



The VTS Basics: Getting Started with Visual Trader Studio

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VTS System Requirements

There are no special system requirements for VTS. If you are running the MetaTrader platform on your PC, then VTS should work fine.

In general, the system requirements are:

- Microsoft Windows operating system – Windows 98 or later
 - An Internet connection
 - 1 Gigabyte of memory (RAM)
 - The MetaTrader platform, Version 4
 - At least 5 Megabytes of hard drive memory available
-



What Is MetaTrader?

MetaTrader is a trading platform offered by many FOREX brokers. The trading platform is very comprehensive, offering just about every feature you would expect from a FOREX trading platform. Honestly, most FOREX trading platforms offer the same functionality and MetaTrader is generally the same or better when compared with other FOREX trading platforms.

What makes MetaTrader special is that it offers the trader the ability to create automatic (or mechanical) trading programs called “**Expert Advisors**”.

MetaTrader created its own programming language called MQL to create these “Expert Advisors”. The MQL language is very powerful and allows a trader to execute many strategies that simply could not be executed manually.

But best of all MetaTrader is free. So it is a great opportunity for a trader to evaluate systematic (or mechanical or algorithmic) trading strategies with little or no investment.

As previously mentioned, MetaTrader is offered by many brokers. Just run an internet search on “MetaTrader broker” and you’ll see dozens. If you are new to MetaTrader and are looking to download the platform, I recommend Alpari, simply because they allow you to directly download the installation package and immediately open a demo account. (Most FOREX brokers offering MetaTrader ask you to fill out a form after which they email you a link to their MetaTrader download page.)

Incidentally, MetaQuotes, the parent company that created MetaTrader, allows brokers to “white label” the MetaTrader platform. This simply means they allow the broker to insert the broker’s own name (and some images and icons) into the platform. I mention this because, although the MetaTrader platforms offered from different brokers may look slightly different, they are all the same – with the same functionality.

Here is a current link to the [Alpari MetaTrader](#) download page. This page contains a link for downloading the platform, as well a link to a [MetaTrader User Guide](#) if you are looking for more information about MetaTrader. (If these links are no longer valid, simply perform an internet search for “Alpari MetaTrader”).



What Is VTS?

Visual Trading Studio (VTS) is an application that allows you to create an Expert Advisor by dragging and dropping graphical elements onto a drawing pad.

Using VTS is similar to using applications like Microsoft Paint or Visio.

VTS offers a toolbox of elements which you can drag, configure and connect on a drawing pad. When you are satisfied with the drawing, you press a button and VTS builds an Expert Advisor. The Expert Advisor's MQL file is automatically generated by VTS. Now you can simply open your MetaTrader platform, attach the Expert Advisor to a currency chart, and you are running your trading strategy.

Is VTS Easy to Use?

It's pretty easy, but it does require some learning. You'll need to learn the five basic elements used to build all Expert Advisors as well as some general rules about how the elements can be linked together. Most traders can complete the tutorials in just a few hours and become reasonably proficient in less than a day.

"Reasonably proficient" means you are able to build a typical trading system without much trouble.

VTS simplifies the tedious programming required of the MQL language. However, at the same time VTS also allows access to the full functionality and power of MQL.

Since MQL is a very powerful language, expect to continue learning new techniques for a long time.



Why Use VTS?

- VTS eliminates the need to learn the syntax of the MQL programming language.
- A VTS diagram is a visual representation of how the trading system works. The same diagram you create to build your trading system can be used to illustrate your strategy. This allows you to easily share ideas and collaborate on new strategies.
- VTS allows you to add your entire strategy, or parts of your strategy, to your own custom toolbox. This allows you to reuse logic by simply dragging it on to your drawing.
- VTS allows you to easily incorporate professionally-developed, off-the-shelf trading strategies into your own custom trading system.

The bottom line is VTS allows you to transform a trading idea into a working system fast. And at the same time, the illustrative nature of VTS allows you to visually see your ideas and share them with others (both programmers and non-programmers.)



Install MetaTrader 4.0

If you do not already have MetaTrader 4.0 installed on your computer, you'll need to install it if you want VTS to build Expert Advisors. (If you only want to use the drawing features of VTS to flesh out a strategy you do not need to install MetaTrader.)

- Follow the instructions provided by the broker whose MetaTrader platform you have downloaded.
- Take note of the folder in which you install MetaTrader.
- The default location for Alpari is C:\Program Files\ MetaTrader - Alpari UK.
- You'll need to provide the MetaTrader installation folder to VTS. (This is where VTS will place the Expert Advisors that it builds.)

Install VTS

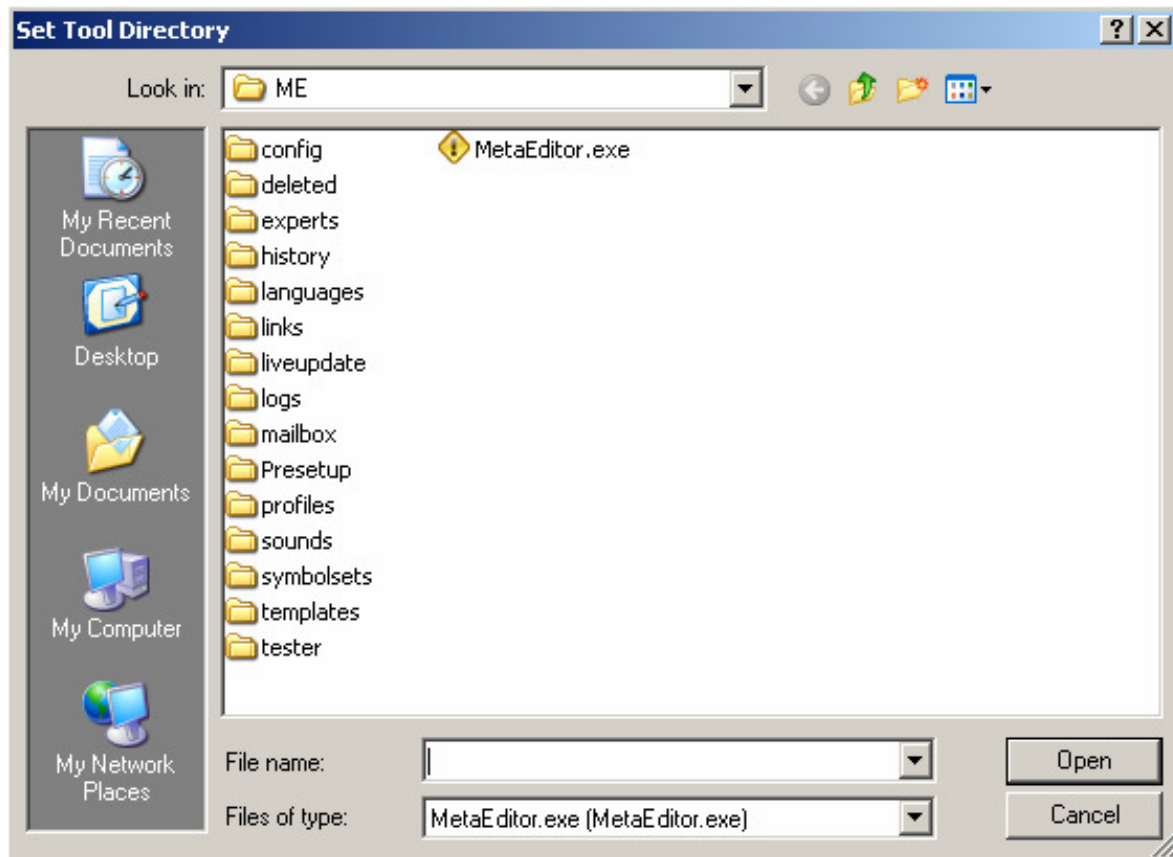
- Double click the setup program and VTS will start the installation process.
- Just follow the prompts – VTS installs just like any other windows program.

Configure VTS

Set the Tools Folder

This setting defines where VTS will place the Expert Advisor code when it is built.

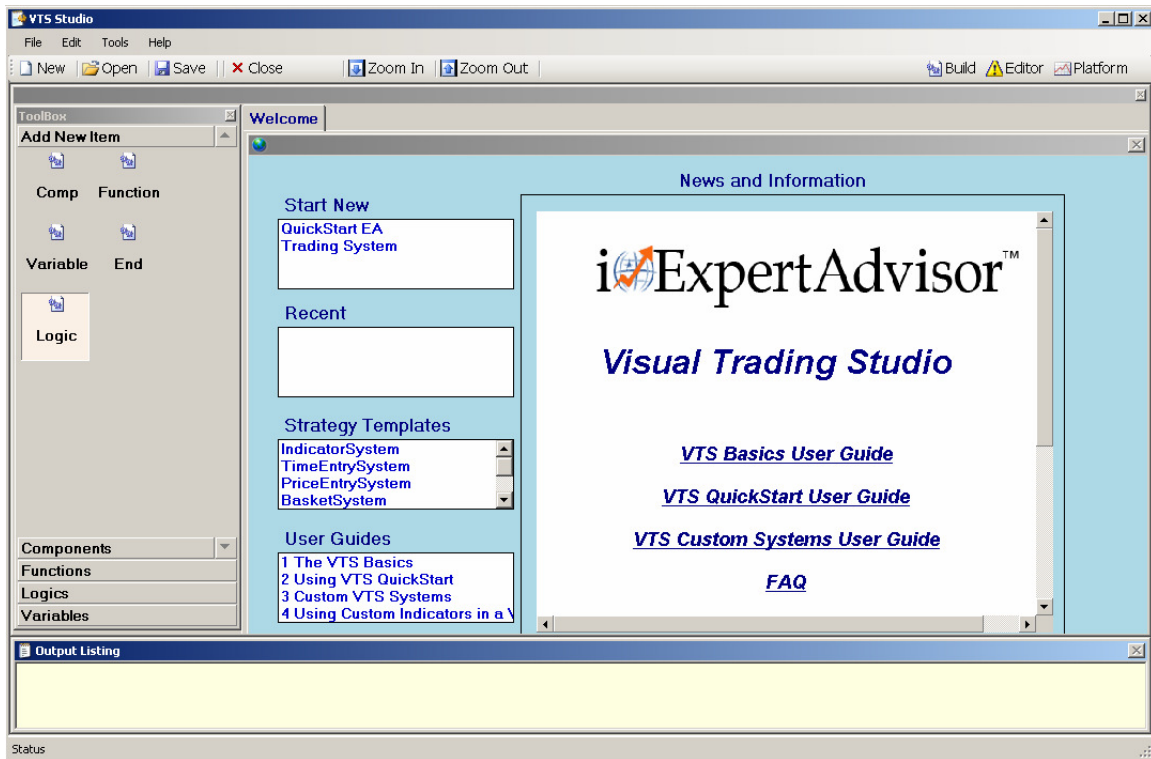
- Start VTS.
- When you attempt to build your first Expert Advisor by pressing the Build button, you'll be asked to set the MetaTrader configuration folder.
- Navigate to the folder where you installed MetaTrader and select "open".
- Note: The file selection window looks for the MetaEditor.exe file because the location of this file indicates the location of the MetaTrader platform.



If you need to change this setting, it can be manually set by navigating to:
Tools->Platform Configuration
from the main VTS window.

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Overview of the VTS Application



When you start the VTS application you will see four main areas.

- The large Welcome page in the center
- The buttons across the top
- The toolbox to the left
- The output window along the bottom

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The Welcome Page



Within the Welcome page you see five smaller windows.

News and Information Window

The largest window to the right is a news and information window. This window is used to communicate important news from [iExpertAdvisor](#) to VTS users.

Start New Window

The window in the top left corner is the “Start New” window. This window allows the user to start a new project by clicking one of the options in the window. Currently, the only option is “Expert Advisor”. Eventually this window will offer many other options such as “Custom Indicator”, “DLL”, “MQL Library”, etc.

Recent Systems Window

The window in the middle left is the “Recent Systems” window. This window lists the VTS systems that have recently been opened. Clicking on any of the systems listed in this window will open the selected system.

Strategy Templates Window

The window in the lower left is the “Strategy Template” window. This window allows the user to start a new project by clicking one of the options in the window.

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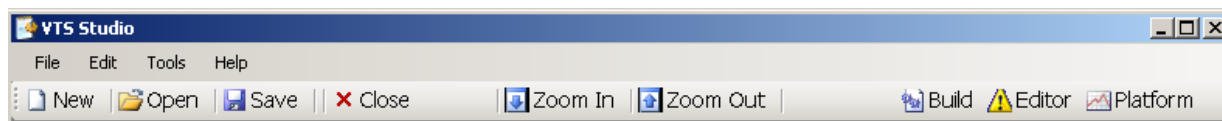
Clicking on any of the systems listed in this window will build and open the selected Strategy Template system.

User Guides Window

The window in the bottom left corner is the “Getting Started” window. This window is used to list the available VTS and MQL tutorials. These manual are stored locally on your PC so they can be viewed offline.

The Buttons

Across the top of the VTS main window there are a number of buttons.



New - Starts a new VTS system.

Open – Opens an existing VTS system.

Save – Saves the currently selected window.

Close – Closes the currently selected window.

Zoom In – Makes the current drawing larger.

Zoom Out – Makes the current drawing smaller.

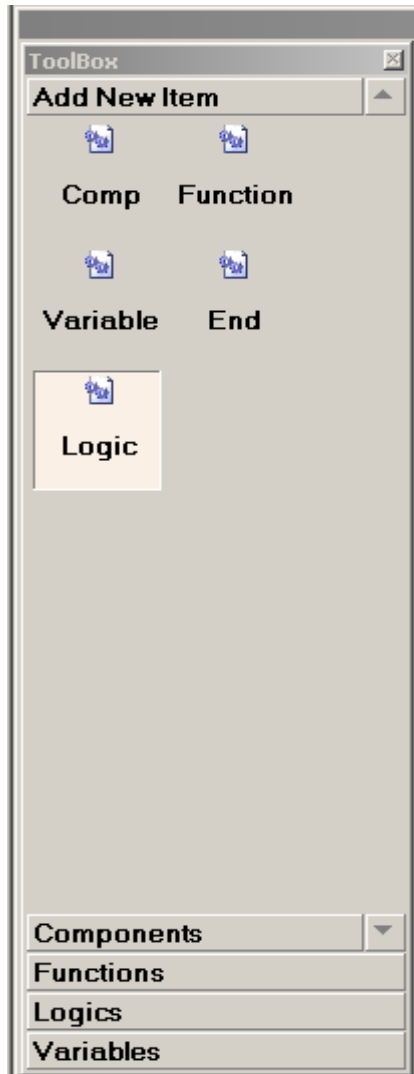
Build – Builds the MQL code for the currently selected window.

Editor – If enabled opens the MetaTrader text editor called “MetaEditor”.

Platform – If enabled opens the MetaTrader trading platform.

The ToolBox

The ToolBox is on left side of the VTS main window.





There are four tabs on the toolbox:

Add New Item Tab

This tab allows you to add new elements to the drawing. The elements available are:

- Component
- Function
- Logics
- Variable
- EndPoint

Selecting one of these elements and dragging it onto the drawing will guide the user through configuration and then place the element on the drawing. (Each element will be fully described later.)

Components Tab

- This tab shows a “tree view” of the existing components available to be added to a drawing.
- Selecting one of these components and dragging it onto the drawing will add the component to the drawing.

Functions Tab

- This tab shows a “tree view” of the functions available to be added to a drawing.
- Selecting one of these functions and dragging it onto the drawing will add the function to the drawing.
- The functions tab offers all of the MQL functions as well as any user-defined functions added to the toolbox.

Logics Tab

- This tab shows a “tree view” of the logics available to be added to a drawing.
- Selecting one of these logics and dragging it onto the drawing will add the logics to the drawing.

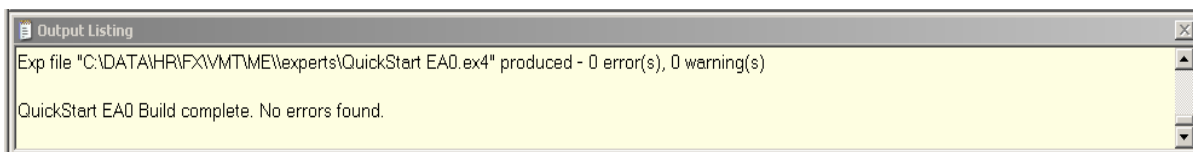
Variables Tab

- This tab shows a “tree view” of the variables available to be added to a drawing.
- Selecting one of these variables and dragging it onto the drawing will add the variable to the drawing.
- The variables tab offers MetaTrader defined variables, some predefined variables that are required for most Expert Advisors, and any user-define variables.

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The Output Window

This window displays messages from the VTS system while building an Expert Advisor's MQL file.



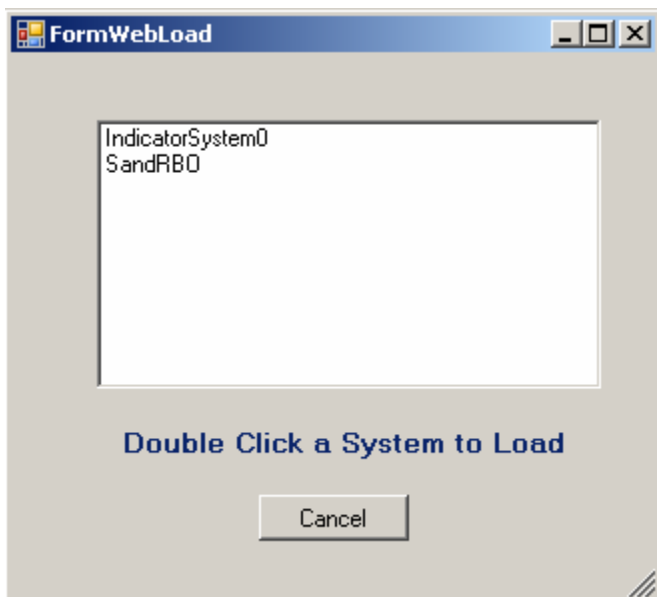
Web Load

The Web Load feature is found by navigating to File -> Web Load from the VTS main window.

When new Strategy Templates or Trading Systems are introduced they are loaded onto the iExpertAdvisor server and made available from this window.

Each time the window is opened it queries the iExpertAdvisor server for the currently available systems. This window may take a few moments to populate depending on the speed of your Internet connection.

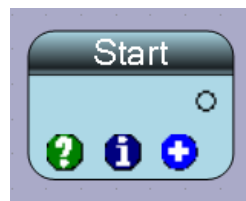
Double-clicking on of the selections in this window will download the system to your local computer and load it into VTS.



Element Description

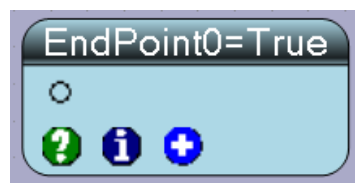
Start Element

Each drawing must have one Start element. The Start element is automatically drawn by VTS. This element is used as the logical starting point for each strategy.



EndPoint Element

Each drawing must have at least one EndPoint element. Each path within a strategy must end with an EndPoint. An EndPoint has a value which can be used to indicate the status of a logical path. For example, if the logical path was successful, the EndPoint's value could be defined as "SUCCESS". Or if the logical path was not successful, the EndPoint's value could be defined as "FAIL".



Variable Element

A Variable element is an element used for storing a value. A Variable element is either a number or a string of alphanumeric characters. Some examples of common variables used in a trading strategy are: TakeProfit, StopLoss, Lots, TotalTrades, TradeProfit, etc.

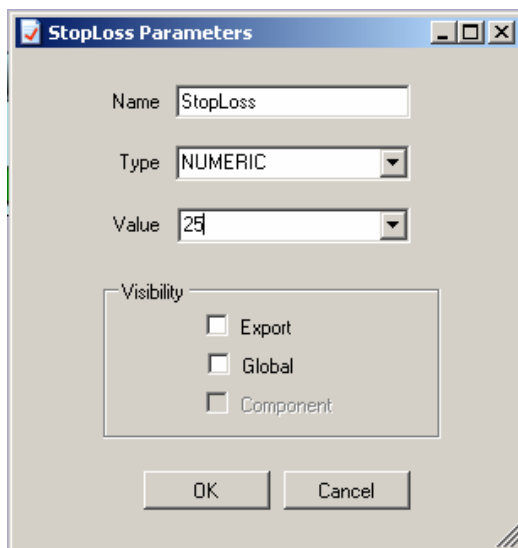
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Variable Visibility Types

A Variable element may have the following Visibility types:

- Global – This means the value of the variable is maintained between executions of the Expert Advisor.
- Export - This means the value of the variable is exported (shown) as an input variable to the Expert Advisor.
- Component - This means the value of the variable is exported (shown) as an input variable to the Component on which the variable is placed.



Function Element

A Function element is either an MQL-defined function offered by the MQL language, or a snippet of raw MQL code.

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MQL-Defined Function

If the function is an MQL-defined function and the function requires parameters, the user will be prompted for the parameters values when the function is dragged onto the drawing.

What is an MQL-defined function? What is a parameter?

Here is an example:

The **OrderClose** MQL function is used to close an existing order.

Here is the so-called signature of the **OrderClose** function:

```
bool OrderClose(int ticket, double lots, double price, int slippage, color Color)
```

What does this mean?

The first word “bool” is a data type. The word “bool” is short for Boolean – meaning true or false. This indicates that after the function **OrderClose** has executed it will return a Boolean type, true or false, to indicate if it was successful or not.

The second word is the name of the function, in this case **OrderClose**.

In between the open and close parenthesis are the function’s parameters. The data type of the parameter is listed first and then the name of the parameter. The parameters are separated by commas.

The first parameter type is an “int”, which is short for integer. (If you recall, an integer is a whole number like -1, 0, 1, 2, or 3. It is not a number with a decimal point like 1.3.) The parameter itself is “ticket”, which is the ticket of the order to be closed.

The second parameter type is a “double”. A double is a number that may or may not have a decimal point. 1.3, 1.0 and 1 are all valid double values. The parameter itself is “lots”, which is the number of lots to be closed.

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The third parameter type is a “double”. The parameter itself is “price”, which is the preferred price at which to close the order.

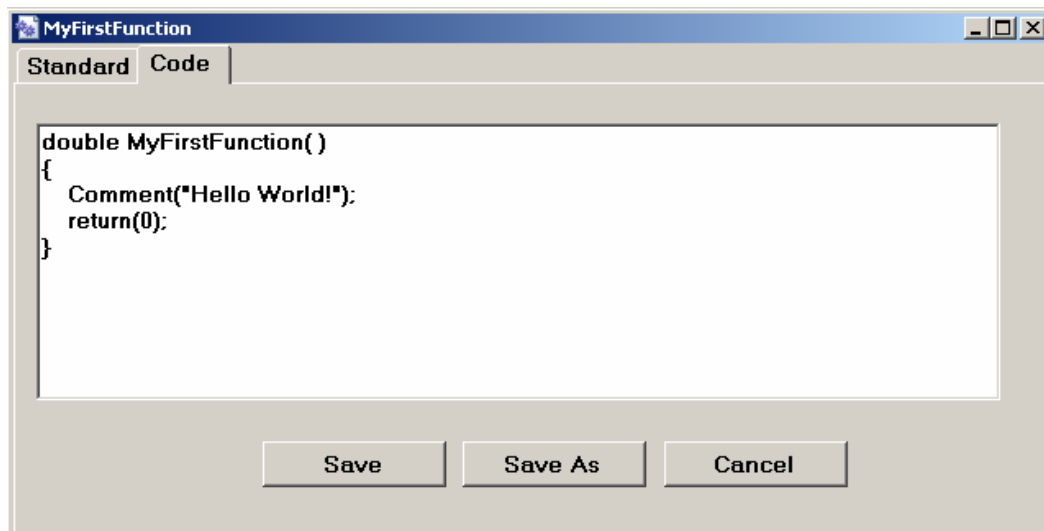
The fourth parameter type is an integer. The parameter itself is “slippage”, which is the amount of slippage from the preferred price that is allowed when attempting to close the order.

The fifth parameter type is a “color” type. (The color data type in MQL is just an integer. The MQL language assigns a unique number to each a color name. This way, the user can reference the color name and does not have to remember a number.) The parameter itself is “Color”, which is the color of the arrow that will be shown on the MetaTrader currency chart when the order is closed.

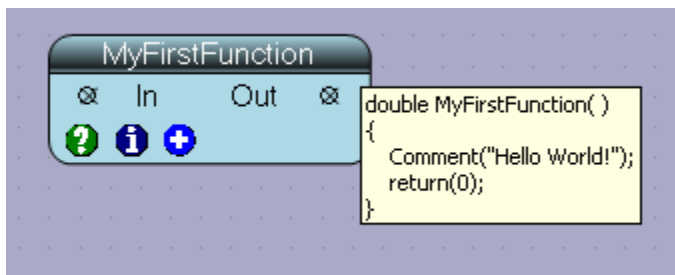
When you drag the **OrderClose** function onto a VTS drawing, a window will open that will prompt for the value of each parameter. There will be a pull down list for some available values for each parameter, as well a help button that provides a description of the parameter.

MQL Code Snippet Function

The other type of function is an MQL code snippet. If you have a section of MQL code that works well, it can be pasted into a text form and accessed like any other function. If there are MQL constructs that are too difficult to describe using a VTS drawing, the constructs can be added to VTS using this method.



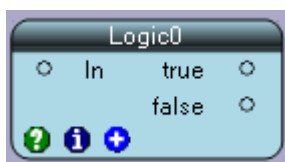
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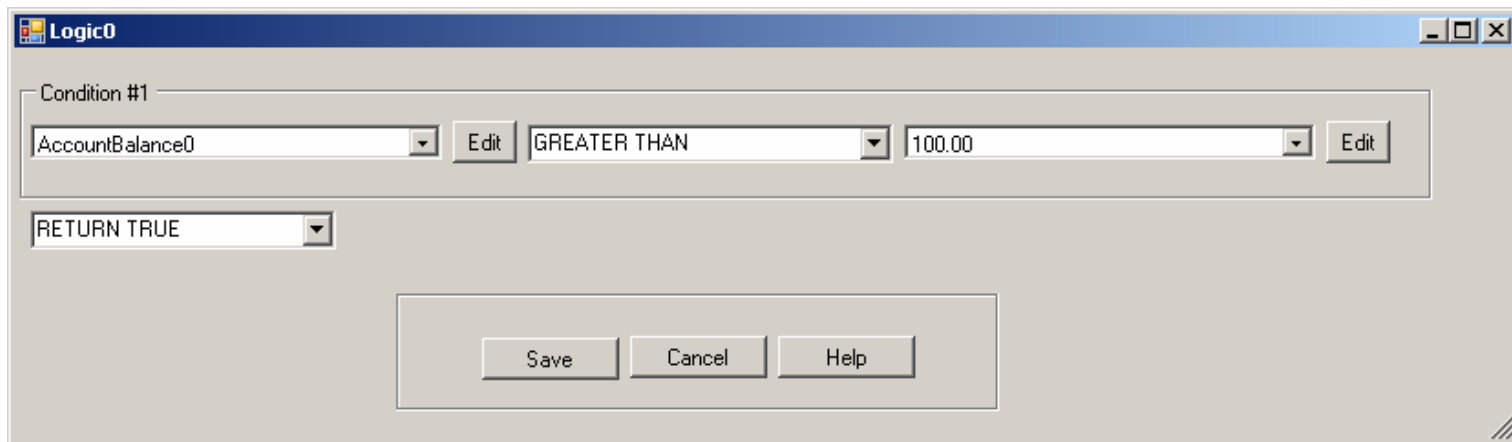
Note: The name of the function element in VTS must be the same exact name as the function in the MQL code. (Use save-as to set the function element to the correct name.)

Logic Element

A Logic element is an element that allows you to define logical conditions. The logic of the strategy will follow the path of the Logic that is true.

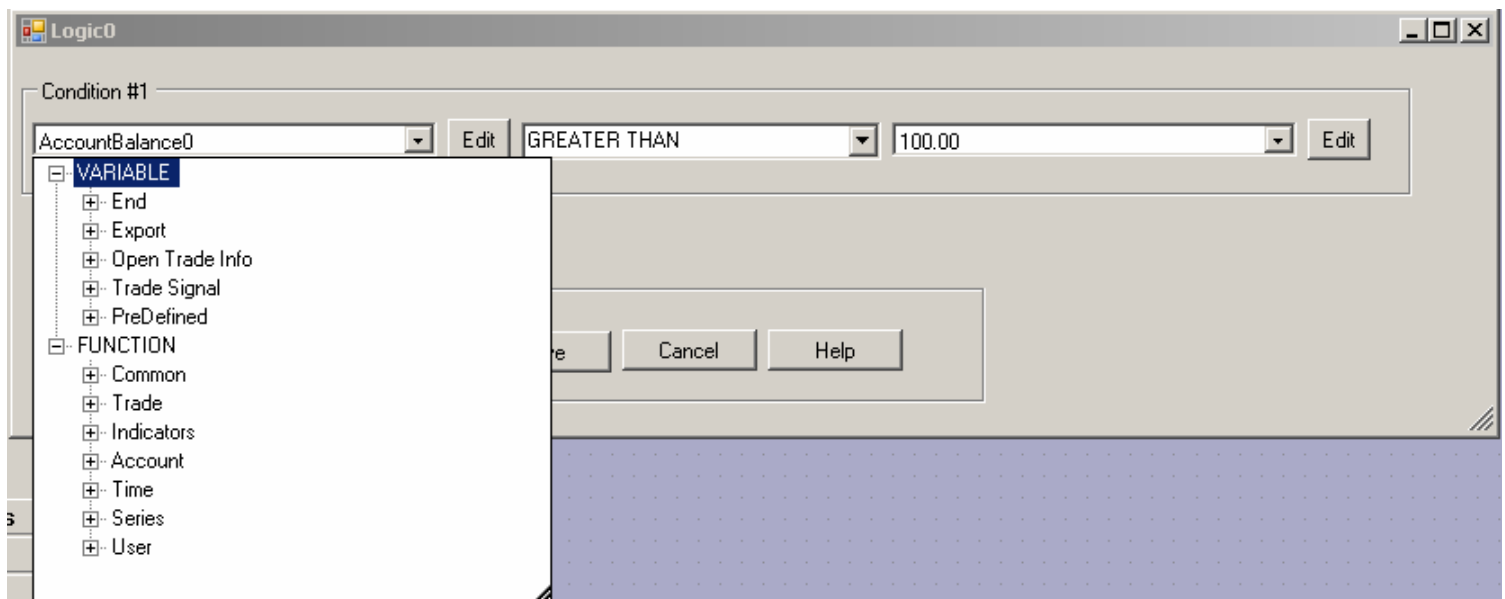


For example, a typical logical condition may be “if the account balance is more than \$100.00 continue trading, otherwise stop trading”. In this case a Logic element would be added to the drawing, the values “\$100.00” and “AccountBalance” would be defined in the Logic Configuration Window.

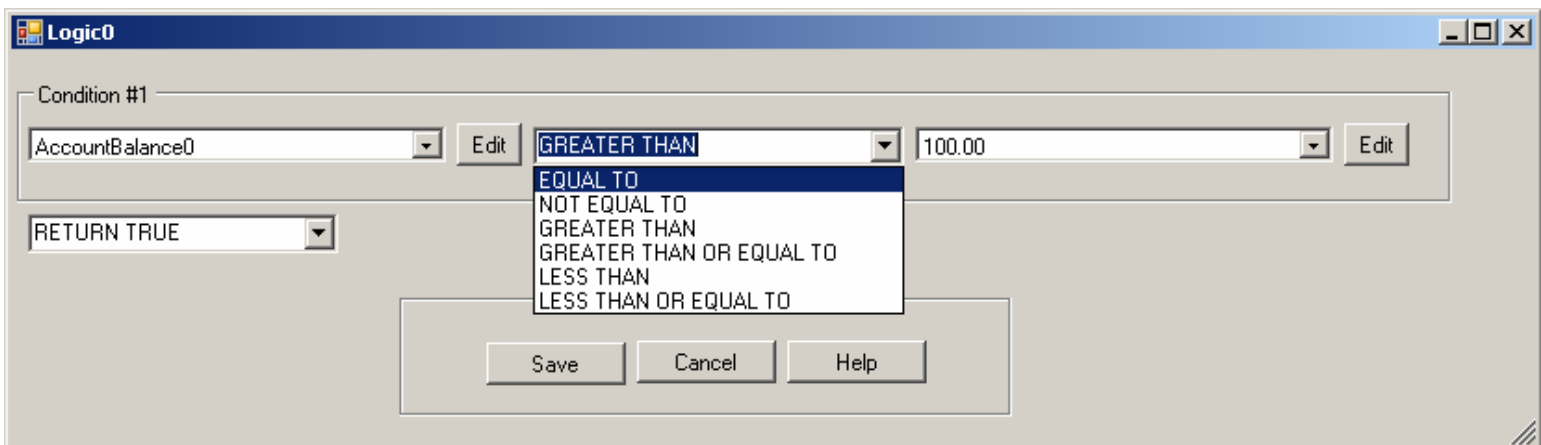


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Each of the left and right values of the Logic Configuration Window offers a pull down menu for locating variables and functions:



The center value values of the Logic Configuration Window offers a pull down menu to select the chosen “condition test”:



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The value entry found in the bottom left corner of the Logic Configuration Window allows the addition of further conditional logic using AND or OR logic:

The screenshot shows a window titled "Logic0" with the following configuration:

- Condition #1:** AccountBalance0 > GREATER THAN 100.00
- Logic Operator:** AND
- Condition #2:** TotalTrades < LESS THAN MaxTrades
- Result Action:** A dropdown menu is open, showing options: RETURN TRUE (selected), RETURN FALSE, AND, OR, INSERT, and REMOVE.
- Buttons:** Save, Cancel, and Help.

The Logic Configuration Window above illustrates a logical decision that states:

*If the AccountBalance is greater than 100
AND
If the TotalTrades variable is less than the MaxTrades variable, end with
True, otherwise end with False.*

Component Element

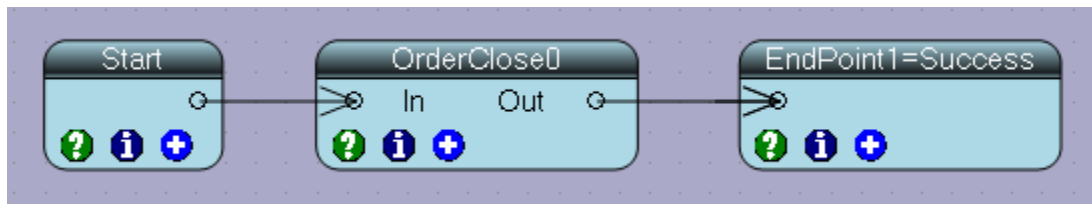
A Component element is a drawing. It may contain all other elements, including other components.

The Component element is very powerful. It allows the user to define certain logic, such as a “Trade Entry”, and reuse the logic by dragging and dropping. When a Component element is dragged from the “Add New Element” tool tab, a new drawing pad is created.



Links

Links are lines with arrows that are used to connect Elements on the drawing pad.



Link Rules

- Start elements have only outgoing links. A Start element must have at least one outgoing link, and can have more than one.
- End elements have only incoming links. An End element must have at least one incoming link, and can have more than one.
- Variable elements must have exactly one incoming link and one outgoing link.
- Function elements must have exactly one incoming link and one outgoing link.
- Component elements must have exactly one incoming link and one outgoing link.

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- Logic elements:
 - Have exactly one incoming link the input point.
 - Have one or more outgoing links for each of the output points (true and false).
-



Expert Advisor General Information

- An Expert Advisor is built by creating an MQL file, with an extension of mq4, and then compiling the MQL file into Expert Advisor code.
- The extension of the Expert Advisor file is ex4.
- If the Alpari version of MetaTrader was installed on your PC, the folder "C:\Program Files\ MetaTrader - Alpari UK\experts" will contain both mq4 and ex4 files.
- The mq4 file is a human readable file.
- If you double click an mq4 file, the "MetaEditor" application will start and load the mq4 file.
- The MetaEditor application is part of the MetaTrader platform. It is automatically installed when the MetaTrader platform is installed.
- The "MetaEditor" application is used to edit MQL code. It has many useful features found in most code editors, including intellisense, context help and an online library.
- While editing an mq4 from within the MetaEditor, an Expert Advisor is built by clicking the "Compile" button. If there are no syntax errors, the MetaEditor application will build the ex4 file.
- The ex4 file is not a human readable file. It is binary code interpreted by the MetaTrader platform.
- So by compiling the mq4 file, you are converting the MQL language, which is human readable text, into a binary file that can be read by a machine.
- When the MetaTrader platform is started, any ex4 files in the "experts" folders are shown to be available under the "Expert Advisors" folder from the Navigator window.
- The VTS application converts its drawings into MQL code and then invokes the MetaEditor to create the ex4 file.
- When the Build button is pushed, VTS automatically creates an mq4 and ex4 file and places them in the MetaTrader platform's "experts" directory.

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- If needed, the mq4 file can be edited using the MetaEditor application. Warning: Changes made by hand to an mq4 file from within the MetaEditor will be lost if the Build button is clicked from the VTS application.
- Both the MetaEditor and Terminal applications can be run from within VTS when VTS is configured correctly.
- If either the Terminal or MetaEditor buttons are clicked when they are selected and running, VTS will prompt to “push” the window out of the VTS application.
- The Terminal application will be “pushed” out of the VTS application if it is running when VTS is closed. This is done to prevent Traders from inadvertently losing their MetaTrader connection.



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