEF (Read-only) Format

To export a study in SEF (Read-only) format:

1. Open the **Export Studies** window by selecting **File** in the main menu and clicking **Export Read-Only**, or by using the Ctrl+R keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be displayed in the list.
3. Select the studies to be exported by using the checkbox to the left of the study's name, or by double-clicking the study's name; click **Select All** to select all studies, and **Clear All** to clear all selections.
4. Click **OK** to open the **Export** window.
5. Select a path and choose the name for the file to export the study or studies to, and click **Save**.

Using Studies (PowerLanguage Editor)

Custom studies can be created from scratch or existing studies modified by using the PowerLanguage Editor.

Studies can be classified into three types: **Indicators**, **Signals**, and **Functions**.

An **Indicator** is a visual technical analysis tool, used to analyze market conditions and identify and forecast trends and market patterns. An indicator is a visualization of a mathematical formula, and consists of one or more Plots – lines, histograms, series of points or crosses, highs and lows, left and right ticks, or a combination of the above.

A **Signal** is a mechanical technical analysis tool, used to systematically specify market entry or exit points according to a set of trading rules implemented in the signal's algorithm. The trade points are indicated on a chart by ticks and arrows. Signals can be viewed as the basic building blocks of strategies.

A **Function** is an independent procedure (subroutine) that can be called from another script to carry out a specific task.

Creating Indicators

To create an indicator:

1. Open **New** dialog box by clicking the **New**  icon on the toolbar, by selecting **File** in the main menu and clicking **New**, or by using the Ctrl+N keyboard shortcut.
2. Select **Indicator**.
3. Enter the indicator name.
4. Click **OK**.

Creating Signals

To create a signal:

1. Open **New** dialog box by clicking the **New**  icon on the toolbar, by selecting **File** in the main menu and clicking **New**, or by using the Ctrl+N keyboard shortcut.

2. Select **Signal**.
3. Enter the signal name.
4. Click **OK**.

Creating Functions

To create a function:

1. Open **New** dialog box by clicking the **New**  icon on the toolbar, by selecting **File** in the main menu and clicking **New**, or by using the Ctrl+N keyboard shortcut.
2. Select **Function**.
3. Enter the function name. 4. Select the **Return Type**.
5. Select the **Function Storage**.
6. Click **OK**.

Available Studies List

A list of all available studies can be viewed in the **Open** window. Studies' **Name**, **Type**, **Status**, and the last modification date (**Modified**) are displayed in the list.

Studies can be opened for editing, deleted, and studies' properties modified, from the **Open** window.

To open the **Open** window:

1. Click the **Open**  icon on the toolbar.
2. The **Open** window can also be opened by selecting **File** in the main menu and clicking **Open**, or by using the Ctrl+O keyboard shortcut.

Study List

The list of available studies, displayed in the **Open** window, can be set to include one or more of the following study types: Indicators, Signals, and Functions. To select the study types to be listed, select or clear the appropriate checkboxes in the **Study Type** section.

In the list, each study's name, type, status, and last modification date and time are displayed in the **Name**, **Type**, **Status**, and **Modified** columns. The list can be sorted by any column, in ascending or descending order, by clicking on the column header:

- **Name** column displays the study's name.
- **Type** column displays the study's type: Indicator, Signal, or Function.
- **Status** column displays the study's status:
 -  • **Compiled** - the study is ready to be used; to learn more, see Compiling Studies
 -  • **Protected** - the study cannot be opened for editing, and the study's code cannot be viewed; to learn more, see Protecting Studies
 - No status is displayed – the study has to be compiled before it can be used; to learn more, see Compiling Studies
- **Modified** column displays the date and time that the most recent study modification has been made.

To scroll through the list of studies, use the scrollbar on the right side of the list, or the UP ARROW and DOWN ARROW keys on the keyboard.

Opening Studies

To open a study:

1. Open the **Open** window.

To open the **Open** window:

1. Click the **Open**  icon on the toolbar.
2. The **Open** window can also be opened by selecting **File** in the main menu and clicking **Open**, or by using the Ctrl+O keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be included in the list.
3. Select one or more studies to be opened; several studies can be selected at once by holding down Ctrl or/and Shift keys while making the selection. All studies can be selected by using the Ctrl+A keyboard shortcut, or by clicking any study's name and then clicking **Select All**.
4. Click **OK** or double-click the selected study.

Saving Studies

To save a study in PowerLanguage Editor, click the **Save**  icon on the toolbar. A study can also be saved by selecting **File** in the main menu and clicking **Save**, or by using the Ctrl+S keyboard shortcut.

All studies, currently open in PowerLanguage editor, can be saved by selecting **File** in the main menu and clicking **Save All**, or by using the Ctrl+Shift+S keyboard shortcut.

Note: If no modifications have been made to studies, the **Save** icon on the toolbar and **Save** commands will not be available.

Renaming Studies

A study can be renamed by one of the following methods:

- Click the **Properties**  icon on the toolbar; in the **Properties** tab of the **Properties** dialog box that appears, in the **Name** box, enter the new study name and click **OK**.
- Right-click within the study's window and then click **Properties**; in the **Properties** tab of the **Properties** dialog box that appears, in the **Name** box, enter the new study name and click **OK**.
- Select **File** in the main menu and click **Save As**; in the dialog box that appears, enter the new study name and click **OK**.

A study can also be renamed from the **Open** window. To rename a study from the **Open** window:

1. Open the **Open** window.

To open the **Open** window:

1. Click the **Open**  icon on the toolbar.
2. The **Open** window can also be opened by selecting **File** in the main menu and clicking **Open**, or by using the Ctrl+O keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be included in the list.
3. Right-click the study to be renamed, and then click **Edit**.

4. In the **Properties** tab of the **Properties** dialog box that appears, in the **Name** box, enter the new study name and click **OK**.

Closing Studies

A study can be closed by one of the following methods:

- Click the **Close** icon on the study's title bar.
- Right-click on the study's window tab, and then click **Close**.
- Select **File** in the main menu and click **Close**.
- Use the Alt+F4 keyboard shortcut.

Deleting Studies

To delete a study:

1. Open the **Open** window.

To open the **Open** window:

1. Click the **Open**  icon on the toolbar.
 2. The **Open** window can also be opened by selecting **File** in the main menu and clicking **Open**, or by using the Ctrl+O keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be included in the list.
 3. Select one or more studies to be deleted; several studies can be selected at once by holding down Ctrl or/and Shift keys while making the selection. All studies can be selected by using the Ctrl+A keyboard shortcut, or by clicking any study's name and then clicking **Select All**.
 4. Press the Delete key on the keyboard, or right-click the study to be deleted, and then click **Delete**.

Editing Study Properties

Study properties can be edited from the Properties window.

Properties window can be opened by one of the following methods:

- Click the **Properties**  icon on the toolbar.
- Right-click within the study's window and then click **Properties**.

Properties window can be opened from the **Open** window. To open the **Properties** window from the **Open** window:

1. Open the **Open** window.

To open the **Open** window:

1. Click the **Open**  icon on the toolbar.
 2. The **Open** window can also be opened by selecting **File** in the main menu and clicking **Open**, or by using the Ctrl+O keyboard shortcut.
2. In the Study Type section, select or clear **Indicator**, **Signal**, and/or **Function** checkboxes to specify the types of studies to be included in the list.
 3. Right-click the study, the properties of which are to be edited, and then click **Edit**.

Portfolio Backtester

Backtesting a Portfolio

Once a portfolio has been created, strategy configured, and portfolio settings selected, the portfolio can be backtested.

To backtest a portfolio:

- Click the **BackTest**  button on the toolbar, or
- Select **Portfolio** in the main menu and then select **Run Backtesting**.

Backtesting a portfolio will generate a Portfolio Performance Report that will be displayed in a separate window.

The description for each performance measure is described in the Report.

Configuring Strategies

Understanding Strategies

A strategy is a set of signals, applied to a chart. Signals systematically specify market entry or exit points according to a set of trading rules implemented in the signals' algorithms, and can be viewed as the basic building blocks of strategies.

Over 100 pre-built, customizable signals, covering the most popular trading concepts, are already included with the platform, and additional signals can be imported from a variety of sources.

Signals can be fully customized, or entirely new signals created, using PowerLanguage® scripting in **PowerLanguage Editor**.

A portfolio can contain several strategies.

Each strategy can have its own list of symbols and signals. It is possible apply different strategies to different sets of symbols.

Basic adjustments to a signal's logic can be made by simply changing the **Input Values**. Signals can have one or more inputs, or none at all. Multiple instances of the same signal can be used in the same strategy, and each instance can have different input settings.

Strategies can be constructed by simply combining a number of signals.

Signal settings are specific to each particular signal, while Strategy Properties regulate the actions of a group of signals as a whole.

Adding Strategies

To add a strategy to a portfolio:

1. Under the main menu select **Portfolio**.
2. Select **Add Strategy**.

Cloning Strategies

To clone a strategy right-click on the strategy and click **Clone Strategy**.

Adding Signals

The number of signals that can be added to a portfolio is limited only by your computer's hardware configuration.

To add a signal to a portfolio:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
 2. Expand the **Strategy** for which the signal will be added.
 3. Right-click on the **Signals** node and select **Add Signals**.
 4. Select a signal from the **Add Signals** window.
 5. Select **OK**.

You can also drag and drop signals from one strategy to another.

Note: Only the compiled (those with the **Ready Status** of **Yes**) signals can be inserted. To learn more see [Compiling Studies](#)

Removing Signals

To remove a signal:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
 2. Expand the **Strategy** for which the signal will be removed.
 3. Expand the **Signals** node.
 4. Right-click on the signal to be removed and select **Remove Signal**.

Copy and Paste Signals

To copy / paste a signal right-click on the signal and click **Copy / Paste**.

Note: To select multiple signals at once select a signal, hold Shift button and move up or down the list of signals using **Up** or **Down** Arrow buttons.

Signals List

To see which signals are applied to a portfolio:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
 2. Expand the **Strategy** that contains the signals.
 3. Expand the **Signals** node.

Note: Signals' execution priority is assigned according to the order in which they appear in the Signals List, with the signals at the top of the list having a higher priority. To view the available input parameters of a particular signal

1. Right-click on the signal.
2. Select **Format Signal**. The Format Signals window will appear. The table will show available inputs.
3. In the **Value** column, click on the value of the input to be changed and enter the desired value.

Name – name of the signal

Inputs – input parameters of the signal; to learn more see Default Studies Inputs and Setting Studies Inputs

Turning Signals Off and On

Signals can be turned off or on. The script of a signal that is turned off will not be executed and will not generate orders.

To turn a signal off or on:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
 2. Right-click on the strategy in which the signal resides.
 3. Select **Show Signals**. The **Format Settings** window will appear.
 4. Select the **Signals** tab.
 5. Select the **Status** button to toggle the signal on or off.
 6. Click the **OK** button.

Changing Signal Priority

If execution of all entries generated for a portfolio causes the capital limits to be exceeded, then the entries with the highest priority will receive preference, while the entries with the lowest priority will not be executed.

The priority of a symbol is the order in which it is listed in the Symbol List of the Portfolio Backtester.

Signal priority can also be specified in PowerLanguage using the **PortfolioEntriesPriority** keyword.

Moving a Signal to a Different Strategy

To move a signal to a different strategy:

Drag the signal from the strategy in which it resides and drop it into the Signals node of the new strategy.

Setting Signal Input Values

An **Input** is a constant used in the signal's calculations.

Signals can have one or more inputs, or none at all. Each input is assigned a name.

There are three types of inputs: Numeric, True/False, and String.

Signals can be modified by changing the input **Values**.

One of the main advantages of using the inputs is that basic adjustments to the study's logic can be made by simply changing the input values, without the need to edit the studies' actual code.

Multiple instances of the same signal can be used in the same strategy, and can have different input settings.

Inputs are also used for Trading Strategy Optimization.

To change a signal's inputs:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
 2. Right-click on the signal.
 3. Select **Format Signal**. The Format Signals window will appear. The table will show available inputs.
 4. In the **Value** column, click on the value of the input to be changed and enter the desired value.

Strategy Properties

Strategy properties are separate from the individual signals' settings, affect all of the signals in a strategy, and regulate the actions of a group of signals as a whole.

Strategy properties include **Costs/Capitalization**, **Maximum bars back**, **Position limits**, and **Trade size** sections.

Costs/Capitalization

To change costs or/and capitalization assumptions:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:
 1. Go to **Portfolio Backtester** application.
 2. Under the main menu click **View** and then select **Portfolio Tree**.
2. Right-click on the strategy.
3. Select **Show Properties**. The **Format Settings** window will appear.
4. Select the **Properties** tab.
5. In the **Costs/Capitalization** section, enter the commission dollar amount in the **Commission** textbox, and:
 - Select **per Trade** to specify that the dollar amount entered represents commission per trade, or
 - Select **per Share/Contract** to specify that the dollar amount entered represents commission per share/contract
6. In the **Costs/Capitalization** section, enter the slippage dollar amount in the **Slippage** textbox, and:
 - Select **per Trade** to specify that the dollar amount entered represents slippage per trade, or
 - Select **per Share/Contract** to specify that the dollar amount entered represents slippage per share/contract
7. In the **Interest Rate** textbox, enter the interest rate, to be used in performance ratio calculations.

Maximum Number of Bars Study Will Reference

All signals based on past data use a certain number of bars for their calculations.

The **maximum number of bars study will reference** must be greater than or equal to the number of bars that the signal uses.

For example, if the signal uses the past 10 bars to make its calculations, the **maximum number of bars study will reference** must be greater than or equal to 10.

To change the **maximum number of bars study will reference**:

1. Open **Portfolio Tree** window

To open the **Portfolio Tree** window:

1. Go to **Portfolio Backtester** application.
2. Under the main menu click **View** and then select **Portfolio Tree**.
2. Right-click on the strategy.
3. Select **Show Properties**. The **Format Settings** window will appear.
4. Select the **Properties** tab.
5. In the **Costs/Capitalization** section, enter a number in the **Maximum number of bars study will reference** textbox.

Position Limits

Position Limits settings control the maximum number entry orders in the same direction and the maximum number of shares/contracts per position.

To enter position limits:

1. Open **Portfolio Tree** window To open the **Portfolio Tree** window:

1. Go to **Portfolio Backtester** application.
2. Under the main menu click **View** and then select **Portfolio Tree**.
2. Right-click on the strategy.
3. Select **Show Properties**. The **Format Settings** window will appear.
4. Select the **Properties** tab.
5. In the **Position Limits** section, select the check box to enable order limits in the same direction.
6. Enter the number of entry orders permitted in the same direction into the textbox.
 - Select **when the order is generated by a different entry order** radio button to apply the entry order limit only when the entry orders originated from different signals, or
 - Select **regardless of the entry that generated the order** radio button to apply the entry order limit regardless of whether the entry orders originated from the same or different signals.
7. In the **Maximum shares/contracts per position** textbox, enter the maximum shares/contracts permitted.

Trade Size

Trade size settings set the size of each trade, either by the number shares/contracts or by currency value.

Trade size settings select the number shares/contracts or the currency value per each trade.

Note: These settings are ignored if trade size is specified by the signal.

To enter the trade size:

1. Open **Portfolio Tree** window

To open the **Portfolio Tree** window:

1. Go to **Portfolio Backtester** application.
2. Under the main menu click **View** and then select **Portfolio Tree**.
2. Right-click on the strategy.
3. Select **Show Properties**. The **Format Settings** window will appear.
4. Select the **Properti**stab.

5. In the **Trade Size** section,
 - Select the **Fixed Shares/Contracts** radio button to enter the trade size in terms of shares/contracts, or
 - Select the **Dollars per Trade** radio button to enter the trade size in terms of dollars, or
 - Enter a whole number to specify how fractional shares/contracts will be rounded
 - In the **Minimum number shares/contracts** box, enter the minimum number of shares/contracts.
 - Select the **Percent of Equity** radio button to enter the trade size in terms of percent of equity.

Operating Portfolios

Portfolios can be created by the MultiCharts Portfolio Backtester.

MultiCharts Portfolio Backtester is included with the MultiCharts platform as a separate application.

Starting Portfolio Backtester

To start MultiCharts Portfolio Backtester:

1. Select the **Portfolio Backtester** icon on the computer's desktop or on the Quick Launch bar, or:
2. Select **All Programs**, select **MultiCharts**, and click **Portfolio Backtester**.

Creating Portfolios

To create a new Portfolio:

1. Click the **New Portfolio**  icon on the toolbar, or
2. Select **File** in the main menu and then select **New Portfolio**, or
3. Press **CTRL+N** to use the keyboard shortcut.

Saving Portfolios

A Portfolio, complete with the strategy and all settings, is saved as a file with a .pws extension.

To save a Portfolio:

- Select the **Save Portfolio**  icon on the toolbar, or
- Select **File** in the main menu and then click **Save Portfolio**, or
- Press **CTRL+S** to use the keyboard shortcut.

To save an already named Portfolio under a new name, select **File** in the main menu and select **Save Portfolio As**.

Loading Saved Portfolios

To load a saved Portfolio:

1. Open the **Open** file window.

To access the **Open** file window:

- Select the **Load Portfolio**  icon on the toolbar, or
- Select **File** in the main menu and then click **Load Portfolio**, or
- Press **CTRL+O** to use the keyboard shortcut.

2. Navigate to the portfolio file (*.pws) and select it.
3. Press the **Open** button.

Renaming Portfolios

Portfolios can be renamed by two different methods:

- Save a copy of the Portfolio under a different name (see Saving Portfolios) or,
- Use Windows Explorer or another program to rename a Portfolio file as you would any other Windows file.

Deleting Portfolios

Use Windows Explorer or another program to delete the Portfolio file as you would any other Windows file.

Understanding the Symbols Table

A table of portfolio symbols is displayed in the Symbols section. The symbols are displayed under two categories: Tradable Symbols and Information Symbols.

Tradable Symbols

Tradable symbols are the symbols for which the orders are generated. Tradable symbols are listed in the first column of the table, **data1**.

Unless **PortfolioEntriesPriority** function is specified within a strategy, the order, in which the symbols are listed in the Symbols Table, determines the entry priority for the symbols, with the symbols at the top of the table having a higher priority.

Informational Symbols

Informational symbols are the symbols that may be required by the strategy's logic to make trading decisions.

For example, if the strategy's logic references S&P 500 Index to make trading decisions for 3M, the S&P 500 Index symbol must be listed in as an Informational symbol, in addition to the 3M symbol being listed as a Tradable symbol. Up to four informational symbols can be used for each tradable symbol; informational symbols must be listed in the **data2** through **data5** columns, in the same row as the tradable symbol for which they are intended.

Adding Symbols to the Symbol List table:

Note: Informational symbols can only be added to a row that already contains a tradable symbol.

To add a symbol:

1. Select the cell where the symbol is to be added.
2. Open the **Select Symbol** window by one of the following methods:
 - Double-click the cell, and then click the <http://www.multicharts.com/img/wiki/portfolio/ellipse.gif> button, or
 - Right-click the cell, and then click **Format Instruments**.
3. Select a data feed from the **Data Source** drop-down list box.
4. Select a symbol from the list of available symbols in the **All Symbols** tab, or use the category tabs to list only a particular category of symbols.

The list can be sorted by any column, in ascending or descending order, by clicking on the column header.

If the symbol isn't in the list, please see Adding Symbols to Symbol List for more information.

Selecting Multiple Symbols

Multiple symbols can be selected in the **Select Symbol** window and added to the Symbol List.

New rows will be automatically inserted in to the table.

To select a group of adjacent symbols:

1. Select the symbol on one end of the group.
2. While holding the SHIFT key, select the symbol on the other end of the group. The entire group will be selected.

To select multiple symbols one-by-one:

1. Hold down the CTRL key and select each symbol.
2. To cancel the selection, hold down the CTRL key and select the symbol again.
5. Click **OK** to add symbol(s) to the table.

Symbols can also be entered directly into each cell. Symbols already in the QuoteManager database will show up in blue.

Unrecognized symbols will show up in red, indicating that they must be added to the Symbol List.

Working with Symbol List table

To delete a row,

1. Right-click on any cell in the row.
2. Select **Delete Row**. To

insert a row,

1. Right-click on the **Data1** cell in the row above which the new row is to be inserted.
2. Select **Move Down**. A new row will be inserted.

A symbol can be copied from a cell using the CTRL+C keyboard shortcut, and pasted to a cell using CTRL+V keyboard shortcut.

The symbol can also be pasted to all cells of a column. To paste a symbol to all cells of a column, select the entire column by clicking the column header, and then paste the symbol to any of the selected cells.

Data Series Properties

Data Series Properties consists of **Resolution**, **Field**, **Session**, **Build Volume On**, and **Time Zone** settings.

Global Settings

Global settings consist of the **Data Range** and **Time Zone** settings.

To access global settings, select the **Data** tab in the main window.

Data Range

To backtest based on # of bars back or days back:

1. Select the first (upper) radio button in the **Data Range** section.
2. Enter a number in the textbox

3. Select **Bars Back** or **Days Back** in the drop-down list.
4. In the **From** field, enter the date from which **Bars Back** or **Days Back** will start counting.

To backtest based on a specified date range:

1. Select the second (lower) radio in the **Data Range** section.
2. Enter the date range in the **From** and **To** fields.

To set the timezone:

Select either **Local** or **Exchange** time zone from the drop-down list.

Symbol Specific Settings

Symbol specific settings consist of **Resolution**, **Quote**, **Field**, **Sessions**, and **Build Volume On**.

To access symbol specific settings:

1. Select the cell where the symbol is to be added.
2. Open the **Select Symbol** window by one of the following methods:
 - Double-click the cell, and then click the <http://www.multicharts.com/img/wiki/portfolio/ellipse.gif> button, or
 - Right-click the cell, and then click **Format Instruments**.
3. Select the **Settings** tab:

Resolution

Resolution can be based on a **Time** interval (seconds, minutes, hours, days, weeks, months, or years), or on a **Count** interval (tick, volume, change, or range). To set resolution,

1. In the **Resolution** textbox, enter the number units for each bar.
2. In the **Resolution** drop-down list, select the desired units.

To learn more about resolution, see Chart Resolution

Quote Field

It is possible to use trade data, bid data, or ask data by setting the **Quote Field**. To set the **Quote Field**, select **Ask**, **Bid**, or **Trade** in the **Quote Field** list box.

To learn more about Quote Field, see Quote Field

Sessions

To set sessions:

Select the trading session of the symbol from the drop-down list.

Build Volume On

For volume-based resolution, it is possible to build the volume bars based on trade volume or tick count:

Select **Trade Volume** or **Tick Count** from the drop-down list.

Data Download Mode

It is possible to perform backtesting using only locally stored historical data, or download any additional data that may be required before beginning the backtesting process.

To download any additional historical data that may be required before beginning backtesting,

1. Select the **Data** tab in the main window.
2. Select the **Download Data Before Backtesting** checkbox.

To perform backtesting using only the locally stored historical data, clear the **Download data before backtesting** checkbox.

Portfolio Optimization

Understanding Optimization

A strategy is created by implementing trading concepts, ideas, and observations of historical market behavior, into a trading system. The very idea of a trading system implies a degree of optimization to market behavior.

The process of strategy optimization further enhances and automates this process. Strategy optimization is the search for the set of optimum parameters for the defined criteria. By testing a range of signal input values, optimization aids in selecting the values that correspond, based on historical data, to the best strategy performance. Optimization aids in better understanding of strategy's characteristics and in creating new criteria for entries and exits.

Optimization can have detrimental effects if the user searches for the combination of inputs based solely on the best performance over a period of historical data and focuses too much on market conditions that may never occur again. This approach is known as over-optimization or curve-fitting. Performance will not be the same in real trading, since historical patterns are highly unlikely to be repeated.

Optimization Methods

There are two optimization methods: Exhaustive Search and Genetic Algorithm.

Exhaustive, also called **Brute-Force**, optimization systematically goes through all the potential combinations in search for the best solution. The length of time required is proportional to the total number of all possible solutions. Unless relatively few parameters are involved, the period of time required to reach a solution by this method may turn out to be unacceptably long. Thus, exhaustive optimization may only be suitable when there is a limited number of possible solutions.

Genetic Algorithms optimization evaluates only the more promising combinations, finding near-optimum solutions in a fraction of time that would be required by the brute-force approach, making Genetic Algorithm optimization powerful enough to analyze strategies with hundreds of parameters. Genetic Optimizer settings add flexibility to this technique.

To learn more about optimization techniques, see [Understanding Optimization](#)

Running Portfolio Optimization

Once a portfolio has been created, strategy configured, and portfolio settings selected, portfolio optimization can be run.

Exhaustive Search Portfolio Optimization

To perform portfolio optimization:

1. Click the **Optimize**  button on the toolbar, or select **Portfolio** in the main menu and then click **Run Optimization**.
2. In the **Select Optimization Method** dialog box that appears, select **Exhaustive Search**.
3. In the **Exhaustive Search Properties** window that appears, select the **Optimizable Inputs** tab.
4. Check/uncheck the check box to the left of the signal name and input name to enable/disable optimization for this input or check the check box to the left of the **Signal Name** column heading to enable optimization for all inputs (at least one input should be selected to perform optimization).
5. The **Current Value** column shows input values that are currently selected for the signals applied on the chart.
6. In the **Start Value** column, enter the desired starting values for each of the inputs.
7. In the **End Value** column, enter the desired ending values for each of the inputs.
8. In the **Step** column, enter the desired step size, for each of the inputs.
9. The **Step Count** column shows current amount of steps for an input.
10. Select the **Optimization Criteria** tab.
11. Select the **Use Limitation** checkbox to limit the output to a defined number of the best results; unselect the checkbox to list all the results in the optimization report.
12. When **Use Limitation** checkbox is checked Optimization dialog window shows current best results for selected criteria during optimization.
13. Enter the desired number of best results in the **Show N best results** box.
14. Select the best results criteria in the **best results for** list box.
15. Select **Ascending** or **Descending** option to sort the output in ascending or descending order, respectively.
16. Click **OK** to run the optimization and generate the Optimization Report.

Genetic Algorithms Portfolio Optimization

To perform portfolio optimization:

1. Click the **Optimize**  button on the toolbar, or select **Portfolio** in the main menu and then click **Run Optimization**.
2. In the **Select Optimization Method** dialog box that appears, select **Genetic Algorithm**.
3. In the **Genetic Algorithm Properties** window that appears, select the **Optimizable Inputs** tab.
4. Check/uncheck the check box to the left of the signal name and input name to enable/disable optimization for this input or check the check box to the left of the **Signal Name** column heading to enable optimization for all inputs (at least one input should be selected to perform optimization).
5. The **Current Value** column shows input values that are currently selected for the signals applied on the chart.
6. In the **Start Value** column, enter the desired starting values for each of the inputs.
7. In the **End Value** column, enter the desired ending values for each of the inputs.
8. In the **Step** column, enter the desired step size, for each of the inputs.
9. The **Step Count** column shows current amount of steps for an input.
10. Select the **Algorithm-specific Properties** tab.
11. Select the best results criteria in the **Criteria** list box.
12. Select **Ascending** or **Descending** option to sort the output in ascending or descending order, respectively.
13. Set the Genetic Algorithm properties. For information on GA properties, see Understanding Genetic Algorithm Optimization
14. Click **OK** to run the optimization and generate the Optimization Report.

15. Optimization dialogue window shows Average fitness value for current population during optimization.

Using Optimization Report

After the optimization process is complete, a Strategy Optimization Report is generated and displayed in the **Optimization Report** window. Only one Optimization Report window can be open at a time.

The report lists the results of all input combinations (subject to limitations options), arranged by the specified criteria in the specified order. Each row lists a set of performance results for each combination of inputs. The report can be sorted by values in any three of the criteria, in either ascending or descending order.

Sorting the Optimization Report

To sort the report:

1. Select the most significant sort criterion in the **Sort by** list box at the top left of the report window, and then select **Ascending** or **Descending** to specify the sort order.
2. Select the second most significant sort criterion in the **Then by** list box at the top center of the report window, and then select **Ascending** or **Descending** to specify the sort order.
3. Select the least significant sort criterion in the **Then by** list box at the top right of the report window, and then select **Ascending** or **Descending** to specify the sort order.

Applying an Inputs Combination to the Strategy

A combination of inputs listed in any row of the report can be applied directly to the portfolio strategy.

To apply an inputs combination:

1. Double-click the row with the desired inputs combination.
2. In the dialog box that appears, click **Yes** to apply the input combination, or click **No** to cancel.

Note: Once a new inputs combination is applied to the strategy, the portfolio will have to be backtested again.

3D Optimization Charts

3D Optimization Chart is a visual representation of how the strategy's parameters affect its trading performance. The 3D graph reveals the most robust parameter zones, and is a great tool for avoiding over-optimization (curve-fitting). Robust parameter zones will appear to have gradual, rather than abrupt changes in the surface plot. Over-optimized zones will appear to have radical changes or spikes in the surface plot.

To view the 3D Optimization Chart, click the **View 3D Optimization Chart**  button at the bottom left of the report window.

A 3D Chart will be displayed in the **3D Optimization Charts** window.

Exporting Strategy Optimization Reports

Strategy Optimization Report can be exported to a standard .csv (comma-separated values) file. The .csv file can then be imported into a spreadsheet application for further analysis.

To export the Optimization Report:

1. Click the **Export** button at the bottom left of the of the report window.

2. In the **Save Strategy Optimization Report As** dialog box that appears, navigate to the desired location, enter the file name, and click the **Save** button.

Portfolio Performance Report

A Portfolio Performance Report is generated by Backtesting a Portfolio.

Once the portfolio backtesting is complete, a Portfolio Performance Report is displayed in a separate window on the desktop. Reports can be displayed only one at a time.

The report is used to analyze, based on the historical data, the strategy's performance for the entire portfolio.

Performance Report features a two-panel design. Left panel is a "tree" navigation structure, while the right panel displays the performance data. Each section of the report is accessed by clicking the appropriate section name in the left panel.

Performance measurements are organized into five categories: Strategy Analysis, Trade Analysis, Periodical Analysis, Breakdown by Symbols, and Correlation Analysis. A description for each of the measurements within a group is available in the group's root section.

Two of the five categories are unique to portfolio backtesting.

Breakdown by Symbols

The Breakdown by Symbols category shows the performance of each symbol in the portfolio.

The **Overview** node shows the net profit and total number of trades of each symbol.

The **Ratios** node shows the performance ratios of each symbol. The ratios available are Upside Potential, Sharpe Ratio, Sortino Ratio, Fouse Ratio, Calmar Ratio, Sterling Ratio, Avg. win / Avg. loss, Profit Factor, and Percent Profitable.

The **Equity Curve Analysis** node shows equity curve statistics for each symbol.

The performance statistics available are Maximum Equity Drawdown, Maximum Equity Run-up, Avg. Monthly Return, and Standard Deviation of Returns.

Correlation Analysis

The Correlation Analysis category shows the equity correlation among the symbols in the portfolio.

The **Based on Daily Equity** node shows the daily equity correlation of the symbols in the portfolio.

The **Based on Monthly Equity** node shows the monthly equity correlation of the symbols in the portfolio. The **Based on Annual Equity** node shows the annual equity correlation of the symbols in the portfolio.

The description for each performance measure is described in the report.

To show the description of the performance measure,

1. Hover the mouse pointer over the name of the performance measure.

If there is a description, the pointer will change to a **Description**  pointer.

2. Click on the name. The description will appear on the bottom of the report.

For a more information on using performance reports, see Using Performance Report.

Portfolio Settings

Portfolio settings define the conditions under which the strategy is executed. Portfolio Settings include **Exposure**, **Max % of Capital at Risk per Position**, **Initial Portfolio Capital**, **Margin per Contract** and **Potential Loss per Contract**.

Portfolio Settings can be set from the **Portfolio Settings** tab in Portfolio Backtester application.

To use the Portfolio Settings tab:

1. Select the **Portfolio Settings** tab in the main window.
2. In the **Exposure** box, enter the maximum percentage of capital to be exposed to risk.

For example, with **Exposure** set to 50%, a maximum of 50% of the capital will be available for the sum of all positions. If an additional position causes total exposure to exceed 50%, the position size will be reduced so that the **Exposure** limit is not exceeded.

Exposure is defined as follows: entry price * number of contracts. This is the definition for both long and short positions.

3. In the **Max % of Capital at Risk per Position** box, enter the maximum percentage of capital that can be risked per position.

For example, with **Max % of Capital at Risk per Position** set to 5%, a maximum of 5% of the capital will be available for a single position. If an additional position risks more than 5% of capital, then the position size will be reduced so that the **Max % of Capital at Risk per Position** limit is not exceeded.

Max % of Capital at Risk per Position is defined as follows: entry price * number of shares. This is the definition for both long and short positions.

Note: **Max % of Capital at Risk per Position** cannot exceed the **Exposure** setting.

4. In the **Initial Portfolio Capital** box, enter the amount of the initial trading capital.
5. In the **Required Capital Assumptions in Margin Trading** section, choose to use either **Margin per Contract** settings or **Potential Loss per Contract** settings.

Note: Do not use both.

Using Margin per Contract Settings

1. In the **Margin per Contract** section,
 - Select **Absolute Margin value (from QuoteManager symbol settings)** to get the margin value from QuoteManager. Each symbol has a margin setting in QuoteManager. If no margin setting was entered in the QuoteManager symbol settings, then the margin value is assumed to be zero, or
 - Select the **Margin value % of contract cost radio button** to enter a margin percentage that will be applied to all contracts.
2. In the **Potential Loss per Contract** section, input "0.001" into the **Absolute Max Potential Loss** box. This effectively disables the **Potential Loss per Contract** section.

Note: Only the initial margin will be taken into consideration. The maintenance margin will not be taken into consideration.

Using Potential Loss per Contract Settings

1. In the **Potential Loss per Contract** section,
 - Select **Absolute Max Potential Loss** to enter the max potential loss in absolute dollars, or
 - Select **Max Potential Loss** to enter the max potential loss in percentages.
2. In the **Margin per Contract** section, set **Margin value % of contract cost** to "0". This effectively disables the **Margin per Contract** section.

In real trading, margin values and other portfolio settings may change depending on the circumstances. Portfolio Backtester enables the user to calculate the margin values and change portfolio settings dynamically with PowerLanguage.

For more information, please see PowerLanguage portfolio-related keywords (prefixed with the word "Portfolio").

Understanding Portfolio Backtesting

Portfolio Trading

Applying a trading strategy to a number of financial instruments simultaneously offers several advantages:

- Portfolio diversification will produce more consistent results
- Infrequent trading opportunities will be more common across a number of symbols
- Portfolio strategies can maximize profit and minimize risks by allocating the capital within a portfolio dynamically, based on each instrument's performance
- Portfolio strategies can enter, scale-in, scale-out, or exit positions based on the overall portfolio performance
- Portfolio strategies are generally more robust and less susceptible to over-optimization

Understanding Dynamic Portfolio

A dynamic portfolio strategy is more than simply a collection of separate strategies, and must take in to account a number of additional factors:

- Capital limits
- Entry orders priority
- Money and Risk management
- Overall portfolio performance

Portfolio Backtesting

Portfolio backtesting offers a number of advantages:

- Backtesting a strategy on a single instrument may not produce enough trades to distinguish a pattern from a coincidence
- Backtesting a strategy on a number of instruments is more likely to reveal any shortcomings and helps to avoid over-optimization
- A robust strategy is likely to demonstrate consistent profitability across various instruments
- By backtesting on a diverse portfolio, the instruments most suitable for the particular trading strategy can be selected

Batch Portfolio Backtesting, also known as Basket Backtesting, evaluates each strategy separately and then compiles the results.

Understanding Portfolio Backtesting

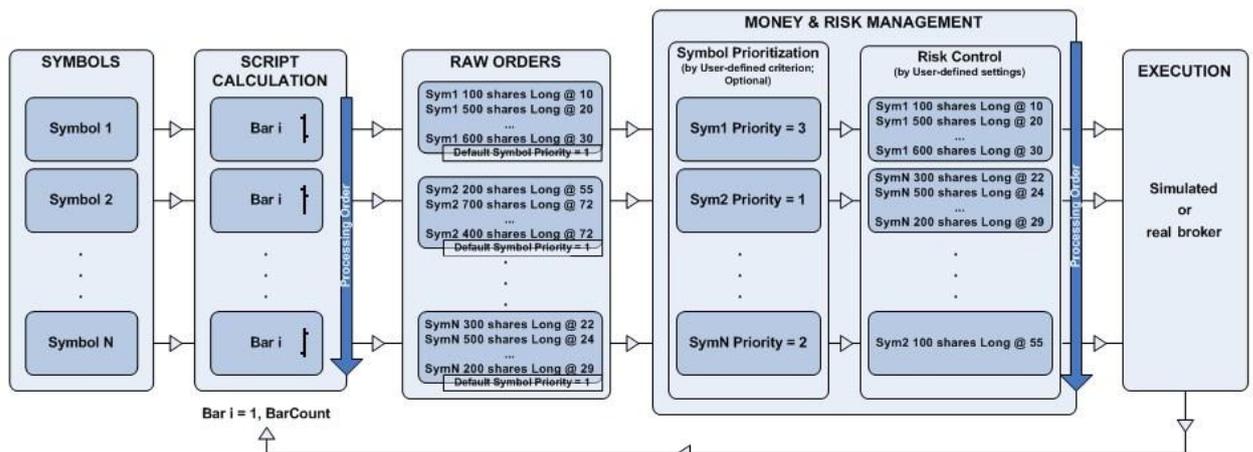
True Dynamic Portfolio Backtesting simulates the actions of a real trader by taking in to account the overall portfolio considerations dynamically, during the evaluation of each bar.

Portfolio equity and the available capital are dynamically evaluated for every instrument, on every bar, in order to determine the amount available to be invested.

When available capital is insufficient to enter all of the trading opportunities that arise simultaneously, the best opportunities are selected according to user-customizable criteria.

In addition to the performance of a particular instrument, portfolio drawdown or other portfolio performance aspects can be taken in to consideration when making entry and exit decisions.

Portfolio Backtesting Diagram



Script Calculation and Raw Order Generation

During backtesting, a single bar of each symbol's data series is evaluated by the strategy's signal scripts, starting with the first (oldest) bar. The series' bars are evaluated in the order that the symbols appear in the symbols table of the Portfolio Backtester. Based on evaluation of each series' bar, a set of one or more orders may be generated by the scripts for each of the symbols. Order sets are generated in the same sequence as the series' bars are evaluated.

This process is illustrated in the Raw Order Generation section of the diagram: the first bar for symbol 1 is evaluated first, and a set of orders is generated based on that bar. Then the first bar for symbol 2 is evaluated, and a set of orders is generated based on that bar. The process is repeated until the first bar for the last symbol (Symbol N) is evaluated.

The resulting sequence of order sets begins with the order set for the symbol 1, followed by the order set for symbol 2, and ends with the order set for symbol N.

Symbol Prioritization

If **PortfolioEntriesPriority** function is specified within a strategy, the sequence of the order sets is rearranged based on the criteria specified.

This process is illustrated in the Symbol Prioritization section of the diagram: the resulting sequence of order sets begins with the order set for the symbol 1, followed by the order set for symbol N, and ends with the order set for symbol 2.

The position of a set of orders in the sequence determines its relative priority: the set of orders for symbol 1 has the highest priority (3), set of orders for symbol N has the second highest priority (2), and the set of orders for symbol 2 has the least priority (3).

Understanding Portfolio Backtesting

Risk Control

At the risk control stage, the sequence of order sets is treated as one long sequence of orders. The orders are executed one-by-one from the beginning of the sequence, until all orders are executed, or until the risk control limits defined in Portfolio Settings of the Portfolio Backtester prevent the execution of remaining orders. Any remaining orders that could not be executed are discarded.

This process is illustrated in the Risk Control section of the diagram: all of the orders for symbol 1 and symbol N are executed, while only some of the orders for symbol 2, 100 shares Long @ 55, are executed, due to risk control limits preventing the execution of the rest of the orders for symbol 2.

The entire process is repeated for the next bar of each of the portfolio symbol's data series.

FAQ

“MultiCharts must be run with Administrator Privileges in order to register a new Data Feed”

In order to remove this popping up on every start alert, 3 steps must be taken:

1. Go to **Windows Start -> Control Panel -> Programs and Features/Uninstall a program/Add or remove programs** -> Make sure you have **Microsoft .NET Framework 3.5** installed. If it is not in the list, please download it from [Microsoft page](#) and install it.
2. Make sure MultiCharts products are closed and there are no MultiCharts Processes running.
3. Make a right-click on MultiCharts icon -> **Run as Administrator**.

After this the red alert should not appear anymore. All next sessions of MultiCharts can be launched "not as Administrator", but by regular double-click.

Collecting and Saving Data to MultiCharts

There is plenty of ways to receive data in MultiCharts, however each way treats received data individually. The only common thing is that no data can be received (except for ASCII Import, see) if Offline mode of MultiCharts is selected.

Note: Data that was received in MultiCharts is stored in cache during MC working session. Once the software (**tsserver.exe**, see MultiCharts Processes) is shut down, the data is saved into MultiCharts database.

Saving Historical Data

Most of supported data vendors provide historical data that is always stored locally after data is received. All types of data are stored:

- Ticks, minutes, days (see Tick, Minute and Daily Data) ;
- Asks, bids, trades.

Exceptions: Historical data from the following data sources is not stored locally :

- * ASCII Mapping * CSI
- * Historical data from GlobalServer can be stored locally if the box is checked in the data source settings.
- * MetaStock
- * Historical data from TradeStation can be stored locally if the box is checked in the data source settings.

When data is imported from ASCII file, it is always stored in MultiCharts database.

Saving Data Collected in Real-Time

Saving RT Data Collected in QuoteManager

All types of data received from data vendors if "Collect RT Data w/o Plotting" is on in QuoteManager (see Online Mode Data Collection) is stored in database.

Saving RT Data Collected in MultiCharts

- RT data plotted in DOM window is not saved.
- RT data plotted in Market Scanner window is saved the same way as data plotted in Chart window.
- RT data plotted in Time & Sales Window is saved the same way as data plotted in Chart window.
- RT data plotted in Chart window is stored or is not stored, depending on its type:
- Ticks are always stored.
- Minute and daily are recorded or not recorded for each data vendor individually:

Note: If a data source provides only real-time data (no historical backfill) it is always recorded in MultiCharts database. Only the data vendors, supporting both history and real-time feed are listed in the following table.

Data Vendor	RT minutes DL missing historical data is not checked	RT minutes DL missing historical data is checked	RT daily DL missing historical data is not checked	RT daily DL missing historical data is checked
Barchart	V	X	X	X
Bloomberg	V	X	X	X
CGQ	V	X	X	X
eSignal	V	X	X	X
Interactive Brokers	V	X	X	X
IQFeed	V	X	X	X
LMAX	V	X	X	X
MB Trading	V	X	X	X
Open E Cry	V	V*!	X	X
PFG BEST	V	X	X	X
Quik	V	X	X	X
Thomson Reuters	V	X	X	X
TradeStation	V	X	X	X
Zen-Fire	V	X	X	X

V*! - Open E Cry data source provides real-time minute data that is stored in database. It is important to know that if charts only with minute data from Open E Cry are plotted in MultiCharts, tick data is not stored locally.

Note: Take into account that **Download Missing Historical Data** checkbox affects the way MultiCharts treats received real-time data for Chart and Market Scanner windows.

Note 2: If a data vendor does not provide historical Ask/Bid data, than Ask/Bid data received in real-time is recorded in MultiCharts database.

Compilation Error (errLine 0, errColumn 0, errLineEnd 0, errColumnEnd 0)

Compilation Error (errLine 0, errColumn 0, errLine End 0, errColumnEnd 0)

If a customer experiences an issue with compilation errors for all his/her scripts in PowerLanguage Editor, most likely he/she has faced one of two compilation problems:

- **Compilation issue connected with GCC short paths.**
- **Compilation issue connected with Virtual Allocation**

It is extremely easy to check if you have one of the issues:

1. In **PowerLanguage Editor** main menu go to **File**, then **New...** and in the pop up window choose any study type.
2. Give it any name.
3. Without putting a single keyword into the completely empty study, click on the **Compile** button in the ToolBar of PowerLanguage Editor.
4. If the fresh blank study is compiled with error, it means that you have one of two compilation problems.

Depending on which type of compilation problem you have there are two ways to fix them. To find out which one you have:

1. Open **C:\ProgramData\TS Support\MultiCharts\StudyServer\Studies** (*for Windows 7/8*) or **%allusersprofile%\Application Data\TS Support\MultiCharts\StudyServer\Studies** (*for Windows XP*).
2. Open the file **compiler_error.log**.
 - If the file contains lines similar to:
"Internal error in mingw32_gt_pch_use_address, at config/i386/host-mingw32.c:151: VirtualAlloc (commit):"
"C:\PROGRA~1\TSSUPP~1\MULTIC~1\STUDYS~1\Studies\SrcCpp\INDICA~1\I_SBTE~1.CPP:1: fatal error: can't read PCH file: Invalid argument. Compilation terminated." **It means that this is the issue with virtual allocation.**
 - If the file contains lines similar to:
"C:\PROGRA~1\TS Support\MultiCharts\make\MinGW\bin\dltool: Can't open def file: C:\PROGRA~1\TS"
"C:\PROGRA~1\TS Support\MultiCharts\make\MinGW\bin\dlwrap.exe"
"C:\PROGRA~1\TS Support\MultiCharts\make\MinGW\bin\dltool exited with status 1"

It means that this is the issue with GCC short paths.

Compilation issue connected with Virtual Allocation

To fix the issue:

1. Close all MultiCharts products and make sure all MultiCharts Processes are finished in Windows Task Manager.

2. Download the following zip archive onto your machine and unpack it.

For MC 8.0 Release 32 bit: https://dl.dropbox.com/u/95112551/MakeGCH_elapiver_163.zip

For MC 8.0 Release 64 bit: https://dl.dropbox.com/u/95112551/MakeGCH_elapiver_163_x64.zip

1. Run **Updater.exe**, click on **Update**, then make sure there are **no errors** in the log and click on **Close**.

Compilation Error (errLine 0, errColumn 0, errLineEnd 0, errColumnEnd 0)

Compilation Issue Connected with GCC Short Paths

When MultiCharts is in the process of installation on your computer it checks **NtfsDisable8dot3NameCreation** key in the registry: **HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem**. If the value of the key is **1**, it may cause the issue. If it is **1**, the following message pops up:

The installer has detected that NtfsDisable8dot3NameCreation registry key in HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem is set to 1. It may cause a compiler issue: studies may not be compiled in PowerLanguage Editor.

Click Next to continue or Cancel to exit the Setup Wizard and change registry key above to zero using regedit utility (click Windows Start button, select Run, type regedit and press Enter), restart the computer and run installer again.

To fix the issue:

1. Close all MultiCharts products and make sure all MultiCharts Processes are finished in Windows Task Manager.
2. Click on **Windows Start button**, then **Run** and type **Regedit**. Press **Enter**.

3. In the Registry open the path:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem

4. Change the value of the **NtfsDisable8dot3NameCreation** key to **0**.
5. Reboot the operation system.
6. After the system is rebooted, do not launch Multicharts. Open **C:\ProgramData\TS Support\MultiCharts\StudyServer\Studies** (for Windows 7/8) or **%allusersprofile%\Application Data\TS Support\MultiCharts\StudyServer\Studies** (for Windows XP).

- Open the **compiler_error.log** file. Depending on what path is written in the file you will have to rename several folders in one of 2 possible locations:

- **C:\ProgramData\TS Support\...** (example for Windows 7/8); **C:\Documents and Settings\All Users\Application Data\TS Support\...** (example for Windows XP)

- **C:\Program Files\TS Support\...** (example for any Windows)

1. Rename the **TS Support** folder into **TS SupportOld**. Create new folder **TS Support**. Move everything from **TS SupportOld** into the new **TS Support**. Delete the **TS SupportOld** folder.
2. Open the new **TS Support** folder. Rename the **MultiCharts** folder into **MultiChartsOld**. Create new folder **MultiCharts**. Move everything from **MultiChartsOld** into the new **MultiCharts**. Delete the **MultiChartsOld** folder.
3. Open the new **MultiCharts** folder. Rename the **StudyServer** folder into **StudyServerOld**. Create new folder **StudyServer**. Move everything from **StudyServerOld** into the new **StudyServer**. Delete the **StudyServerOld** folder.

Run PowerLanguage, create new study (any type) and try to compile it. Should be compiled without any errors. If the issue persists, please contact our support team in [Chat ^[1]].

Creating Custom Futures Using ASCII Import

Here is the instruction of how to create a custom futures using your data from ASCII files, make your data feed fill the gap between the last date in the file and today's date and receive real-time. This is an example of creating @CL custom futures, using minute data from files and Interactive Brokers data vendor:

1. Add current contract + distant (expired) contracts for this year if required. **Example:** Today's date is 06.10.11; the last date in your file is 04.10.11 (all dd.mm.yy); CLU1 (September contract) should be added because the last date you have is before the date of expiration of CLV1 (October contract).
2. Import all data from the file into CLU1, but not after its expiration date, so several days of minute data are not imported. It is recommended to import any data after the date of expiration: for CLU1 you should not import anything after its expiration on 22.08.11.
3. In MultiCharts Main Menu please go to **File**, then click on **Preferences** and select **Data Server Mode** tab. Check the **Show Data Server Mode dialog box on startup** box.
4. Close all MC products and make sure all MultiCharts Processes are off.
5. Open MultiCharts; select **Offline Mode**; plot CLU1 chart: 1 day resolution, using the whole data range of data you have imported.
6. In MultiCharts please go to **File** and click **Export data** to export daily data from the chart.
7. Open **QuoteManager** and import this daily data to the CLU1 instrument (see Importing ASCII data).
8. Editing an existing symbol properties | Rename the **CLV1** to **CLV2011** (for example). It should be made not to request data from data source, so the imported data (both daily and minutes) is not replaced with data from server when you reload your chart.
9. Create a Creating a Custom Futures symbol | Custom Futures (date rollover is preferred).

Note: Sometimes a customer can face a problem when the expiration rule doesn't coincide with expiration dates of individual contracts, so we recommend to change rollover dates when you create custom futures for 1-2 days, so those 1-2 days of data will be taken from distant contract, not from the current one. It will help you to avoid gaps on your chart.

10. Close all MC products and make sure all MultiCharts Processes are off.
11. Open MultiCharts; select **Online Mode** and check the **Download Missing Historical Data** box; plot the Custom Futures **on chart**.

Now you can plot both minute and daily based charts. You will have your data from ASCII that won't be replace; no gaps after the last date in your file which have been filled by your data vendor; real-time data from your data source.

Custom Criteria Optimization

Custom Criteria Optimization

If the standard set of optimization parameters does not suit you, you can create your own custom criteria for optimization.

There are two ways to create custom criteria for optimization:

1. Write custom criteria in java on the **Optimization Criteria** tab of the **Exhaustive Search Properties** window or on the **Algorithm-Specific Properties** tab of the **Genetic Algorithm Properties** window (see Performing Optimization) ; or :
2. Create a custom signal using SetCustomFitnessValue keyword in PowerLanguage Editor specifying your custom criteria.

Example: You want to optimize your signal by Sharpe Ratio. This parameter is not among standard criteria.

One possible solution would be to create a function which calculates SharpeRatio in Power Language (see default SharpeRatio function) and use it as a SetCustomFitnessValue keyword parameter. See the **! optimize by sharp ratio !** default signal as an example. Such signal should be applied to your chart with the signals that you want to optimize applied before performing optimization.

Make sure that you select the **Custom Fitness Value** from the list under the **Standard Criteria** section on the **Optimization Criteria** tab of the **Exhaustive Search Properties** window or on the **Algorithm-Specific Properties** tab of the **Genetic Algorithm Properties** window (see Performing Optimization).

Note: **!optimize by sarp ratio!** default signal can be used as an example showing how to find the best parameters using custom criteria.

“Data feed could not be loaded” Error Message

There can be multiple reasons for "Data feed could not be loaded" message.

1. One of the data feeds that is used on your workspaces is disabled in QuoteManager->Tools->Data sources. Make sure that data feeds you are using are Active.
2. On one of the charts on your workspace the data feed that is disabled in the QuoteManager is used. Close this chart or activate the data feed for it.
3. During MultiCharts installation not all of the data feed DLLs have been installed due to antivirus/firewall activity. Please close MultiCharts and all of its products. Make sure all processes ^[1] are finished. Then go to MultiCharts folder (make a right click on the MultiCharts shortcut -> Properties -> "Shortcut" tab -> select "open file location") and run DataUpdater.exe

Floating-Point Division by Zero Error Message

“Floating-Point Division by Zero” Error Message

Floating-Point Division by Zero Error Message

This error message may pop up in MultiCharts after you've applied a study to your chart. Floating point error means that there is a division by a variable in the code and this variable's value is zero. You need to identify this variable and fix it or to make sure that the variables value is not zero in the code.

To do this please use Print keyword to check value of the variables used it the script. Alternatively, you can deduce it using the following piece of code

Examples

```
var: vrs(0); if vrs=0 then raiseruntimeerror("!!!alarm vrs=0");

if vrs<>0 then
plot1(close/vrs) else
plot1(0);
```

Getting Started Wizard

The first time you launch MultiCharts you will see a wizard that helps you configure your data feed and create a chart.

To enable/disable Getting Started Wizard:

1. Click **File** in the main menu of MultiCharts;
2. Select **Preferences**;
3. On the **Workspaces** tab under **Wizard Options** section check/uncheck **Run Wizard on Startup** feature;
4. Click **OK** to apply the changes.

Global Variables

Global Variables

Understanding Global Variables

Global Variables is an external .dll file that can be used to pass values between strategies on separate charts and third party applications. The information is stored in a shared memory space. External processes can access the data in the memory for further operations. From Multicharts the Global Variables functionality is accessed by PowerLanguage functions. When a customer uses Global Variables it is important to determine the read-write action time because the actions are performed on the script calculation.

Additional info on our discussion forum: <http://www.multicharts.com/discussion/viewtopic.php?t=2483>

And on Big Mike's Trader discussion forum: <http://www.bigmiketrading.com/tradestation-multicharts-easylanguage-programming/3502-global-variables-gv-easylanguage-tradestation-multicharts.html>

Global variables can be used in backtesting only in Portfolio Backtester: http://www.multicharts.com/trading-software/index.php/Spread_and_Pair_Trading#Pair_Trading_in_Backtesting

Help – About MultiCharts Error

When a customer goes to Help in MultiCharts main menu and then click on **About MultiCharts...** it may display an error message. Resolution of the issue is simple: the customer should go to Microsoft web page to download latest available for your operation system version of Internet Explorer. Its components are used in some parts of MultiCharts software. After fresh IE is installed the issue should be fixed. If it is not, contact MultiCharts support team.

How Signals are Calculated

Note: This article is regarding the calculation done on a **Regular chart type**.

- **Realtime. Normal mode.**

The script is calculated on the bar close. Order is placed on this bar close/ next bar open. Order is filled on any tick price within the next bar.

- **Realtime. Intra-Bar Order Generation (IOG) enabled.**

The script is calculated tick by tick. Order is placed on the next tick. Order is filled on any tick price within the bar.

- **Calculation on historical data. Regular mode (IOG disabled. Bar Magnifier disabled)**

The script is calculated on the bar close. It is considered that all prices were within the bar (Intra-bar Price movement assumption is used) . Order is filled on any price within the bar.

- **Calculation on historical data. IOG enabled. Bar Magnifier disabled.**

The script is calculated four times on OHLC of the bar. It is considered that all prices were within the bar (Intra-bar Price Movement Assumption is used). Order is filled on any price within the bar with the step (minmove/pricescale).

- **Calculation on historical data. IOG disabled. Bar Magnifier enabled.**

The script is calculated 1 time on main data series close. It is considered that there were only OHLC values of the detailed data series. Order is filled only on OHLC prices of the detailed data series.

- **Calculation on historical data. IOG enabled. Bar Magnifier enabled.**

The script is calculated on the Open value of the main data series, then OHLC of each bar of the detailed data series selected in bar magnifier, then on the Close of the main data series. Order is filled only on these O (main) -OHLC (detailed) -C (main) values.

Note: IOG and Bar Magnifier work differently on non-standard chart types. Refer to this article for more details IOG and Bar Magnifier on non-standard chart types

Note: Why is Data Playback strategy performance different from Backtesting results?

How to Backup User Data

Even though MultiCharts is a stable and reliable piece of software you may want to backup your custom data and studies to be on the safe side in case of a system crash or hardware failure.

Exporting Custom Studies (Indicators, Signals, Functions)

See Importing and Exporting Studies

Saving User Data

There are two ways to backup user data: backup database files or export data from QuoteManager into .qmd files.

Copying database files is faster, but you won't be able to merge this data with the other data which already exists in the database if needed.

Exporting data from QuoteManager into .qmd files will allow you to merge this data with the other data which will exist in the database in the future.

To save database files:

1. Click Windows **Start** button.
2. Select **Run**
3. For Windows Vista/Windows 7/Windows 8 paste the following command: `%allusersprofile%\TS Support\MultiCharts ;`

For Windows XP paste the following command: `%allusersprofile%\Application Data\TS Support\MultiCharts`

4. Press **Enter**.
5. In the popped up window make a copy of the **DataBase** folder with all its contents.

Note: MultiCharts 32 bit databases are incompatible with MultiCharts 64 bit. Copying a 32 bit database folder into MultiCharts 64 bit will cause errors. Please use the next step "Export data" to export your databases from MultiCharts 32 bit version or use the following tool to convert your 32 bit data bases into 64 bit format: [How to Reduce Database Size](#)

To export data:

1. Open QuoteManager:
In MultiCharts main menu select **File**, then point to **New** and click **QuoteManager Window**
2. In QuoteManager main menu select **File**, then point to **Export Data** and click **Export All Instruments...** ;or Click the Export Data  icon on the toolbar.
3. In the **Export** window make sure that the **Export symbols with settings, no data** check box is unchecked.
4. Click **Next**
5. Enter the name of the *.qmd file and choose the path where it will be located.
6. Click **Next**
7. Click **Finish**.

Saving Workspaces

See Saving Workspaces

Saving Custom Study Templates

To save Custom Study Template:

1. Click Windows **Start** button.
2. Select **Run**.
3. Paste a command (same for Windows Vista/Windows 7/Windows 8 and XP) `%userprofile%\Application Data\TS Support\MultiCharts`

4. Save all *.tml files
5. These files are supposed to end up in your new computer.

Restoring Custom Studies

See Importing and Exporting Studies

Restoring User Data

To restore database files:

Note: MultiCharts 32 bit databases are incompatible with MultiCharts 64 bit. Copying 32 bit database folders into MultiCharts 64 bit will cause errors.

1. Close MultiCharts, Portfolio Backtester and QuoteManager.
2. Click Windows **Start** button.
3. Select **Run**
4. For Windows Vista/Windows 7/Windows 8 paste the following command: *%allusersprofile%\TS Support\MultiCharts ;*
For Windows XP paste the following command: *%allusersprofile%\Application Data\TS Support\MultiCharts*
5. Press *Enter*.
6. Copy the DataBase folder with all its contents to the popped up window.

To import data:

1. Open QuoteManager:
In MultiCharts main menu select **File**, then point to **New** and click **QuoteManager Window**.
2. In QuoteManager main menu select **File**, then point to **Import Data** and click **Import Instruments...** ;or:
Click the **Import Data**  icon on the toolbar.
3. In the Import window select the file to import.
4. Click **Next**.
5. Click **Finish**.

Restoring Custom Study Templates

To restore Custom Study Template:

1. Click Windows **Start** button.
2. Select **Run**.
3. Enter the same command for Windows Vista/Windows 7/Windows 8 and XP: *%userprofile%\Application Data\TS Support\MultiCharts*
4. Copy *.tml files from your old computer to the popped-up folder.

How to Collect Dumps

Dump files contain information necessary for investigation of crash and "platform freezing" issues. If MultiCharts processes are still running in the Task Manager after the crash, you can collect dump files yourself.

1. Go to <http://www.microsoft.com/en-us/download/details.aspx?id=26798> and download Debug Diagnostic Tool.

2. After you have downloaded DebugDiag.msi and installed on your computer, go to Windows Start menu -> All Programs -> Debug Diagnostics Tool -> Debug Diag
3. On first start of the application you will see the active "Select Rule Type" dialogue. Cancel it.
4. Go to "Processes" tab.
5. Under this tab you should find the required process, right click on it -> create Mini Userdump
6. Now you need to go to C:\Program Files\DebugDiag\Logs\Misc (or C:\Program Files (x86)\DebugDiag\Logs\Misc if you have 32 bit Operation System).
7. There you should find 2 files for each of processes you have previously created dumps. Please, copy them to your Desktop, because you won't be able to zip them in that folder. Zip the files on your Desktop and send it to MultiCharts Support ^[1].

Note: If you are using MultiCharts 32 bit on a 64 bit Operation System you should download 32 bit version of DebugDiag.

How to Configure a Proxy Connection

How to Configure a Proxy Connection

If you have a proxy setup, right-click on the Yellow  or the Green  **Authorization Button** in the bottom right corner of the MultiCharts window and click **Proxy Settings**.

You may need to ask your IT specialist about the proxy settings. Follow the instructions very carefully.

How to Connect Multiple Interactive Brokers Profiles

In order to connect 2 Interactive Brokers broker profiles in MultiCharts with 2 different Interactive Brokers accounts please:

1. Open **the 1st** instance of **IB TWS** platform;
2. Log into it with **IB account #1**;
3. Check the settings of the **1st** IB API connection:
 1. In TWS click the 'Configure button;
 2. Select **API** section;
 3. Open the **Settings** menu;
 4. **Socket port** should be set to 7496 (by default); 5. **ClientID** should be set to 0 (or empty by default);
6. Click OK.
4. Check the **Interactive Brokers** Broker Profile in MultiCharts:
 1. In MultiCharts click **File**;
 2. Select **Broker Profiles**;
 3. Open **Manage Broker Profiles** menu;
 4. Highlight **Interactive Brokers" broker profile**;
 5. Click **Edit**;
 6. Make sure that the **Port** and **ClientID** settings are **the same** as in the **1st IB TWS** platform settings.

5. Open **the 2nd** instance of **IB TWS** platform;
6. Log into it with IB **account #2**;
7. Check the settings of the **2nd** IB API connection:
 1. In TWS click the 'Configure button';
 2. Select **API** section;
 3. Open the **Settings** menu;
 4. **Socket port** should differ from the 1st IB TWS settings. It can be set to 7497 (or any other number **different** from the **1st IB TWS port**) ;
 5. ClientID should be set to 1 (or any other number **different** from the **1st IB TWS ClientID**) ;
 6. Click OK.
8. Create the new Interactive Brokers broker profile:
 1. In MultiCharts click **File**;
 2. Select **Broker Profiles**;
 3. Open **Manage Broker Profiles** menu;
 4. Click **New**;
 5. Select **Interactive Brokers**
 6. In pop-up window check that **Port** and **ClientID** settings are the same as in **the 2nd** IB TWS (i.e. Port - 7497, ClientID - 1).
 7. Click OK.
 8. The new (the second) broker profile will be named "Interactive Brokers 2" by default. This name can be changed in accordance with your needs.

Note: The data can be received only from 1 instance of TWS at once. This data can be used for trading with **both** accounts. Please check Interactive Brokers data feed settings in QuoteManager. The port number is set to 7496. It means that the data should be downloaded from the 1st TWS platform with account #1. If you want to receive the data from account #2, please change the port number to 7497 (or any other that you used for the 2nd TWS) in Interactive Brokers data feed settings in QuoteManager.

How to Connect to a Data Feed or a Broker

Click the link below to find connection video tutorials

[Video tutorials on how to connect to different data feeds and brokers](#)

How to Get Data from FXCM (MCFX data feed) and Set Up for Trading on FXCM

MCFX data source

MultiCharts cannot receive data directly from FXCM. In MultiCharts FXCM data is available only through our servers. Such data source is called MCFX.

Note: When a customer is subscribed to regular MCFX platform he has MCFX login and password. The login and password cannot be used to get data into MultiCharts after required module is installed.

We provide MultiCharts Forex Data (up to 10 years of FXCM tick data: asks and bids) for \$99 per month. Here is the link to subscribe to [Forex Data \(MCFX data for MultiCharts\)](#)

Note: We provide data for the following key currency pairs: AUD/CAD, AUD/JPY, AUD/NZD, AUD/USD, CAD/JPY, CHF/JPY, EUR/AUD, EUR/CAD, EUR/CHF, EUR/GBP, EUR/JPY, EUR/NZD, EUR/TRY, EUR/USD, GBP/AUD, GBP/CHF, GBP/JPY, GBP/USD, NOK/JPY, NZD/CAD, NZD/CHF, NZD/JPY, NZD/USD, SEK/JPY, USD/CAD, USD/CHF, USD/HKD, USD/JPY, USD/NOK, USD/SEK, USD/SGD, USD/TRY, USD/ZAR.

This subscription is separate from MC license. MCFX data feed is not installed automatically with MultiCharts. If you have MultiCharts, but you don't have MCFX login and password, you can sign up for MCFX or contact our support team in live chat to get 2 weeks of trial for free.

How to Get Data from FXCM (MCFX data feed) and Set Up for Trading on FXCM

How to install MCFX data source into MultiCharts

1. Make sure you have MultiCharts 8.0 Release. Both 32-bit and 64-bit versions can be [downloaded here](#)
2. Please download appropriate Updater version:
 - [Updater for MultiCharts 32-bit](#)
 - [Updater for MultiCharts 64-bit](#)
 - [Updater for MultiCharts .NET 32-bit](#)
 - [Updater for MultiCharts .NET 64-bit](#)
3. Unzip the file and install the updater
4. Run QuoteManager and set up the MCFX data feed with your MCFX login and password
5. **DO NOT** add any symbols from MCFX data source. Please close the QuoteManager and make sure all MultiCharts Processes are ended in Task Manager
6. Run QuoteManager and add the symbols from MCFX data source
7. Now you can plot charts in MultiCharts using MCFX data.

How to set up MultiCharts for trading from MCFX charts on your FXCM account

1. To establish connection to FXCM broker follow this instruction: [FXCM Broker Profile](#)

Note: PAMM accounts are supported: only 1 account is visible and trades can be successfully executed. The final profit/loss should be allocated to any other subaccount on FXCM end.

2. Configure symbol mapping **manually** as it is described at the bottom of the symbol mapping instruction: [Symbol Mapping](#)

Note: To edit a broker symbol click the Edit button on the right side of the Broker Symbol column.

If everything is done correctly, you will be able to trade on FXCM using MCFX data in MultiCharts.

How to Install an Updater

In some particular situations MultiCharts support team can send a link to download an updater file. Such archive file may contain a hot fix for an existing issue, extended logging modules and so on. Here is the instruction of how to unpack and install the file:

1. Please close MultiCharts and all its applications (QuoteManager, PowerLanguage Editor, Portfolio Backtester and 3D Optimization Charts).
2. Run Windows Task Manager (right-click on windows clock -> run Task Manager) and make sure that all MultiCharts Processes are ended. If a process of MultiCharts is still there after 20 seconds, end it manually.
3. Unzip the archive. Then run the Updater.exe and click on the "Update" button.
4. Scroll up log of the updater to make sure there are no errors. If there is an error, contact MultiCharts support team.
5. Close the updater. An issue should be fixed or additional functionality should be enabled. MultiCharts can be launched.

How to Make Indicator and Signal Calculation results the Same

Signal calculation values are often compared to the indicator plot using the same function. In order to have relevant results for comparison you need to follow this simple guide to make indicator and signal calculation results the same.

Make sure signal and indicator have the same settings:

- First of all base the calculation of the studies on the same amount of bars.
 1. To set the number of bars that **signal** will reference:
 1. Click **Format** in the main menu of MultiCharts;
 2. Select **Strategy Properties**;
 3. Turn to the **Properties** tab;
 4. In **Maximum number of bars study will reference** the default value is 50 bars.
 2. To set the same value for the indicator:
 1. Click **Format** in the main menu of MultiCharts;
 2. Select **Studies**;
 3. Highlight your indicator;
 4. Click the **Format** button;
 5. Turn to the **Properties** tab;
 6. Under **Max number of bars study will reference** select **User specified and enter the amount of bars**.
- If the signal is calculated tick by tick, i.e. IOG is enabled for the signal, the **Update on every tick** feature should be enabled for the indicator.

To enable the **Update on every tick** feature:

1. Click **Format** in the main menu of MultiCharts;
 2. Select **Studies**;
 3. Highlight your indicator;
 4. Click the **Format** button;
 5. Turn to the **Properties** tab;
 6. Check the **Update on every tick** checkbox.
- **Realtime-History Matching** should be enabled/disabled (upon necessity) for both signal and indicator. Please see detailed instructions at Realtime-History Matching section.

Note: Indicator and signal should be based on the corresponding data series and have the same input values.

- If indicator and signal settings are the same - the calculation results should be equal.

How to Migrate from MultiCharts 32 bit to MultiCharts 64 bit

MultiCharts 64 bit has been available since version 8.0. All modules have been rewritten to 64-bit, so they can use all available RAM on a computer. Performance of the application is now limited only by the amount of physical memory in your computer. Limitations on bars per chart, mapping and importing ASCII files more than 4 GB, number of symbols and plots in Scanner, and displaying strategy performance report with large number of trades have been all lifted in the 64-bit version.

MultiCharts 32 bit and MultiCharts 64 bit are **two separate applications** that can be installed on the same PC. You can use your license in both programs, but not at the same time. If you like to run both versions simultaneously, please read How to use your license on two computers at the same time article.

Note: Installation of MultiCharts 64 bit will not update your current 32 bit version.

As MultiCharts 64 bit is an application separate from MultiCharts 32 bit, all user data should be transferred manually.

Note: You will need to input your registration name and registration code (16 digits) provided by our business department in your newly installed MultiCharts64.

Transferring user data

Transferring Custom Studies

To transfer the custom studies it is necessary to export them from PowerLanguage Editor of 32 bit version and import them into PowerLanguage Editor of 64 bit version. Please see Importing and Exporting Studies article for detailed instructions.

If your study from MultiCharts 32 bit uses a custom DLL, you need to recompile this DLL into 64 bit one.

Otherwise, it will not be recognized in MultiCharts 64 bit.

Protected *.sef files from any version of MultiCharts 32 bit cannot be used in any version of MultiCharts 64 bit.

Protected *.sef files from any 7.X version of MultiCharts cannot be used in any 8.X version of MultiCharts. Only .sef studies created with the same version number (build) of MultiCharts can be imported in this case. If a .sef file is compiled in a different build of MultiCharts it won't be imported.

If you upgrade from MultiCharts 8.0 to MultiCharts 8.1/8.2/8.X, the studies can be imported without recompilation.

Transferring Database files

1. Close MultiCharts and all of its processes (see the list of all processes here ^[1]);
2. Backup 32 bit database files (see How to Backup User Data) ;
3. Convert your database from 32 bit to 64 bit. Please see How to Reduce Database Size article for detailed instructions;
4. Copy the converted database folder.
5. Click Windows Start button (on the computer with MC 64 bit);
6. Select Run;
7. For Windows Vista/Windows 7/Windows 8, paste the following command: *%allusersprofile%\TS Support\MultiCharts64 ;*
8. For Windows XP paste the following command: *%allusersprofile%\Application Data\TS Support\MultiCharts64 ;*
9. Press Enter;
10. Paste the copied converted DataBase folder with all its contents to the popped up window to replace new 64 bit database with your old converted one.
11. Run the Dataupdater.exe in the installation folder of MultiCharts 64 bit.

Note: All the data in 64 bit database will not be available after database file replacement.

Transferring Workspaces

MultiCharts 64 bit can use workspaces saved in MultiCharts 32 bit. To transfer workspaces save them in MultiCharts 32 bit (see Saving Workspaces) and open them in MultiCharts 64 bit.

Transferring Custom Study Templates To

save Custom Study Template:

1. Click Windows Start button.
2. Select Run.
3. Paste a command (same for Windows Vista/Windows 7/Windows 8 and XP) *%userprofile%\Application Data\TS Support\MultiCharts*
4. Copy all *.tml files
5. Paste a command (same for Windows Vista/Windows 7/Windows 8 and XP) *%userprofile%\Application Data\TS Support\MultiCharts64*
6. Paste *.tml files that you previously copied into the popped-up folder.

How to Move MultiCharts Database, Studies and Logs from C Drive

How to Move MultiCharts Database, Studies and Logs from C Drive

During installation of MultiCharts, one can specify different from C drive installation folder location. However, the most space that is used by MultiCharts is filled with MultiCharts database, log files and studies. By default everything mentioned is stored on the C drive. There is a way to move the files and folders to a different hard drive.

Database files

Before starting, it is recommended to backup the database (see How to Backup User Data) . The first step is to copy the files themselves:

Note: See How to Reduce Database Size to fill less space on another drive before moving the database files.

1. Click **Windows Start** button.
2. Select Run.
3. For Windows Vista/Windows 7/Windows 8 paste the following command: **%allusersprofile%\TS Support\MultiCharts ;**

Note:

For 64 bit Windows the path to MultiCharts 64 bit database is **%allusersprofile%\TS Support\MultiCharts64;**

For 64 bit Windows the path to MultiCharts 32 bit database is **%allusersprofile%\TS Support\MultiCharts;**

For 64 bit Windows the path to MultiCharts .NET 64 bit database is **%allusersprofile%\TS Support\MultiCharts .Net64;**

For 64 bit Windows the path to MultiCharts .NET 32 bit database is **%allusersprofile%\TS Support\MultiCharts .Net**

For Windows XP paste the following command: **%allusersprofile%\Application Data\TS Support\MultiCharts**

4. Press **Enter**.
5. In the popped up window make a copy of the Database folder with all its contents.
6. Paste the copy of the database to new location.

The second step is to change the registry key:

1. Click **Windows Start** button.
2. Select Run.
3. Type **regedit**.
4. Press **Enter**.
5. Find the **Path** registry key On 64 bit Windows the path to MultiCharts 64 bit databases key is **HKEY_LOCAL_MACHINE\SOFTWARE\TS Support\MultiCharts\Databases\Portfolio**

On 64 bit Windows the path to MultiCharts 32 bit databases key is

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\TS Support\MultiCharts\Databases\Portfolio

6. Change the path to new location of your database files.
7. Find the **Path** and **CashePath** registry keys On 64 bit Windows the path to MultiCharts 64 bit key is **HKEY_LOCAL_MACHINE\SOFTWARE\TS Support\MultiCharts\Databases\Storage**

On 64 bit Windows the path to MultiCharts 32 bit key is

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\TS Support\MultiCharts\Databases\Storage

8. Change the paths to new location of your database files.
9. Find the **DictionaryPath** registry key On 64 bit Windows the path to MultiCharts 64 bit databases key is **HKEY_LOCAL_MACHINE\SOFTWARE\TS Support\MultiCharts\Databases\Portfolio**
On 64 bit Windows the path to MultiCharts 32 bit databases key is **HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\TS Support\MultiCharts\Databases\Portfolio**
10. Change the path to new location of your database files.

Studies

Before starting, it is recommended to backup the studies (see How to Backup User Data) . The first step is to copy the files themselves:

1. Click **Windows Start** button.
2. Select Run.
3. For Windows Vista/Windows 7/Windows 8 paste the following command: **%allusersprofile%\TS Support\MultiCharts\StudyServer;**

Note:

For 64 bit Windows the path to MultiCharts 64 bit studies is **%allusersprofile%\TS Support\MultiCharts64\StudyServer;**

For 64 bit Windows the path to MultiCharts 32 bit studies is **%allusersprofile%\TS Support\MultiCharts\StudyServer;**

For Windows XP paste the following command: **%allusersprofile%\Application Data\TS Support\MultiCharts\StudyServer**

4. Press **Enter**.
5. In the popped up window make a copy of the Studies folder with all its contents.
6. Paste the copy of the studies to new location.

The second step is to change the registry key:

1. Click **Windows Start** button.
2. Select Run.
3. Type **regedit**.
4. Press **Enter**.
5. Find the **StudiesPath** registry key in **HKEY_LOCAL_MACHINE\SOFTWARE\TS Support\MultiCharts**

Note:

For 64 bit Windows the path to MultiCharts 64 bit studies is **HKEY_LOCAL_MACHINE\SOFTWARE\TS Support\MultiCharts64;**

For 64 bit Windows the path to MultiCharts 32 bit studies is **HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\TS Support\MultiCharts;**

6. Change the path to new location of your study files.

Log files

There is no need to backup your logs unless the file contain information regarding an issue (see MultiCharts Logs). To change the logs folder location:

1. Click **Windows Start** button.
2. Select Run.
3. Type **regedit**.
4. Press **Enter**.
5. Find the **BugSlayer\Log Directory** in **HKEY_CURRENT_USER\Software\TS Support\BugSlayer**
6. Change the path to logs folder location.

How to Reduce Database Size

How to Reduce Database Size

When a customer deletes an instrument or instruments from QuoteManager or deletes data from any instrument, the size of the database files stays the same. To reduce the database, follow the instruction:

1. Close all MultiCharts products and make sure all its processes are ended. See MultiCharts Processes.
2. Back up your database.
3. Download the archive with 3 files: get the archive ^[1]
4. Unzip the archive.
5. Open the unzipped folder.
6. Run the .bat file. Do not touch .exe file.

Note: Take into account that if you use a 32-bit version of MultiCharts then use "gbak_x32.bat". If you use a 64-bit version of MultiCharts then use "gbak_x64.bat".

7. It is extremely important to open MultiCharts installation folder and run **DataUpdater.exe**:

MultiCharts 32 bit on Windows 32 bit: C:\Program Files\TS Support\MultiCharts

MultiCharts 32 bit on Windows 64 bit: C:\Program Files (x86)\TS Support\MultiCharts

MultiCharts 64 bit on Windows 64 bit: C:\Program Files\TS Support\MultiCharts 64

A window will be opened where you can see the procedure progress. If the database is big, then it will take some time (especially the first stage). Do not touch anything. Once the procedure is over, the window will be closed.

Important information:

1. This procedure can be used to reduce the size of your database and to transform the files from any version prior to MultiCharts 8.0 Beta 1 to be used in any MultiCharts 8+ versions (example: from MC 7.4; MC 7.2; MC 7.0; MC 6.2 and earlier to MC 8.0). After the .bat file is used, the database files can be used both in MC 32-bit and in MC 64-bit.
2. Database files from any 32-bit version, starting with MultiCharts 8.0 Beta 1 can be used in any 64-bit version, starting with MultiCharts 8.0 Beta 1 and vice versa without any transformation.
3. If the database size is more than 4 gb, to avoid possible problems do not export all instruments from QuoteManager, because it may hang the software. Use the steps from above.

How to Solve Digital Rights Management System Connection Problem

If you see the following message, it means that MultiCharts cannot connect to the authorization server:

"There is no connection to the digital rights management system. No real-time data will be available."

There are 2 possible reasons of the issue:

1. Internet connection problems. Please check your Internet connection. If you have a proxy setup, please configure it properly (see more info here - [How to Configure a Proxy Connection](#)).
2. Anti-virus or firewall connection is blocking MultiCharts authorization. Please try to temporarily disable your anti-virus and firewall software and see if it solves the issue. Also, please make sure that MultiCharts has access to <https://mcauth.com/>, <https://mcauth1.com/>, <https://mcauth2.com/> **servers and Port # 80 is open. You can try to open www.mcauth.com page in your browser and if you can see a picture of a plant and "We'll Have More Soon" text, you should be able to connect to DRM system.**

If the problem persists, please contact MultiCharts Support.

How to Use Your License on Two Computers at the Same Time

Note: MultiCharts license can be running in online mode only at one PC at a time. In order to get real time data and trade MultiCharts needs to be authorized and running in online mode. You can use your license on PC#2 in offline mode for writing strategies and backtesting using locally stored data while your PC#1 is in online mode. You can switch between two computers-close MC on PC#1 and start MC on PC#2 in online mode.

1. Authorize MultiCharts with your registration name and code on PC#2 first;
2. Switch MultiCharts to offline mode (MultiCharts -> File tab->Preferences->Data server mode-> Offline);
3. Disable Internet connection on this PC or right click on Authorization button in the bottom right corner of the main MultiCharts window, go to Proxy settings, check "Use HTTP Proxy to authorize, type in any information into the Host and Port fields, click Ok.";
4. Start MultiCharts on PC#1 in Online mode (MultiCharts -> File tab->Preferences->Data server mode-> Online).

Note: You need to repeat this procedure each 30 days.

Note: While authorizing on PC#2 you will receive a message "Do you want to terminate the session on a different machine" if MultiCharts is currently running on PC#1.

Incompatible Version of Tsstorage.dll in Module Shaper Error

This error message pops up when one part of MultiCharts software is launched "as administrator" and another part is launched regular way.

Example: TradeStation is launched "as administrator" by default always. MultiCharts is not. It means that to work with TradeStation data feed, MultiCharts should be run by right-click and then the "run as administrator" option should be selected. However, if after that you run QuoteManager for instance by double click, you will get the error message.

Once a part of MultiCharts is launched with administrative rights (right-click on the icon -> run as administrator), all other MultiCharts parts should be launched the same way.

Note: If MultiCharts is launched with "as administrator" QuoteManager or PowerLanguage Editor can be launched with administrative rights too by going to **File** in MultiCharts main menu, then **New** -> ...

Interactive Brokers Pacing Violation

Interactive Brokers has some data request limitations.

1. A single data request cannot return more than 2000 seconds of historical data at once;
2. IB API processes only 60 requests per 10 minutes.

If a large amount of data is requested in MultiCharts, a "**Pacing Violation**" message will be shown in the Event Log of QuoteManager window.

It means that the amount of the requests for data exceeds the limitation set by Interactive Brokers. To avoid this situation, please request less data. It is not recommended to request more than 1 day of tick data at once from Interactive Brokers in order to avoid this problem in the future.

In case if this error occurs, it is recommended not to request more data in MultiCharts and not to change data range for existing charts for at least 10 minutes. Alternatively, IB Trader's Workstation can be restarted.

Is there a TPO or Market Profile indicator in MultiCharts?

Is there a TPO or Market Profile indicator in MultiCharts?

TPO indicator is available for both MultiCharts: <http://www.multicharts.com/discussion/viewtopic.php?f=5&t=10872>

and MultiCharts .NET: <http://www.multicharts.com/discussion/viewtopic.php?f=20&t=10778>

It will be added to default studies in the next version.

MultiCharts Logs

MultiCharts log files can be used by MultiCharts Technical Support team to explain an unexpected behavior of the software or its functions when situation is not clear and it requires further deep analysis. Logs together with

screenshots, videos, workspaces, exported scripts and exported symbols can be also reviewed for investigation of the reported issues.

Note: MultiCharts logs should not be analyzed by anyone not related to MultiCharts tech. support to judge on a particular program behavior and to find a solution.

How Log Files Are Generated

By default when MultiCharts is installed, the standard level of logging is enabled. It is enough for investigation of most issues and it doesn't slow down operation system much. From the moment of running the installer of MultiCharts software logs are written down to the particular location. Logs are generated when MultiCharts is launched, the software works and logs stay saved even after all MultiCharts products are closed. The files will stay available no matter how much time passed, but once MultiCharts is launched again the log files from previous session are erased and new files are written down to the same location.

Note: MultiCharts logs and Order and Position Tracker logs are absolutely different files are located in different folders. Order and Position Tracker data is stored in binary files and it is not erased on every restart of MultiCharts. Each tab in order and Position Tracker window is limited to show 10 000 of lines.

How to Send Log Files

In MultiCharts 8.0 Release and higher version

1. Select **Help** in the main menu 2.

Select **Feedback**

3. Click **Send logs**.

Note: Please send the problem description corresponding to the uploaded log files to support@multicharts.com or to the customer care representative you are working on the subject.

For MultiCharts 8.0 Release Candidate and below (or how to collect the logs and send them)

1. Windows Start menu by clicking on the **Windows Start** button.

2. **Programs / All Programs**.

3. **MultiCharts** (folder).

4. **Logs (right-click) → Properties → Open file location**.

Note: In some cases the "Logs" icon may look like an unknown file due to your OS configuration. In most cases after repair of MultiCharts the icon returns the correct view (folder).

MultiCharts Logs

5. In the opened window one can find folders with log files.

Note: Log files of some supported brokers in MultiCharts (for example: Trading Technologies and others) or special extended logs are located in the folder 1 level up. Please, go 1 level up and follow the next step of the instruction to have all log files covering any possible issue.

6. Select all folders and files (except Cache folder) → **right-click** on any of them → **Send to** → **Compressed zip folder**.

7. The zipped archive should be forwarded to MultiCharts tech. support.

MultiCharts Processes

Sometimes you need to restart MultiCharts. If one closes MultiCharts and restarts it too quickly, some of MultiCharts processes may have no time for correct shutdown. After MultiCharts and all of its applications (i.e. MC, QuoteManager, PL editor, ...) are closed, it is recommended to make sure that all processes are ended in the Windows Task Manager:

1. **ATCenterServer.exe**
2. **Fixserver.exe**
3. **MultiCharts.exe**
4. **MessageCenter.exe**
5. **PLEditor.exe**
6. **QuoteManager.exe**
7. **StudyServer.exe**
8. **TradingServer.exe**
9. **TSServer.exe**

Note: The list of the processes your MultiCharts is currently running can be extended depending on the data feed and broker you are currently using.

1. **CQGServer.exe**
2. **CQFServerProxy.exe**
3. **FXCMServerProxy.exe**
4. **OECServer.exe**
5. **OECServerProxy.exe**
6. **LMAXServerHost.exe**
7. **PATSServer.exe**
8. **PATSWrapper.exe**
9. **Stunnel.exe**
10. **TPserver.exe**
11. **ZfServer.exe**
12. **ZfServerProxyV3.exe**

Note: All processes can be found by sorting the Task Manager Processes tab by the description column. All of them have **MultiCharts** in the description, except for ATCenterServer.exe

Pre-built Studies in MultiCharts

MultiCharts comes with over two hundred pre-built studies for an in-depth market analysis, covering the most popular trading concepts and indicators. This comprehensive library includes traditional as well as state-of-the-art studies. A key advantage of MultiCharts is that any study's code can easily be modified. Nearly any custom indicator can also be created from scratch.

Technical Analysis Indicators:

--- Market Depth on Chart ---

% Decrease

% Increase

% Chg

%R

Absolute Breadth

Accum Dist - BuyPr

Accum Dist - PrVol

Accum Swing Index Advance-Decl

Line

Advance-Decl Ratio

ADX

ADXR

Arms Index (TRIN)

Average True Range

Avg Close < Avg Open

Avg Close > Avg Open

Bid & Ask

Bid & Ask Vol Ratio

Black-Scholes

Block Trades per Bar

Bollinger Bands

Brkout of X Bar High

Brkout of X Bar Low

C_3WhSolds_3BlkCrows

C_BullEng_BearEng

C_BullHar_BearHar

C_Doji

C_Hammer_HangingMan

C_MornDoji_EveDoji

C_MornStar_EveStar

C_PierceLine_DkCloud

C_ShootingStar

CCI Average

Chaikin Osc

Chaos AC Oscillalor

Chaos Alligator
Chaos Awesome Oscillator
Chaos Fractals
Chaos Gator
Comm Channel Index
Comm Sel Index
Consecutive Downs
Consecutive Ups
Correlation
Count Criteria PB
Count Criteria SM
Crossovers per Bar
Crossunders per Bar
Cust Gradient- Bnd
Cust Gradient- Unbnd
Custom 1 Line
Custom 2 Lines
Custom 3 Lines
Custom 4 Lines
Custom PaintBar
Custom ShowMe
Data
Day of Week
Day Open-Hi-Lo Lines
Day Open-Hi-Lo RT
Detrended Price Osc
DMI
Ease of Movement
Expiration
First Bar of Day
First Bar of Month
First Bar of Week
First Bar of Year
Floating Text
Floor Trader Pivots
Formula OHLC
Gap Dn Bar
Gap Up Bar
Gapless Bar Chart
Head b26 Shoulders
HPI
Impl Volty- 1 Option
Inside Bar
Island Reversal Dn
Island Reversal Up

Keltner Channel
Key Reversal Dn
Key Reversal Up
Linear Reg Curve
Linear Reg Line MACD
MACD Gradient
Market Thrust
Marney Range Indicator
Marney Volume Indicator
Mass Index
McClellan Osc
Mkt Facilitation Idx
Momentum
Momentum Decreasing
Momentum Increasing
Money Flow
Mov Avg 1 Line
Mov Avg 2 Lines
Mov Avg 3 Lines
Mov Avg Adaptive
Mov Avg Crossover
Mov Avg Envelopes
Mov Avg Exp Ribbon Mov
Avg Exponential
Mov Avg Triangular
Mov Avg Weighted New
High for Chart
New High for Day
New High for Month
New High for Week
New High for Year New
Intraday HiLo New Low
for Chart
New Low for Day
New Low for Month
New Low for Week
New Low for Year
New N-Day HiLo
Next 3rd Friday
OHLC Yesterday
On Balance Volume
Open Interest
Option Delta
Option Gamma
Option Price

Option Theta
Option Vega
Outside Bar
Parabolic SAR
Pennant Brkout
Pivot High
Pivot Low
Pivot Rev Gen - Dn
Pivot Rev Gen - Up
Price < Avg
Price > Avg
Price Channel
Price Osc
Price Reversal
Price Volume Trend
Rate of Chg
RSI
Spread - Diff
Spread - Ratio
Standard Error Bands
Stochastic Fast
Stochastic Slow
Stochastic SlowK
Swing Index
Time Series Forecast
TrendLines Automatic
TRIX
Typical Price
Ulcer Index
Ultimate Osc
Volatility
Volatility Std Dev
Volume
Volume Avg
Volume Brkout
Volume Dn
Volume Gradient
Volume Osc
Volume Rate of Chg
Volume Ratio
Volume Today
Volume Up
VWAP reset
Weighted Close

ZigZag % ZigZag

Pnts

Auto Trading Signals:

!From Broker To Strategy MP Synchronizer!

!From Strategy To Broker MP Synchronizer!

!optimize by sharp ratio!

_Historical Entry

_Percent Exit Pair

_Single 1dir Rnge En

_Single 2dir Rnge En

_Single At-Mrkt En

_Single StpOrLim En

_Stops & Targets

_StpOrLim Exit

ATR Trailing LX

ATR Trailing SX

ATR Trgt & Trail LX

ATR Trgt & Trail SX

Bollinger Bands LE

Bollinger Bands SE Breakeven

Stop

Breakeven Stop LX

Breakeven Stop SX

Channel Breakout LE Channel

Breakout SE

Channel Trailing LX Channel

Trailing SX

Close at End of Day

Consecutive Downs SE

Consecutive Ups LE Custom

Strategy LE Custom

Strategy LX

Custom Strategy SE

Custom Strategy SX

Dollar Trailing

Dollar Trailing LX

Dollar Trailing SX

EntryBar \$ Stop LX

EntryBar \$ Stop SX

EntryBar ATR Stop LX

EntryBar ATR Stop SX

EntryBar Pnt Stop LX

EntryBar Pnt Stop SX

Gap Down SE

Gap Up LE
Inside Bar LE
Inside Bar SE
Keltner Channel LE
Keltner Channel SE
Key Reversal LE Key
Reversal LX
Key Reversal SE
Key Reversal SX
MACD LE MACD SE
Momentum LE Momentum SE
MovAvg Cross LE MovAvg
Cross LX
MovAvg Cross SE
MovAvg Cross SX
MovAvg2Line Cross LE MovAvg2Line
Cross SE MovAvg3Line Cross LE
MovAvg3Line Cross SE
New High LE
New Low SE
Outside Bar LE
Outside Bar SE
Parabolic LE
Parabolic SE
Parabolic_m Trail LX
Parabolic_m Trail SX
Percent Stop LX Percent
Stop SX
Percent Trailing
Percent Trailing LX
Percent Trailing SX
PercentR LE
PercentR SE
Pivot Extension LE
Pivot Extension SE
Pivot Reversal LE Pivot
Reversal SE
Price Channel LE
Price Channel SE
Profit Target
Profit Target LX
Profit Target SX
Profitable Closes LX
Profitable Closes SX

RSI LE
RSI SE
Stochastic Slow LE
Stochastic Slow SE
Stop Loss
Stop Loss LX
Stop Loss SX
TimeExit (Bars) LX
TimeExit (Bars) SX
TimeExit (Calndr) LX
TimeExit (Calndr) SX
Trendline LE
Trendline SE
Volty Expan Close LE
Volty Expan Close LX
Volty Expan Close SE
Volty Expan Close SX
Volty Expan Open LE
Volty Expan Open SE

Problems with Data in MultiCharts

General Information

There are multiple aspects that can possibly affect data shown on chart, DOM, market scanner windows in MultiCharts.

Green Light in MultiCharts

- At the bottom right corner of MultiCharts there is an indicator to show current connection status to MultiCharts authorization server. If it is green, the connection is established and your registration name (usually customer first and last name, all lower case) and registration code (16 digits that should not be mixed with MultiCharts User ID) is verified, as the result it is possible to receive data from connected data source. Red or yellow means you can't receive data. Possible reasons:
 - Incorrect registration name/code.
 - Internet connection problem.
 - Antivirus or firewall blocks MC from license verification.
 - Proxy connection should be used but it is not set up.
 - A problem on MultiCharts Authorization server.
- At the top of the software there is the Trade Bar (shown by default), where all Broker Profiles are located. Each of them has an indicator that is showing current connection state to a particular broker. Connection to a data source and to a broker is separated in MultiCharts. It is important to understand that connected status (green) has nothing

in common with plotting data in MultiCharts. However, it is required to be connected for receiving prices in DOM window, Chart Trading Panel and Trade Bar.

Online/Offline Mode

MultiCharts can be running either in online mode that allows user to receive real-time and historical data from data vendors' servers, or customer can work in offline mode to develop studies and strategies and backtest them on locally saved historical data. There are 3 key points customer should know about modes of MultiCharts:

- It is not possible to receive any data from your data source in offline mode.
- It is possible to connect a broker profile and place orders in offline mode.
- Offline/Online mode affects not only MultiCharts; it affects tserver.exe process that is responsible for data in the software, so selected mode will be common for MultiCharts, QuoteManager and Portfolio Backtester.

It is possible to change tserver.exe mode only when the following conditions are met:

- QuoteManager and Portfolio Backtester are not running, only MultiCharts is launched;
- There is not a single workspace opened in MultiCharts.

To change mode in MultiCharts click:

Problems with Data in MultiCharts

1. **File;**
2. **Preferences;**
3. **Data Server Mode** tab.

Note: If **Download Missing Historical Data** box is checked, MultiCharts will receive requested historical data from data vendor's servers, if the data is not previously stored in MultiCharts database. If the box is not checked, only real-time data will be received.

To learn more about how data is saved to MultiCharts database, read this article.

Data Source Settings

In order to receive data from a particular data source, it should be active and set up. To learn more about data sources, read this article. Each supported data vendor in MultiCharts provides different limited amount of data. To learn how much data is provided in MultiCharts by a specific data source, follow this [\[\[1\]\]](#) link. Offline/Online mode affects all data sources; however, there are also some specific data sources with additional settings that can affect receiving data in MultiCharts particular data vendors' servers:

- Historical data from Interactive Brokers;
- Historical data from IQFeed;
- FXCM data;

Troubleshooting

Missing Historical Data on Charts

Before checking the settings in MultiCharts, it is recommended to check the historical data availability in data vendor's software. In case historical data is not coming from data vendor's server in MultiCharts, please check the following settings:

1. The software is in Online mode and Download Missing Historical Data box is checked;
2. The date source is set up correctly in QuoteManager;
3. The data vendor provides this type of data;
4. The symbol should be added correctly;
5. Merging is not checked until it is required (should be used only for merging 2 different data sources into 1 single chart);
6. The chart type and chart Resolution are correct;
7. The Quote Field is correct;
8. The sessions are correct;
9. The Data Range of the chart is correct (compare to point 3 and 5);
10. Windows date and time corresponds to current date and time for the selected time zone;
11. Reload the chart by pressing CTRL+R on your keyboard (when chart window is active) or by going to View -> Reload -> ...

Important information: When the software requests historical data from a data source's server, the returned data is stored locally in the database (TradeStation data can be saved or not depending the respective setting). If a data vendor doesn't return historical data for a reason, so-called "empty interval" is recorded in the database, so MultiCharts will not fill the gap when the missing data becomes available on data source end (you can check what data is already stored in the database by making a right-click on the symbols in QM and selecting "Edit Data..."). In this case customers should reload data manually in MultiCharts: new historical data for the specified period will be requested; previously stored data and empty intervals will be replaced by new data from server in the local database.

If there is a gap on data series when custom futures is plotted, please make sure the data is available for the individual contracts used for this custom futures.

Absence of Real-Time Data

Before checking the settings in MultiCharts, it is recommended to check the real-time data availability in data vendor's software. In case real-time data is not coming from data vendor's server in MultiCharts, please check the following settings:

Absence of Real-Time Data on Chart

1. The software is in Online mode;
2. The date source is set up correctly in QuoteManager;
3. The data vendor provides this type of data;
4. The symbol should be added correctly;
5. Merging is not checked until it is required (should be used only for merging 2 different data sources into 1 single chart);
6. The Quote Field is correct;
7. The sessions are correct;

8. Windows date and time corresponds to current date and time for the selected time zone;
9. Your data subscription is not delayed.

A custom indicator helping to state if data is not coming in real-time: [2]

Absence of Real-Time Data in DOM, Trade Bar or Chart Trading Panel

1. The software is in Online mode;
2. The date source is set up correctly in QuoteManager;
3. The same Broker Profile is set up correctly and connected;
4. The data vendor provides this type of data;
5. The symbol should be added correctly;
6. Symbol Mapping is set up correctly;
7. Your data subscription is not delayed.

Reasons of Order Rejection

Reasons of Order Rejection

It is a common situation when a customer expects an order to be and executed when it is sent from MultiCharts, however it can be rejected because of incorrect settings in MultiCharts or because of a not met requirement of your broker.

In most cases you can find the reason of rejection on Logs tab of Order and Position Tracker (see Logs Tab) . Below are the most common reasons for rejections, their description and a explanation how a customer can fix them to make the order successfully submitted to the broker.

No Security Definition Has Been Found For This Request

This rejection message occurs when the user has incorrect Symbol Mapping settings.

Since MultiCharts can work with multiple data feeds and brokers, and most of these have an unique instrument symbology and a set of required parameters for a correct order placement, there is a way the software can automatically set up correct symbol mapping between same symbols from different sources with different names and exchanges.

However, symbol mapping should be set up manually if the data source of the chart symbol and brokerage of the broker symbol are different.

Example: @ES from IQFeed -> ESU2 from IB

Note: Symbol mapping between IB symbol on chart and IB symbol at broker is set up automatically correct way only if you have added the symbol by means of symbol lookup (see Adding Symbol from Data Vendor Supplied List).

Spread and Pair Trading

Exchange Traded Spreads

In MC one is able to trade on a spread only if it is exchange traded spread and it is provided by your data vendor as a single separate instrument that is added to QuoteManager database (see Adding Symbols to Database) and mapped correctly to the corresponding broker instrument in Symbol Mapping window. If there is no such instrument on data source end and at your broker, then it is not possible to trade such spread.

Visual Spread on Chart

To see a spread histogram of 2 instruments, one needs to plot a chart window with 2 symbols as data series 1 and data series 2. In the list of our prebuilt studies there are 2 spread indicators that can be applied to such chart.

Spread and Pair Trading

Pair Trading in Real-Time

One can only send orders to buy or sell one or another instrument of a pair in MultiCharts, but to reach this goal the following system should be developed:

- 2 separate chart windows should be plotted with both symbols of a pair on the charts.
- On the first chart the symbol A should be plotted on subchart 1. The symbol B should be plotted on subchart 2.
- On the second chart the symbol B should be plotted on subchart 1. The symbol A should be plotted on subchart 2.
- On both charts the strategies should be applied that has similar but reversed logic to buy for 1st chart and to sell 2nd one (orders can be placed only on data series 1).

Example: When one of the pair is bought or sold, your strategy needs to know exactly what's going on with both symbols. If your pair is Google and Microsoft, you would enter GOOG as symbol one and MSFT as symbol two on first chart. Then you would add MSFT as data one and GOOG as data two on second chart. On first chart when a condition on data 1 is met the strategy buys and at the same time when this very condition is met on the second data series of the second chart that strategy sells and vice versa. This way each instrument in the pair is actively referencing the other instrument—and you achieve complete synchronization.

There is also another, a more complex way to pair trade:

- 2 separate chart windows should be plotted. 1 symbol of a pair per chart.
- 2 separate signals should be applied to each of the charts.
- Each signal script should use Global Variables in its script to pass values between the charts.

Example: When on first chart a particular condition for order generation is met and the strategy sends a market order to go 1 contract long, through Global Variables this strategy informs the other signal on the second chart to generate a market order to go 1 contract short.

Pair Trading in MultiCharts .NET in Real-Time

In MultiCharts .NET it is possible to send one order to different symbols/accounts/brokers at same time without Global Variables in real-time trading.

Pair Trading in Backtesting

It is not possible to use Global Variables for backtesting of your pair-trading strategy either in regular MultiCharts, or in MultiCharts .NET. However it possible for both products in Portfolio Backtester by means of Global Variables. Multiple data series should be allocated in correct order in Portfolio Backtester, so it is possible to perform pair trading, using GV, because of vertical bar-by-bar calculation of the strategy on all of your data series.

Example: When you have GV on first series, you should be able to get those GV when script is calculated on next data series. The calculation of the script is sequential. It means that the script is first calculated on bar 1 of data A and it generates a sell order (as an example) and passes a value through global variable. Then the script is calculated on bar 1 of data B where it reads the global variable and generates identical buy order. Though everything happens sequentially, in fact the sell and buy orders are generated on the bars with the same timestamp (if data A and data B have identical series).

Symbol Guide

To get a consistent data in MultiCharts one should add the correct symbol into the QuoteManager base. The detailed instructions on adding symbols directly from data source can be found here ^[1]

FUTURES

Each futures market has a ticker symbol that is followed by symbols for the contract month and the year. Symbol name consists of **abbreviation**, **month code** and **single/2-digit year**.

Examples: **ESZ2**, **EPM12**, **NQH2**

Month Codes

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Code	F	G	H	J	K	M	N	Q	U	V	X	Z

Futures Symbols

In the table below the correct abbreviations and formatting of the Futures Symbols can be found. **M** stands for the **MonthCode Y** or **YY** stand for the **year**.

Name	Interactive [2] Brokers	Zen-Fire/ [3] Rithmic	DTN [4] IQFeed	eSignal [5]	[6] CQG	Open E Cry [7]	Barchart [8]	MBTrading [9]	Trading Technologies [10]
In dices									
S&P 500 E-mini	ESMY	ESMY	@ES# @ESMY	ES #F ES MY	EPMY	ESMY	ESMY	/ESMY	ESMY

S&P 500	SPXMY	SPMY	SP# +SPMY @SP# @SPMY	SP #F SP MY	SPAMY	SPMY	SPMY	/SPMY	SPMY
Russell 1000 E-mini	RGMY	RFMY	@RS1MY	RN #F	RFEMY	RF-MMY		/RFMY	RIMY
Russell 2000 E-mini	TFMY	TF FMM00YY!	@TFS# @TFSMY	TF #F TF MY	TFEMY	RLM-MMY	RJMY	/TFMY	TFMY
Nasdaq 100 E-mini	NQMY	NQMY	@NQ# @NQMY	NQ #F NQ MY		NQMY	NQMY	/NQMY	NQMY
DJIA E-mini	YMMY	YMMY	@YM# @YMMY	YM #F YM MY	YMMY	YMMY	YMMY	/YMMY	YMMY
Cur rencies									
Euro FX	6EMY	6EMY	@EU# @EUMY	6E #F 6E MY	EU6MY	6EMY	6EMY	/6EMY	6EMY
Japanese Yen	6JMY	6JMY	@JY# @JYMY	JY #F JY MY	EJYMY	6JMY	JYMY	/JYMY	JYMY
British Pound	6BMY	6BMY	@BP# @BPMY	BP #F BP MY	BP6MY	6BMY	B6MY	/6BMY	6BMY
Australian Dollar	6AMY	6AMY	@ADMY	6A #F 6A MY	DA6MY	6AMY	A6MY	/6AMY	6AMY
New Zealand Dollar	6NMY	6NMY	NZD#	6N #F 6N MY	NE6MY	6NMY	N6MY	/6NMY	6NMY
Canadian Dollar	6CMY	6CMY	@CD#	6C #F 6C MY	CA6MY	6CMY	D6MY	/6CMY	6CMY
Swiss Franc	6SMY	6SMY	@SF#	SF #F SF MY	SF6MY	6SMY	S6MY	/6SMY	6SMY
U.S. Dollar Index		DX FMM00YY!	@DX#	DX #F DX MY	DXEMY	DX-MMY	DXMY	/DXMY	
En ergies									
Crude Oil	CLMY	CLMY	QCL# QCLMY	CL #F CL MY	CLMY	GCLMY	CLMY	/CLMY	CLMY
Natural Gas	NGMY	NGMY	+NG# +NGMY	NG #F NG MY	NGMY	GNGMY	NGMY	/NGMY	NGMY

Tick, Minute and Daily Data

MultiCharts supports various chart types and resolutions: time-based, volume-based, price movement-based, non-standard chart types. However all chart resolutions and types are plotted out of 3 base data types that are provided by data vendor:

Tick data.

The following chart resolutions and chart types are plotted out of tick data in MultiCharts:

- N tick.
- N contract.
- N point (range).
- N change.
- N second.
- N range.
- Point & Figure chart type.
- Renko chart if resolutions are tick-based.

Minute data.

The following chart resolutions are plotted out of minute data in MultiCharts:

- N minute.
- N hour.
- Renko chart if resolutions are minute-based.

Daily data.

The following chart resolutions are plotted out of daily data in MultiCharts:

- N day.
- N week.
- N month.
- N quarter.
- N year.
- Renko chart if resolutions are daily-based.

Note: IQFeed data source has an option to request only tick data to build all other resolutions only out of ticks (see IQFeed).

What Affects Chart Timestamps

There are 2 factors that affect what time stamps a customer is able to see in his/her chart window in MultiCharts:

1. **Time Zone** of the chart
2. Applied **Session** Settings

Time Zone of Chart

Local time is the system time of your computer, and **Exchange** time is the local time at the location where the exchange is based according to QuoteManager. If Exchange time zone is selected in chart settings, the time zone from settings of the exchange (see Editing the Exchange/ECN) that is bound to the plotted on chart symbol in QuoteManager is used.

Note: it is important to make sure that your current time matches your time zone in your Windows standard clock setting.

Session Settings and Session Templates

In QuoteManager each symbol has its own session settings that are applied automatically once the symbol is added. There are 2 ways to set up session settings for a chart:

1. Use **default** symbol session settings.
2. Use a prebuilt or a custom **session template**.

Default Symbol Session Settings

To see this session settings:

1. Make a right-click on the symbol in QuoteManager 2.
Select Edit Symbol...
3. Go to Sessions tab.

Note: If when you create a chart, "default" is set up for sessions in chart settings, the sessions from symbol session settings from QuoteManager will be taken.

Prebuilt or Custom Session Template

When creating a chart, there is a list of prebuilt session templates that one can use: **24/7, 25/5, US Stocks (Regular Trading Hours)** and so on, *except for "Default"*. They are prebuilt in QuoteManager and can be modified or new ones can be added (see Setting Custom Session Templates).

Example: Using "24/7" session template in chart settings will give you the same effect as if you use "24/7" session templates in the symbol settings and on chart you select "default".

What is my MultiCharts User ID

What is my Multicharts User ID

To know your MultiCharts User ID select **Help** in the main menu and click **About MultiCharts...**

What Data Sources Can Be Used to Plot Depth of Market (DOM) Window

There are 2 requirements for creating Depth of Market window in MultiCharts:

1. Depth of Market data should be supported by a data vendor and you should be subscribed to it.

Note: In some cases (Interactive Brokers) if there is no subscription to Depth of Market data the best Bid and best Ask may be used to plot only 1 level in DOM window in MultiCharts.

2. The data vendor must also be a supported broker in MultiCharts. **Example:** Even though IQfeed provides Depth of Market data, there is no way a customer can have DOM window with IQFeed data in MultiCharts, because IQFeed is not a broker.

DOM can be created in MultiCharts using the following data vendors/brokers:

- **CQG**
- **Interactive Brokers**
- **IWBank**
- **LMAX**
- **MB Trading**
- **MIG Bank**
- **Open E Cry**
- **Patsystems**
- **Rithmic / Rithmic Server Sim / Rithmic Local Sim**
- **TradeNode**
- **Trading Technologies**
- **Zen-Fire / Zen-Fire Server Sim / Zen-Fire Local Sim**

Note: **FXCM** can't feed DOM window in MC, because there is no such data feed in MultiCharts as "FXCM" (see MCFX for more details).

Dukascopy can't be used to plot DOM window in MultiCharts.

Why Are Accounts in IB TWS Constantly Switching?

Interactive Brokers has specific types of account, such as:

- **Financial Advisor account (FA)**
- **Master account**
- **Friends and Family account**

The distinguished feature of those accounts is the presence of subaccounts. Customers with **FA**, or **Master**, or **Friends and Family** accounts may notice that when MultiCharts is connected to IB data source/broker with such account type, all subaccounts are constantly changing in IB TWS. There is a reason for this. **FA/Master/Friends and Family** account doesn't allow any 3rd party software to access all subaccounts at the same time to get updated information about account balance, open market positions, active orders and so on. That is why MultiCharts has to switch them constantly in IB TWS to update info on all accounts.

Note: This doesn't affect data feed.

Note: Old versions of MultiCharts may have an issue showing similar behavior **without FA** or **Master** account connected. Update your MultiCharts at least to version 8 to fix the issue..

How to disable switching of accounts in IB TWS

1. Run only IB TWS.
2. Click on **Configure** in main TWS window.
3. Click on **Messages** section.
4. Click on **Disable All**.
5. Run MultiCharts.

6. Connect your Interactive Brokers Broker Profile.
7. A message from IB TWS should pop up. Check the box **Remember my decision** and click on **No**.

Why an Order Was or Was Not Executed

Why an Order Was or Was Not Executed?

It is a common situation when a customer expects an order to be generated and executed or vice versa not be generated and not to be executed at a particular place on chart. Combination of 2 following methods of studying nature of fillment or non-fillment of orders sent from MultiCharts during auto trading should help you in understanding the situation.

Order and Position Tracker

If an order was generated and sent from script to broker plugin, it is displayed in Order and Position Tracker on Orders tab. If an order is filled you can see its execution price and details (see Orders Tab). There are 2 possible reasons why an order is not placed at broker:

1. The order was **rejected** either by MultiCharts, or by broker (in most cases you can find the reason of rejection on Logs tab of Order and Position Tracker (see Logs Tab)
2. The order was **cancelled** from script. According to logic of EasyLanguage/PowerLanguage, an order will be maintained as long as the conditions for its generation are met on each calculation. Once a condition is not met, it will be cancelled.

Monitoring from Script

This method is extremely useful for backtesting, since Order and Position Tracker has nothing in common with the process of historical calculation. Adding the following line under the same conditions right before the line, generating your buy/sell orders will help you to understand at what particular bar, when and at what price is your order triggered in code:

```
print("The date is ", DateToString(DateToJulian(Date)), ", time is ",
TimeToString(ELTimeToDateTime(Time)), ", bar # is ", maxbarsback+currentbar-1, ", market position on chart
is", MarketPosition, ", market position at broker is", MarketPosition_at_Broker, ", here a LIMIT/STOP order to
BUY/SELL is generated by the script at ", "100 price (example)");
```

Example: ...

```
If condition1 = true and condition2 = false then begin print("The date is ", DateToString(DateToJulian(Date)), ", time
is ", TimeToString(ELTimeToDateTime(Time)), ", bar # is ", maxbarsback+currentbar-1, ", market position on chart
is", i_marketposition, ", market position at broker is", i_MarketPosition_at_Broker, ", here a LIMIT/STOP order to
BUY/SELL is generated by the script at ", "100 price"); sellshort next bar at 100 limit; end;
```

If the script is applied to your chart and it is opened in PowerLanguage Editor, you will be able to see the following line in the Output tab:

The date is 03.07.2012, time is 18:45:00, bar # is 4362.00, market position on chart is 1.00, market position at broker is 1.00, here a LIMIT order to SELL is generated by the script at 100 price

Why is Data Playback Strategy Performance different from Backtesting Results

Data Playback strategy performance and backtesting results will never be exactly the same due to a number of differences between playback and backtesting calculation.

Intra-Bar Order Generation mode enabled

- Backtesting with bar Magnifier on tries to execute orders only on OHLC prices of the detailed data series. MultiCharts acts like if there were no other prices in-between (between O and H, between H and L etc.). Therefore the signal is calculated at least ($4 * \text{number of details series bars} + \text{Open and Close of the main series}$) times on one bar. I.e. if Bar Magnifier is set to 1 minute on a 5 minute chart, the signal will be calculated up to 22 times ($4 * 5 + 2$) per bar.
- In Data Playback mode (as well as in real-time calculation) MultiCharts tries to execute orders on every tick that is received, on Close price. I.e. if Bar Magnifier is set to 1 minute on a 5 minute chart, the signal will be calculated only 5 times per bar.

Intra-Bar Order Generation mode disabled

- If BarMagnifier is disabled, in Backtesting the signal is calculated on OHCL prices and Multicharts "thinks" that prices between OHLC exist. Average number of calculations = $\text{BarCount} * 4 + \text{local minimums and maximums}$.
- If BarMagnifier is enabled, in Backtesting the signal is calculated on OHCL prices of the detailed data series and Multicharts "thinks" that prices between OHLC of the detailed data series do not exist. Average number of calculations = $\text{BarCount} * (\text{detailed series size} * 4 + (\text{Open} + \text{Close of the main series bar}))$.

Thus, the number of calculations and available prices differ significantly. This leads to different results.

When BarMagnifier is enabled, Data Playback calculation does not take into account local extremums and additional Open and Close prices of the main series bar.