

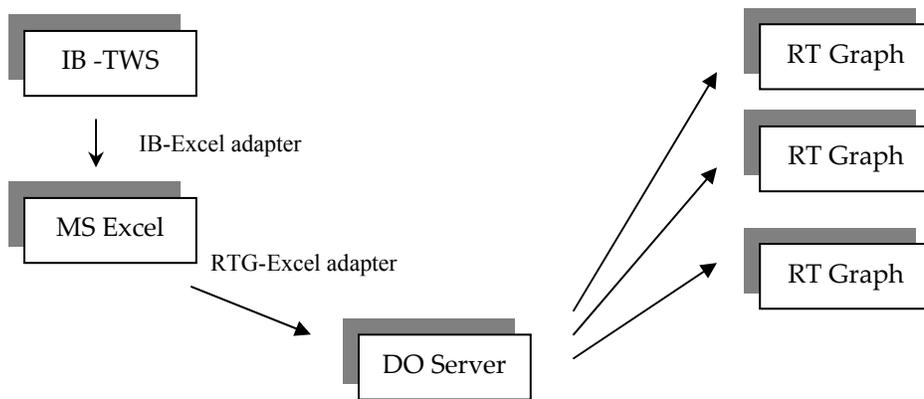


# Real-time Graph

Microsoft Excel has numerous charting options, but all the options are only for “Static” data. If data keeps changing, then the resulting graph will not be stable. CyberXpert’s applications remove this limitation by providing an infrastructure for real-time graphing. If you are getting live feed from IB-TWS into a MS-Excel workbook using our IB-Excel adapter, in one more step, you can plot your important numbers (P&L, Delta, Spread, VaR, etc.,) in a graph.

## Overview

Real-time graph application uses CyberXpert’s modular components.



**DO Server** (stands for DataOutreach Server) acts as a messenger between publisher and subscriber. DO Server can be installed in a network server or in a personal computer.

**RTG Excel adapter** interfaces MS Excel and DO Server for RT Graph, using publish/subscribe technology.

**RT Graph** (stands for Real-time Graph) receives updates from DO Server and plots them in real-time. Here is a snap shot of daily P&L of a portfolio on 27<sup>th</sup> April 05, between 10:30 – 11:30AM.





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## Installation

The distribution package is a self-extraction binary file. Run it directly from your browser. Use the default directory *C:\Program Files\CyberXpert\RealtimeGraph*. You can change it, if needed. Henceforth, this directory will be referred as “<Installed-directory>”.

At the end of installation, you will be prompted for installing MS Excel Add-In. Use this automated Add-In installation. If your macro security level is set to “medium”, you will see a warning message on macro executions; please enable macro execution.

After successful installation, you will find an entry “Real-time Graph” in your “Programs” menu, having menu item for DataOutreach Server ( icon:  ), and Real-time Graph (icon:  ).

Real-time graph uses java virtual machine (JVM). Please click on Real-time Graph, and within few seconds (allow 5 seconds) a screen with grids should appear. If you don’t see any window, please contact our support line.

## Execution

Data is published from MS Excel to DO Server. Real-time Graph applications subscribes for it.



### 1. Start DO Server

DO Server acts as a messenger between MS Excel and Real-time Graph applications; hence, an instance of DO Server is required. When DO Server is running, either its window will be up or an icon  will displayed in the task bar or tray. If DO Server is not running, please start it (Start -> Programs -> Real-time Graph -> DO Server).

### 2. Publish Data from MS Excel workbook

A demonstration workbook and RT-Graph configuration files are under *<installed\_directory>/demo/* directory. Open *publisher\_workbook.xls*, and *demo\_graph.rtg* using Realtime-Graph (associate .rtg to Realtime Graph, or launch Realtime-Graph, use File->Open, and navigate to the installed-directory, and select *demo\_graph.rtg* file). If you click “Simulate \$ Changes” in *publisher\_workbook.xls*, you can see its result in *demo\_graph.rtg*. The simulation runs for 60 seconds, and this simulation can be repeated any number of times.

Data is published from MS Excel using cell formula “= rtg\_publish (Topic, Item, Value)”. Consider “Topic” as a subject topic, e.g., Materials, a sector name. Item is some thing within the purview of the



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topic, e.g., P & L. There is no restriction on topic and item names. Please avoid using “~”, “|” and “=” characters.

Example: Sectors are listed in column A, and Profit is calculated in Column D. The profit values are published in Column E. The \$ Change value is simulated in this example, which can also be a value based on real-time price quotes.

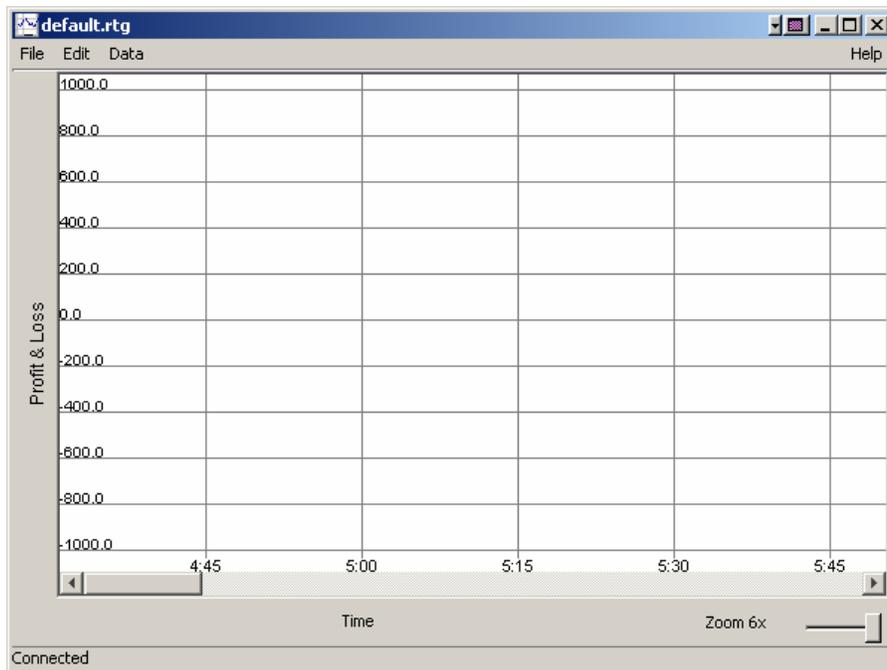
	A	B	C	D	E
1	<i>Sector</i>	<i>Position</i>	<i>Change</i>	<i>Profit</i>	<b><u>Send to RTGraph</u></b>
2	Materials	1000	5.00	=B2 * C2	=rtg_publish (\$A2, D\$1, \$D2)
3	Financials	-800	3.00	=B3 * C3	=rtg_publish (\$A3, D\$1, \$D3)
4					

In the above table, we are publishing a computed value from MS Excel workbook to all subscribers. DataOutreach supports publications from VBA and stand-alone programs, but these are beyond our intended scope. Please refer DataOutreach user guide for further details.

The function *rtg\_publish(...)* returns 0 on success. If you see any number other than 0, then it indicates an error communicating with DOServer. Restarting DOServer (step 1) may solve your problem.

### 3. Start Real-time Graph

Real-time Graph receives updates those are published from MS Excel workbook. Start Real-time Graph by selecting “Start -> Programs -> Real-time Graph -> Real-time Graph” (icon:  ). You will see a screen with grids as shown below. It has four menu items: File, Edit, Data and Help.





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**File Menu:** A common menu used for storing and retrieving graph configurations.

- File -> New: Clears the working version and restarts using the default values.
- File -> Open: Opens a saved configuration.
- File -> Save: Saves the current configuration.
- File-> Save As: Saves the current configuration in a different file.
- File-> Exit: Quits the running instance.

**Edit Menu:** It has “Layout”, “Subscription”, “Line Color” and “Server Configuration” menu items.

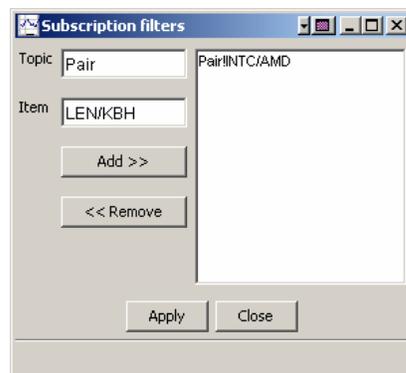
**Layout:** In layout window, you can change X-axis and Y-axis names, Y axis value range, X axis range (time range), update frequency, and the number of grids to be displayed.



When you start an instance, the X-axis time starts from “Now” and it goes up to “Now + Duration”. The duration is defaults to 480 min (8 hours). So, if you start at 9:30 AM, you can monitor till 5:30 PM. The plot frequency tells the application to update the screen every “x” seconds. A value less than one second may affect your system performance. The default 1 sec is a reasonable value. The grids help you to interpret the range. Too many grids may clutter your screen and too few may not give a good traction.

You can monitor the messages, and other system error messages in the application’s task bar. Enable it only when you do not see any update on the screen.

**Subscriptions Menu:** A subscription entry needs to be added for receiving published values and plotting them on the screen. An entry can be made as follows:



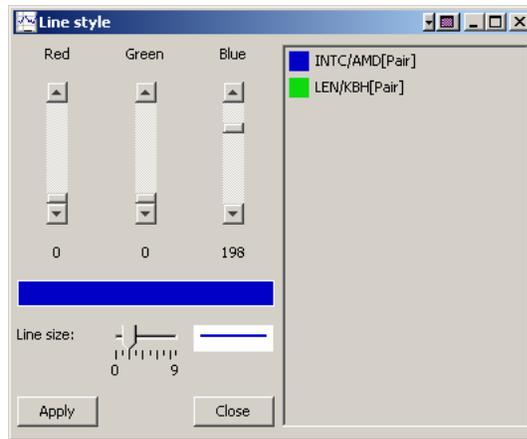


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You can add individual subscriptions as “Topic: Pair” and “Item: INTC/AMD” or use wildcard in the place of an item as “Topic: Pair” and “Item: \*”. If you use this wildcard, all published “Pair”s, will be plotted on the screen.

Click “Apply” and look for updates on the screen. A random color will be assigned to each subscription. You can change the line color by selecting “Line Color” menu.

**Line Color:** All new subscription requests will get a random color. You can change the colors by selecting the old color and manipulate the color controls.



**Server Configuration:** Please leave the settings as it is. It is used only when you are running a centralized DOServer, and publishing values from a stand-alone program.

**Data** menu is for screen display data operations.

**Save updates** saves all updates you see on the screen to a file. A new file with suffix “.dat” will be created along with the configuration file.

**Load updates** loads the saved updates.

**Clear & Restart** clears the current chart and restarts setting the start time to current time.

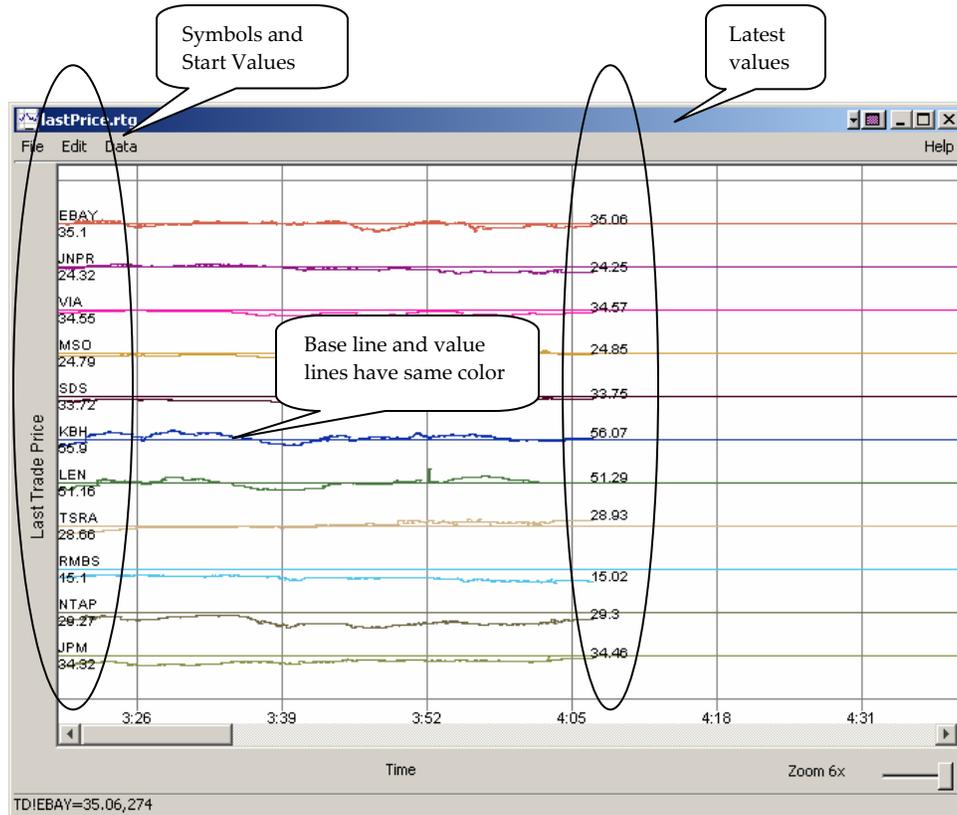
**Save graph on exit** option, enables you to save all updates and configuration when you exit.

**Band view** helps you to view set of instruments next to each other, irrespective of their start value. Each row is dedicated for an instrument, and you can see the instrument name and it’s start value at the left side margin.

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*Display values* places the latest value near the line head. Therefore, you need not go back and see the values in Excel workbook.

Screen snapshot when “Band view” and “Display values” are set.



## Uninstall

- Select “Start -> Programs -> Real-time Graph -> Real-time Graph Uninstaller”. This will uninstall Realtime Graph.
- Disable “RTG Excel Adapter” add-in in MS Excel. The entry will be removed by excel add-in Manager.

Thank you for using CyberXpert’s solution. Feel free to email [support@cyberxpert.com](mailto:support@cyberxpert.com) for any support issues and enhancements.

Wish you a Good Fortune.