RealTimeToExcel

Getting Real-Time Data
from Yahoo! Finance and Databases into Microsoft Excel

Version 2.5, November 21, 2014

User's Manual

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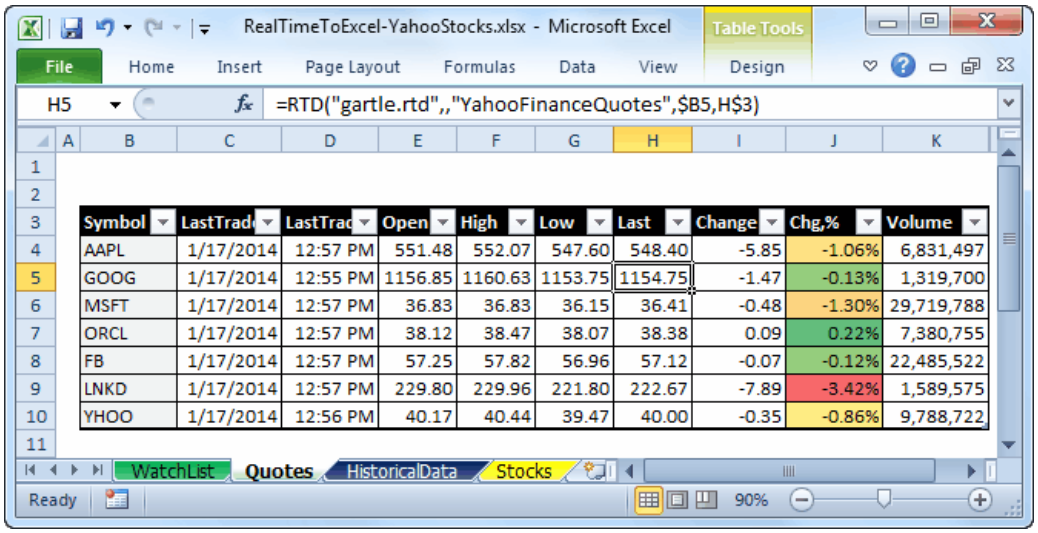
Getting Started

Microsoft Excel has the "magic" RTD function that allows refreshing values from real-time data servers in Excel spreadsheets.

The RTD function can be used in regular Microsoft Excel formulas.

So you may use cell values as formula arguments and build powerful refreshable data sheets and models in a couple of minutes.

For example:



Symbol	LastTrad	LastTrad	Open	High	Low	Last	Change	Chg,%	Volume
AAPL	1/17/2014	12:57 PM	551.48	552.07	547.60	548.40	-5.85	-1.06%	6,831,497
GOOG	1/17/2014	12:55 PM	1156.85	1160.63	1153.75	1154.75	-1.47	-0.13%	1,319,700
MSFT	1/17/2014	12:57 PM	36.83	36.83	36.15	36.41	-0.48	-1.30%	29,719,788
ORCL	1/17/2014	12:57 PM	38.12	38.47	38.07	38.38	0.09	0.22%	7,380,755
FB	1/17/2014	12:57 PM	57.25	57.82	56.96	57.12	-0.07	-0.12%	22,485,522
LNKD	1/17/2014	12:57 PM	229.80	229.96	221.80	222.67	-7.89	-3.42%	1,589,575
YHOO	1/17/2014	12:56 PM	40.17	40.44	39.47	40.00	-0.35	-0.86%	9,788,722

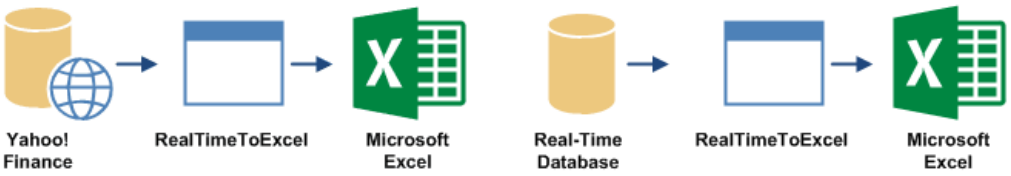
Used formulas look like:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","AAPL","Open")
=RTD("gartle.rtd",,"YahooFinanceWatchList","AAPL","High")
=RTD("gartle.rtd",,"YahooFinanceWatchList","AAPL","Low")
=RTD("gartle.rtd",,"YahooFinanceWatchList","AAPL","Last")

=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","EPSEstimateCurrentYear")
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","EPSEstimateNextYear")
```

RealTimeToExcel is an RTD server for Microsoft Excel that allows:

1. Getting real-time data from Yahoo! Finance into Microsoft Excel.
2. Getting real-time data from databases into Microsoft Excel.



Yahoo! Finance publishes delayed quotes and financial data from 60 world's exchanges free of charge for non-commercial use.

RealTimeToExcel is an intermediary that loads data from Yahoo! web services and refreshes data in Microsoft Excel.

It is important that the RealTimeToExcel default settings comply with Yahoo! Terms of Services.

For databases, RealTimeToExcel allows refreshing data from database tables in Excel in an easy way, without coding.

You may start learning about RealTimeToExcel in the following topics:

- Using RealTimeToExcel
- Edition Comparison
- Database Providers
- Yahoo! Finance Quotes
- Yahoo! Finance WatchList
- Yahoo! Finance Stocks

- Yahoo! Finance Historical Data
- Yahoo! Finance Options

Edition Comparison

RealTimeToExcel allows updating data in Microsoft Excel from Yahoo! Finance and databases in real-time.

Using RealTimeToExcel you may build and update real-time models in Microsoft Excel.

If you are a private trader or investor you might select the free Express or low cost Personal edition.

If you are a professional trader or institutional investor you might select the Standard or Enterprise edition.

See prices at www.savetodb.com.

Feature	Unregistered	Express	Personal	Standard	Enterprise
Number of updated tables	7	7	10	15	Unlimited
Number of updated rows per table	20	50	500	1000	Unlimited
Yahoo! Finance Quotes	✔	✔	✔	✔	✔
Yahoo! Finance Watch List	✔	✔	✔	✔	✔
Yahoo! Finance Stocks	✔	✔	✔	✔	✔
Yahoo! Finance Historical Data	✔	✔	✔	✔	✔
Yahoo! Finance Options	✔	✔	✔	✔	✔
Microsoft SQL Server Compact	✔	✔	✔	✔	✔
Microsoft SQL Server	✔	✔	✔	✔	✔
Oracle MySQL	✔	✔	✔	✔	✔
SkySQL MariaDB	✔	✔	✔	✔	✔
Oracle Database	✔	✔	✔	✔	✔
IBM DB2	✔	✔	✔	✔	✔
NuoDB	✔	✔	✔	✔	✔
Microsoft Excel x86 and x64	✔	✔	✔	✔	✔
Regular email support	✔	✔	✔	✔	✔
Priority email support, 1 year	✘	✘	✔	✔	✔
Private traders and investors	✔	✔	✔	✔	✔
Professional traders and institutional investors	✔	✔	✘	✔	✔
Commercial use	✔	✔	✘	✔	✔

Install and Uninstall

Installing RealTimeToExcel

RealTimeToExcel is included in the companion products, SaveToDB and RealTimeToDB.

So, you have three options to install RealTimeToExcel:

- Installing with the SaveToDB setup package.
- Installing with the RealTimeToDB setup package.
- Installing with the RealTimeToExcel setup package.

All the packages work with 32-bit and 64-bit versions of Microsoft Excel.

Installing with SaveToDB Setup

If possible, use the complete suite of the Gartle Technology Corporation products with the SaveToDB 4.1 or higher setup.

All products and examples are deeply integrated that allows starting work in a couple of minutes.

Microsoft Excel with SaveToDB add-in installed used to work with data and to manage databases updated by RealTimeToDB and RealTimeToExcel.

Installing with RealTimeToDB Setup

You may use the RealTimeToDB setup package if you plan to use RealTimeToDB and RealTimeToExcel on the server and manage databases from client computers.

RealTimeToDB allows getting data from Yahoo! Finance into databases using RealTimeToExcel, and getting the data in different time frames from the databases into Microsoft Excel.

Installing with RealTimeToExcel Setup

You may use the RealTimeToExcel setup package if you need only the RealTimeToExcel features.

Use this installation method if you completely understand the purpose and do not require additional examples and wizards.

Updating RealTimeToExcel

The standard way to update the product is to run a new version setup without uninstalling the current product.

Upgrading Gartle RTD Server 1.x to RealTimeToExcel 2.0

Gartle RTD Server has been renamed to RealTimeToExcel.

The RTD server name is also changed from "GartleRTD.GetData" to "gartle.rtd".

So, the both versions can be installed and used simultaneously. Just install the new product.

Note, that the products have different data directories, but connect to the same Yahoo! web server.

To migrate to the new version from Gartle RTD Server, you have to change the RTD server name in Excel formulas.

Also you have to change configuration files if you have modified the previous ones.

When you finish migrating, you may uninstall the previous version.

Important! Gartle RTD Server is completely free, when RealTimeToExcel is not.
Try all of your watch lists on the new version before uninstall Gartle RTD Server.

Uninstalling RealTimeToExcel

To uninstall RealTimeToExcel, open **Control Panel**, **Program and Features**, then select the installed product (SaveToDB, RealTimeToDB, or RealTimeToExcel) and click the Uninstall button.

What's New

Legend:

[+] Added Feature

[-] Fixed Bug

[*] Improved/changed feature

Version 2.5, November 21, 2014

[-] Loading option chains from Yahoo! Finance web pages has been added as Yahoo! Finance YQL has issues with option data.
The Yahoo Finance options provider has the default configuration value
<add key="DataSource" value="html" />
The option can be cleared after solving the issue with the YQL web service.

[-] Loaded files with empty data are deleted.
So the data can be updated on the next download cycle.

Version 2.4, October 15, 2014

[+] The DividendPayDate2 field has been added into the Yahoo! Finance Quotes data provider.
The field contains the DividendPayDate value parsed as date.

Version 2.3, July 15, 2014

[+] Support for NuoDB has been added.
NuoDB is an innovative database management system with advanced features:
the distributed cloud database, scale-out performance, geo-distribution, auto-administration, multi-tenancy.
NuoDB has also a free edition with 4GB database size limit.
Visit http://www.nuodb.com.

[+] NuoDB ADO.NET Driver is installed with the setup package.
You do not need to install additional software to work with NuoDB.

[+] Support for SkySQL MariaDB has been added.
MariaDB is an open source MySQL compatible DBMS. All application features for MySQL are suitable for MariaDB.
SkySQL's client base consists of global brands such Google, Fusion-io, HP, Virgin Mobile, Craigslist, Harvard University.
Visit http://mariadb.com.

[*] Support for Oracle Data Provider for .NET has been added.
Oracle Data Provider for .NET 12c Release 2 (12.1.0.1.2) is installed with the setup package.
To use the provider, you must accept license terms at http://www.oracle.com/technetwork/licenses/distribution-license-152002.html.

[*] Support for IBM DB2 .NET Provider has been added.

Version 2.2, May 15, 2014

[-] Possible crush when the server is called from multiple threads have been fixed.

Version 2.1, March 28, 2014

[*] The product can be registered in a silent mode using the RegisterProductCmd command line utility.

[-] NaN values from Yahoo! Finance are returned as null values.

Version 2.0, February 25, 2014

[!] Gartle RTD Server has been renamed to RealTimeToExcel.
RealTimeToExcel has new editions: Express, Personal, Standard, and Enterprise.
See Edition Comparison.
The EULA has been changed. Not all use scenarios are free.

[!] RealTimeToExcel allows getting real-time data from databases.
See System Requirements about supported databases.
See Database Providers about configuring database connections.

[+] RealTimeToExcel is integrated into RealTimeToDB and SaveToDB products.
The integration brings additional benefits.
RealTimeToDB allows updating databases with real-time data and getting data history in different time frames.

SaveToDB installs the local RTD database that allows updating Yahoo! Finance data and getting the data into Microsoft Excel.

[*] The first data during the workbook startup are returned immediately from the cache.

[+] Tick fields has been added to every number data field.
Use the :tick suffix with the data field name. This feature can used for conditional formatting of underlying values.

[+] The predefined rtd_LastUpdateDate and rtd_LastUpdateTime fields in addition to rtd_LastUpdate have been added.
The fields can be used in RealTimeToDB.

[+] The TimeZone server configuration parameter in RealTimeToExcel.dll.config has been added.
The time zone is used to adjust the PC time of the rtd_LastUpdate, rtd_LastUpdateDate, and rtd_LastUpdateTime fields.
The default value is 'Eastern Standard Time'. See Server Settings.

[+] The rtd_server_DateTime, rtd_server_Date, and rtd_server_Time fields have been added.
The fields return the current PC time adjusted to the server time zone.

[+] The rtd_server_LastClosedTradeDate and rtd_server_PrevClosedTradeDate fields have been added.
You may use these fields in Excel formulas to select historical data.

[+] The Yahoo! Finance Options provider works with Mini Options.

[-] ChangeInPercent of Yahoo! Finance Options has been fixed.

[-] ChangeInPercent of Yahoo! Finance WatchList has been fixed.

[*] The Yahoo! Finance Historical Data provider has been updated to new the Yahoo! date format.

[*] The new LastTradeDateTime field of Yahoo! Finance Quotes has been added.

[*] The default refresh time interval has been changed from 2000 to 500 milliseconds.

[-] Temporary log files are correctly deleted.

Version 1.1, July 15, 2013

[+] The Yahoo! Finance Options provider has been added.

[+] The Yahoo! Finance Historical Data provider has been added.

[+] The Yahoo! Finance Stocks provider has been added.

[*] Yahoo! Finance Quotes field set has been changed.

[*] Field synonyms have been added: High, Low, Last.

Version 1.0, July 11, 2013

[+] The first version released.

[+] The Yahoo! Finance Quotes provider has been added.

[+] The Yahoo! Finance WatchList provider has been added.

System Requirements

Supported Versions of Microsoft Excel:

- Microsoft Excel 2007
- Microsoft Excel 2010
- Microsoft Excel 2013

Supported Architectures:

- x86
- x64

Supported Operating Systems:

- Windows XP SP3
- Windows Vista SP1
- Windows 7
- Windows 8
- Windows Server 2003 SP3
- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012

- Windows Server 2012 R2

Supported Versions of Microsoft SQL Server:

- Microsoft SQL Server 2005
- Microsoft SQL Server 2008
- Microsoft SQL Server 2008 R2
- Microsoft SQL Server 2012 including Express LocalDB
- Microsoft SQL Server 2014 including Express LocalDB
- Windows Azure SQL Database

Supported Versions of Microsoft SQL Server Compact:

- Microsoft SQL Server Compact 3.5
- Microsoft SQL Server Compact 4.0

Supported Versions of Oracle Database:

- Oracle Database 10g Release 1
- Oracle Database 10g Release 2
- Oracle Database 11g Release 1
- Oracle Database 11g Release 2
- Oracle Database 12c Release 1

Supported Versions of IBM DB2:

- IBM DB2 9.5
- IBM DB2 9.7
- IBM DB2 10.1

IBM DB2 .NET Provider, IBM DB2 OLE DB Provider or IBM DB2 ODBC driver installed is required.

Supported Versions of MySQL:

- MySQL 5.0
- MySQL 5.1
- MySQL 5.2
- MySQL 5.5
- MySQL 5.6

Supported Versions of SkySQL MariaDB:

- MariaDB 5.1
- MariaDB 5.2
- MariaDB 5.3
- MariaDB 5.5
- MariaDB 10.0

All application features for MySQL are completely compatible with MariaDB.
ADO.Net Driver for MySQL and MySQL ODBC drivers can be used to connect to MariaDB.
MariaDB ODBC Driver 1.0 is not supported.

Supported Versions of NuoDB:

- NuoDB 2.0.4

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Using RealTimeToExcel

Using Yahoo! Finance Data

To get the real-time data from Yahoo! Finance in Microsoft Excel, use formulas in the following formats:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","<Ticker>","<Data Field>")
=RTD("gartle.rtd",,"YahooFinanceQuotes","<Ticker>","<Data Field>")
=RTD("gartle.rtd",,"YahooFinanceStocks","<Ticker>","<Data Field>")
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","<Ticker>",[<date>],"<Data Field>")
=RTD("gartle.rtd",,"YahooFinanceOptions","<Option Code>","<Data Field>")
=RTD("gartle.rtd",,"YahooFinanceOptions","<Option Symbol>",<Expiration Date>,<Strike>,"<Option Type>","<Data Field>")
```

For example:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last")
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","Last")
=RTD("gartle.rtd",,"YahooFinanceStocks","YHOO","FullTimeEmployees")
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","YHOO","2013-12-31","Close")
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","YHOO",,"Close")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO130720C00027000","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO", "130720", 27, "CALL","OpenInt")
```

Use http://finance.yahoo.com/ to find tickers.

See available data fields in the topics:

- Yahoo! Finance WatchList
- Yahoo! Finance Quotes
- Yahoo! Finance Stocks
- Yahoo! Finance Historical Data
- Yahoo! Finance Options

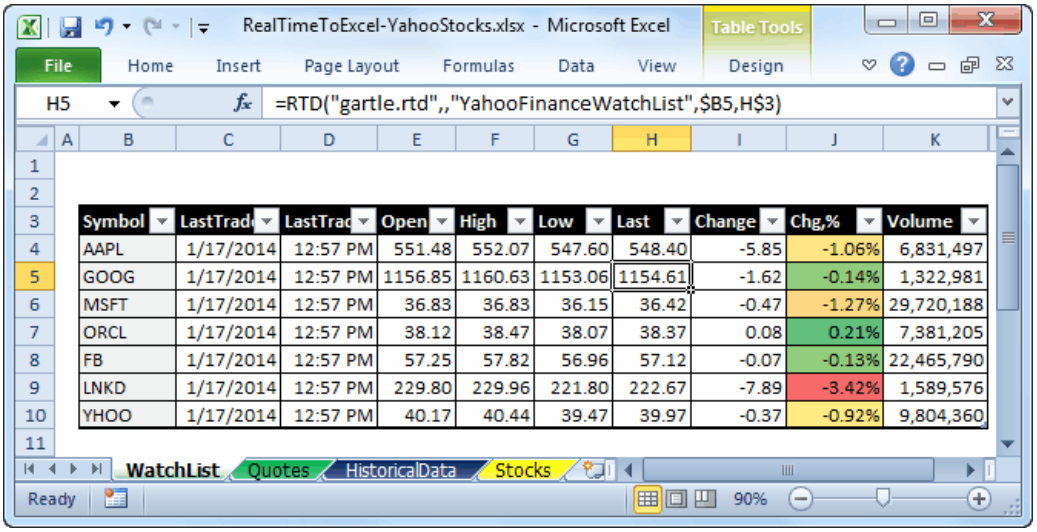
If your Microsoft Excel uses a semicolon as a parameter separator, use semicolons instead of commas.

For example:

```
=RTD("gartle.rtd";;"YahooFinanceWatchList";"YHOO";"Last")
=RTD("gartle.rtd";;"YahooFinanceQuotes";"YHOO";"Last")
```

You may use cell values as formula arguments.

For example:



Symbol	LastTrad	LastTrad	Open	High	Low	Last	Change	Chg,%	Volume
AAPL	1/17/2014	12:57 PM	551.48	552.07	547.60	548.40	-5.85	-1.06%	6,831,497
GOOG	1/17/2014	12:57 PM	1156.85	1160.63	1153.06	1154.61	-1.62	-0.14%	1,322,981
MSFT	1/17/2014	12:57 PM	36.83	36.83	36.15	36.42	-0.47	-1.27%	29,720,188
ORCL	1/17/2014	12:57 PM	38.12	38.47	38.07	38.37	0.08	0.21%	7,381,205
FB	1/17/2014	12:57 PM	57.25	57.82	56.96	57.12	-0.07	-0.13%	22,465,790
LNKD	1/17/2014	12:57 PM	229.80	229.96	221.80	222.67	-7.89	-3.42%	1,589,576
YHOO	1/17/2014	12:57 PM	40.17	40.44	39.47	39.97	-0.37	-0.92%	9,804,360

All the RTD formulas in the table are the same. The tickers are in the column B, and the data field names are in the table headers in the row 3.

Using Database Data

The common Excel formula format is

```
=RTD("gartle.rtd",,"<Database provider>","<Database table name>",<First key column value>[,<Second key column value>[,...]],"<Data field>")
```

For example:

```
=RTD("gartle.rtd",,"rtd-sqlce","QuotesYahoo","AAPL","Last")

=RTD("gartle.rtd",,"rtd-mysql","fundamentals_yahoo","AAPL","OneYearTargetPrice")

=RTD("gartle.rtd",,"rtd-mysql","fundamentals_day_history_yahoo","AAPL","12/31/2013","OneYearTargetPrice")
```

Database providers must be configured for connecting to target databases.

Table names, key columns, and data fields depend on databases. Configuring databases is not required.

See details in Database Providers.

Using Tick Fields

You may use special tick fields for number data fields. Add the **:tick** suffix to the data field name.

Example:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last")
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last:tick")
```

Tick values:

Tick Value	Meaning
1	The value is changed up.
0	The value is unchanged.
-1	The value is changed down.

Tick fields can used for conditional formatting of the underlying fields or as an independent columns.

Monitoring RealTimeToExcel

You may use special data fields to monitor downloading and processing data.

For example:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","rtd_LastUpdate")
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","rtd_LastError")
```

The formulas above show last data update time and the last error code for the YHOO ticker.

See a complete list of the special data cells in RealTimeToExcel Fields.

Complying with Yahoo! Terms of Services

Yahoo! Finance publishes delayed quotes and financial data free of charge for non-commercial use.

RealTimeToExcel default settings comply with Yahoo! Terms of Services.

See important documents about Yahoo! Finance data use:

- Yahoo! Terms of Service at http://info.yahoo.com/legal/us/yahoo/utos/terms/
- Yahoo! APIs Terms of Use at http://info.yahoo.com/legal/us/yahoo/api/api-2140.html
- Yahoo! Query Language at http://developer.yahoo.com/yql/

Configuring RealTimeToExcel

You may change some of server settings. See RealTimeToExcel Settings.

The most useful setting is the Yahoo! API key that allows refreshing data more frequently.

You may configure the setting file using a Start Menu shortcut.

Configuring Yahoo! Finance Data Provider

RealTimeToExcel is configured by default for working with US exchanges without Yahoo! API key.

For working with other exchanges (about 60 world's exchanges) you may change time settings.

Also you may change the refresh interval if you have registered the Yahoo! API key, or you work with a few tickers only.

See topics for details:

- Yahoo! Finance Data Provider Settings
- Yahoo! Finance WatchList
- Yahoo! Finance Quotes
- Yahoo! Finance Stocks
- Yahoo! Finance Historical Data
- Yahoo! Finance Options

You may configure the setting files using Start Menu shortcuts.

RealTimeToExcel Fields

Server Fields

RealTimeToExcel allows getting server information and values of server settings into Microsoft Excel.

Formula format:

```
=RTD("gartle.rtd",,"<Data field>")
```

For example:

```
=RTD("gartle.rtd",,"rtd_server_Version")
```

```
=RTD("gartle.rtd",,"rtd_server_DataCacheDirectory")
```

Field	Meaning
rtd_server_Version	The version of RealTimeToExcel.
rtd_server_DataProviderDirectory	The directory of data provider configuration.
rtd_server_DataCacheDirectory	The DataCacheDirectory value.
rtd_server_RefreshTimerInterval	The RefreshTimerInterval value.
rtd_server_DateTime	The current PC datetime adjusted to the server time zone.
rtd_server_Date	The current PC date adjusted to the server time zone.
rtd_server_Time	The current PC time adjusted to the server time zone.
rtd_server_TimeZone	The TimeZone value.
rtd_server_TraceDownload	The TraceDownload value.
rtd_server_LogFileName	The LogFileName value.
rtd_server_YahooConsumerKey	The YahooConsumerKey value.
rtd_server_LastClosedTradeDate	The calculated date of the last closed trade date.
rtd_server_PrevClosedTradeDate	The calculated date of the previous closed trade date.

Tick Fields

You may use special tick fields for number data fields. Add the **:tick** suffix to the data field name.

Example:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last")
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last:tick")
```

Tick values:

Tick Value	Meaning
1	The value is changed up.
0	The value is unchanged.
-1	The value is changed down.

Tick fields can used for conditional formatting of the underlying fields or as an independent columns.

Data Provider Fields

In addition to data provider specific fields, you may use predefined fields to monitor the current status of data refreshing.

Field	Meaning
rtd_LastUpdate	DateTime of the last update.
rtd_LastUpdateDate	Date of the last update.
rtd_LastUpdateTime	Time of the last update.
rtd_LastError	The last error code. See WebException Status and HTTP Status Codes below.
rtd_LastMessage	The last error message.
rtd_DataProvider	A data provider name. The value is the same as called in the formula.
rtd_RowID	A row identifier based on the formula.
rtd_TopicCount	Unique ticker's data field count in all opened workbooks.
rtd_InQueue	True if the row in the download queue.
rtd_RefreshInterval	Data provider refresh interval.

For example, a data formula is

```
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","LastTradePriceOnly")
```

You may add formulas to monitor data status:

```
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","rtd_LastUpdate")
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","rtd_LastError")
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","rtd_LastMessage")
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","rtd_InQueue")
```

WebException Status Values

The rtd_LastError field can return WebException Status values.

http://msdn.microsoft.com/en-us/library/system.net.webexceptionstatus(v=vs.100).aspx

Value	Member name	Description
0	Success	No error was encountered.
1	NameResolutionFailure	The name resolver service could not resolve the host name.
2	ConnectFailure	The remote service point could not be contacted at the transport level.
3	ReceiveFailure	A complete response was not received from the remote server.
4	SendFailure	A complete request could not be sent to the remote server.
5	PipelineFailure	The request was a pipelined request and the connection was closed before the response was received.
6	RequestCanceled	The request was canceled or an unclassifiable error occurred.
7	ProtocolError	The response received from the server was complete but indicated a protocol-level error. The HTTP status code is shown instead. See below.
8	ConnectionClosed	The connection was prematurely closed.
9	TrustFailure	A server certificate could not be validated.
10	SecureChannelFailure	An error occurred while establishing a connection using SSL.
11	ServerProtocolViolation	The server response was not a valid HTTP response.
12	KeepAliveFailure	The connection for a request that specifies the Keep-alive header was closed unexpectedly.
13	Pending	An internal asynchronous request is pending.
14	Timeout	No response was received during the time-out period for a request.
15	ProxyNameResolutionFailure	The name resolver service could not resolve the proxy host name.

HTTP StatusCode Values

The rtd_LastError field can return HTTP StatusCode values.

http://msdn.microsoft.com/en-us/library/system.net.httpstatuscode(v=vs.100).aspx

http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html

Value	Member name	Description
100	Continue	The client SHOULD continue with its request.
101	SwitchingProtocols	The server understands and is willing to comply with the client's request, via the Upgrade message header field, for a change in the application protocol being used on this connection.
200	OK	The request has succeeded.
201	Created	The request has been fulfilled and resulted in a new resource being created.
202	Accepted	The request has been accepted for processing, but the processing has not been completed.
203	NonAuthoritativeInformation	The returned metainformation in the entity-header is not the definitive set as available from the origin server, but is gathered from a local or a third-party copy.
204	NoContent	The server has fulfilled the request but does not need to return an entity-body, and might want to return updated metainformation.
205	ResetContent	The server has fulfilled the request and the user agent SHOULD reset the document view which caused the request to be sent.
206	PartialContent	The server has fulfilled the partial GET request for the resource.
300	MultipleChoices	The requested resource corresponds to any one of a set of representations, each with its own specific location, and agent- driven negotiation information is being provided so that the user (or user agent) can select a preferred representation and redirect its request to that location.
301	MovedPermanently	The requested resource has been assigned a new permanent URI and any future references to this resource SHOULD use one of the returned URIs.
302	Found	The requested resource resides temporarily under a different URI.
303	SeeOther	The response to the request can be found under a different URI and SHOULD be retrieved using a GET method on that resource.
304	NotModified	If the client has performed a conditional GET request and access is allowed, but the document has not been modified, the server SHOULD respond with this status code.
305	UseProxy	The requested resource MUST be accessed through the proxy given by the Location field.
307	TemporaryRedirect	The requested resource resides temporarily under a different URI.
400	BadRequest	The request could not be understood by the server due to malformed syntax.
401	Unauthorized	The request requires user authentication.
402	PaymentRequired	This code is reserved for future use.
403	Forbidden	The server understood the request, but is refusing to fulfill it.
404	NotFound	The server has not found anything matching the Request-URI.
405	MethodNotAllowed	The method specified in the Request-Line is not allowed for the resource identified by the Request-URI.
406	NotAcceptable	The resource identified by the request is only capable of generating response entities which have content characteristics not acceptable according to the accept headers sent in the request.
407	ProxyAuthenticationRequired	This code is similar to 401 (Unauthorized), but indicates that the client must first authenticate itself with the proxy.
408	RequestTimeout	The client did not produce a request within the time that the server was prepared to wait.
409	Conflict	The request could not be completed due to a conflict with the current state of the resource.
410	Gone	The requested resource is no longer available at the server and no forwarding address is known.
411	LengthRequired	The server refuses to accept the request without a defined Content- Length.
412	PreconditionFailed	The precondition given in one or more of the request-header fields evaluated to false when it was tested on the server.
413	RequestEntityTooLarge	The server is refusing to process a request because the request entity is larger than the server is willing or able to process.
414	RequestUriTooLarge	The server is refusing to service the request because the Request-URI is longer than the server is willing to interpret.
415	UnsupportedMediaType	The server is refusing to service the request because the entity of the request is in a format not supported by the requested resource for the requested method.

416	RequestRangeNotSatisfiable	A server SHOULD return a response with this status code if a request included a Range request-header field, and none of the range-specifier values in this field overlap the current extent of the selected resource, and the request did not include an If-Range request-header field.
417	ExpectationFailed	The expectation given in an Expect request-header field could not be met by this server, or, if the server is a proxy, the server has unambiguous evidence that the request could not be met by the next-hop server.
500	InternalServerError	The server encountered an unexpected condition which prevented it from fulfilling the request.
501	NotImplemented	The server does not support the functionality required to fulfill the request.
502	BadGateway	The server, while acting as a gateway or proxy, received an invalid response from the upstream server it accessed in attempting to fulfill the request.
503	ServiceUnavailable	The server is currently unable to handle the request due to a temporary overloading or maintenance of the server.
504	GatewayTimeout	The server, while acting as a gateway or proxy, did not receive a timely response from the upstream server specified by the URI (e.g. HTTP, FTP, LDAP) or some other auxiliary server (e.g. DNS) it needed to access in attempting to complete the request.
505	HttpVersionNotSupported	The server does not support, or refuses to support, the HTTP protocol version that was used in the request message.

RealTimeToExcel Settings

Server Settings

You may change the RealTimeToExcel settings in the **RealTimeToExcel.dll.config** file.

The default installation folder is %ProgramFiles%\Gartle\RealTimeToExcel.

Configuration parameters:

RefreshTimerInterval

This integer value defines the minimum interval of data refreshing in milliseconds.
The default value is 500 milliseconds.

DataCacheDirectory

This string value allows changing the cache directory of downloaded data.
The default value is %USERPROFILE%\AppData\Local\RealTimeToExcel\DataCache on Windows Vista and later,
and %USERPROFILE%\Local Settings\Application Data\RealTimeToExcel\DataCache on Windows XP.

TimeZone

The string value is used to adjust the PC time used in the rtd_LastUpdate, rtd_LastUpdateDate, and rtd_LastUpdateTime fields.
The default value is 'Eastern Standard Time'.
See available time zones at http://technet.microsoft.com/en-us/library/cc749073(v=ws.10).aspx.

TraceDownload

This boolean value controls download logging.
The default value is False.

LogFileName

This string value allows changing the log file name.
The default value is %USERPROFILE%\AppData\Local\RealTimeToExcel\RealTimeToExcel.log on Windows Vista and later,
and %USERPROFILE%\Local Settings\Application Data\RealTimeToExcel\RealTimeToExcel.log on Windows XP.

YahooConsumerKey

This string values used to specify Yahoo! API Consumer Key. See below.

YahooConsumerSecret

This string values used to specify Yahoo! API Consumer Secret. See below.

You may get values of server settings into Microsoft Excel. See RealTimeToExcel fields.

Yahoo! API Key

Yahoo! specifies the following usage limits:

- 1000 calls per hour for IP authenticated users.
- 10000 calls per hour for applications identified by Access Key.

So, you may increase the usage limits. Do the following steps:

1. Get your Yahoo! API Key at http://developer.yahoo.com/dashboard/createKey.html.
2. Specify Consumer Key and Consumer Secret in the RealTimeToExcel configuration file. See above.
3. Change RefreshTimerInterval in the RealTimeToExcel configuration file if needed.
4. Change RefreshInterval and NextRequestDelay in the Data provider settings if needed.
5. Close and reopen opened workbooks that use RealTimeToExcel.

Database Providers

Basics

RealTimeToExcel allows getting and updating data from databases into Microsoft Excel using native RTD formulas.

Excel formula format:

```
=RTD("gartle.rtd",,"<Database provider>","<Database table name>",<First key column value>[,<Second key column value>[,...]],"<Data field>")
```

For example:

```
=RTD("gartle.rtd",,"rtd-sqlce","QuotesYahoo","AAPL","Last")

=RTD("gartle.rtd",,"rtd-mysql","fundamentals_yahoo","AAPL","OneYearTargetPrice")

=RTD("gartle.rtd",,"rtd-mysql","fundamentals_day_history_yahoo","AAPL","12/31/2013","OneYearTargetPrice")
```

In the example above, the first formula uses **rtd-sqlce** database provider, and the second one used **rtd-mysql** database provider.

Database providers are the text files located in the **DataProviders** subdirectory and named as <database provider>.config.
So, you may create multiple database providers for various databases on various database platforms.

Here is an example of the rtd-sqlce database provider:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="RefreshInterval" value="00:00:05" />
    <add key="NextRequestDelay" value="0" />
    <add key="DataStartTime" value="09:20:00 -05:00" />
    <add key="DataEndTime" value="16:30:00 -05:00" />
    <add key="LoadEndTime" value="24:00:00 -05:00" />
    <add key="LoadOnSaturday" value="1" />
    <add key="LoadOnSunday" value="1" />
    <add key="DefaultSchema" value="" />
  </appSettings>
  <connectionStrings>
    <add name="sqlce-rtdxls" connectionString="Data Source=%LOCALAPPDATA%\Gartle\RealTimeToDB\rtd.sdf"
      providerName="System.Data.SqlServerCe.4.0" />
  </connectionStrings>
</configuration>
```

The **appSettings** section contains configuration parameters described below.

You may use any text file editor to edit the parameters. For example, notepad.exe.

The **connectionStrings** section contains the connection string to the target database.

RealTimeToExcel uses only the first connection string. So, the database provider describes only one database connection.

You may use gConnectionManager to edit connection strings in visual mode and to encrypt the strings.

gConnectionManager is a companion product integrated with RealTimeToExcel.

Table names, key columns, and data fields depend on a database. Read the database documentation to get the correct values.

Key Columns

Database tables can contain several keys with different columns.

RealTimeToExcel **uses the first available primary key, unique key, or unique index with the same number of key columns** as specified in the RTD formula.

First of all, only unique keys and indexes are used. So, each formula gets only the one value identified by the key and the data column. And this works fast.

The second. The first key or index with the same number of columns is used as there is no way to detect the key using the simplest formula format. Otherwise, the Excel formula should contain column names like "Symbol", "YHOO", "Date", "31/12/2013", etc. This approach is not implemented.

This rule requires eliminating ambiguity of keys.

For example, a table should not have an ID auto-incremented field and a unique key for another column.
If the second column is unique in the table, remove the ID column.

Another example, two unique keys or indexes are in a table: (Symbol, Date) and (Date, Symbol).
To get a one unique key per table, make another index non-unique.

Table, Views, and Stored Procedures

Only tables can be used in formulas.

The views have no metadata about keys and indexes. So there is no way to apply the table logic to views.

Stored procedures are potentially can be used in formulas as the procedures have well-known parameters and developers can secure selecting a one row only.
If you interested in this feature, please, contact us.

Database Provider Configuration Parameters

DefaultSchema

This string value defines the default schema of the databases tables.
This feature allows users to use only table names in Excel formulas.
The default schema is empty.

RefreshInterval

This time value defines the interval of row data refreshing.
The default value is 00:00:05, 5 seconds.

NextRequestDelay

This integer value defines the interval between requests to a data source server, in milliseconds.
The default value is 0, no delay.

DataStartTime

This time value defines the time when the data source server starts publishing data.
For example, this is 09:30:00 -05:00 for US exchanges.
The default value is 09:20:00 -05:00.

DataEndTime

This time value defines the time when the data source server ends publishing data.
For example, this is 16:00:00 -05:00 for US exchanges.
The default value is 16:30:00 -05:00.

LoadEndTime

This time value defines the latest time when today's data can be loaded.
For example, this is 24:00:00 -05:00 for US exchanges.
This is the default value.

LoadOnSaturday

This integer value defines the behavior of data loading on Saturday:
0 - Load data as for other working days.
1 - Load Friday's data once.
2 - Do not load the data.
The default value is 1.

LoadOnSunday

This integer value defines the behavior of data loading on Sunday and has the same values as LoadOnSaturday.

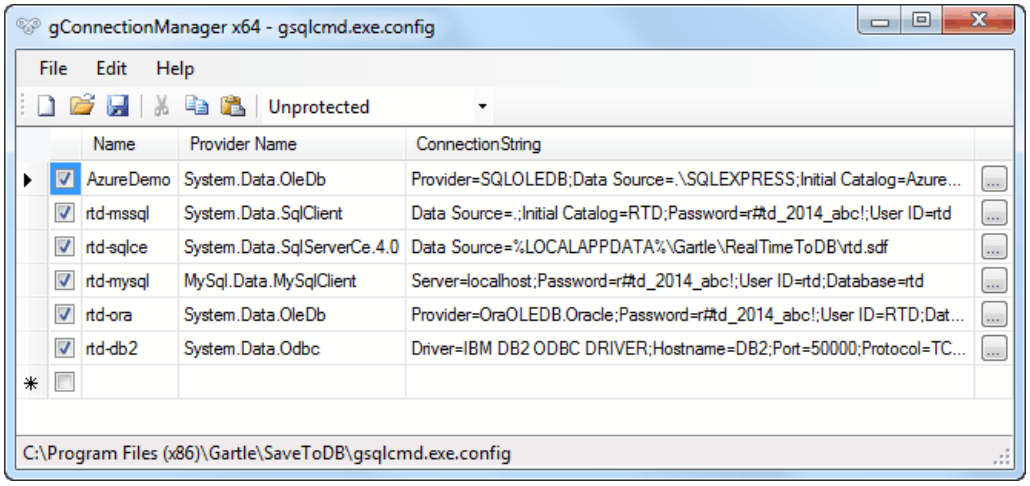
gConnectionManager

gConnectionManager is a companion product that allows editing connections in application configuration files.

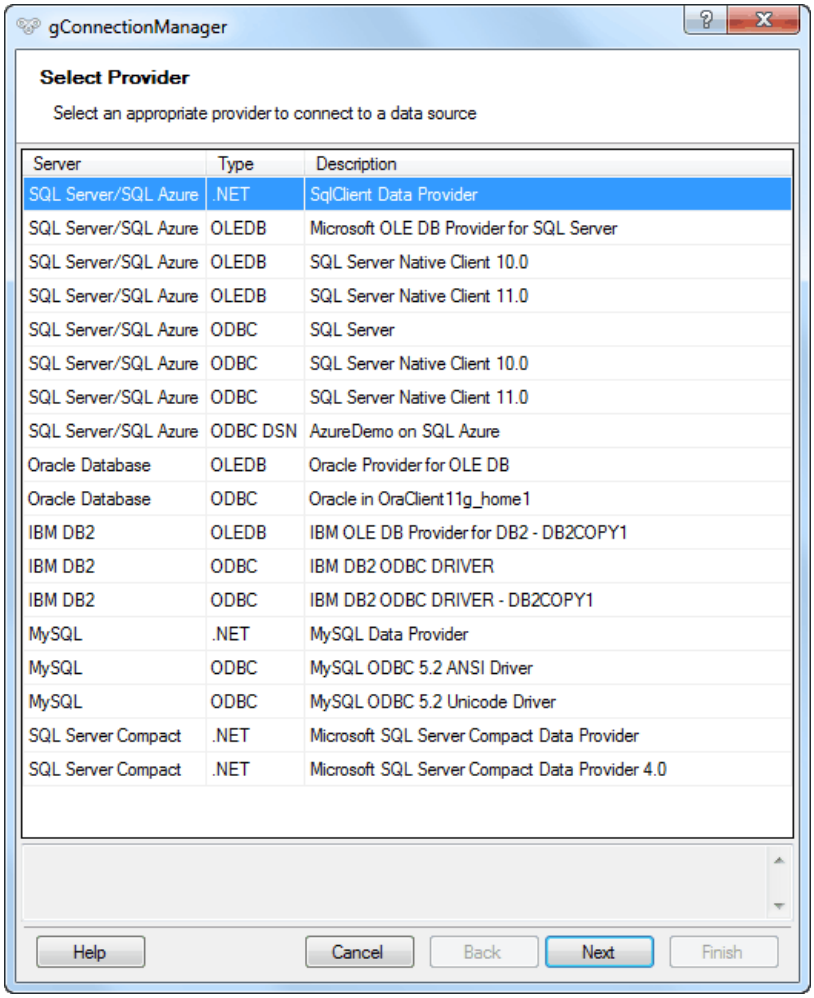
Use gConnectionManager to edit database provider configuration files in the **DataProviders** directory.

Click on the help menu of gConnectionManager to get the help.

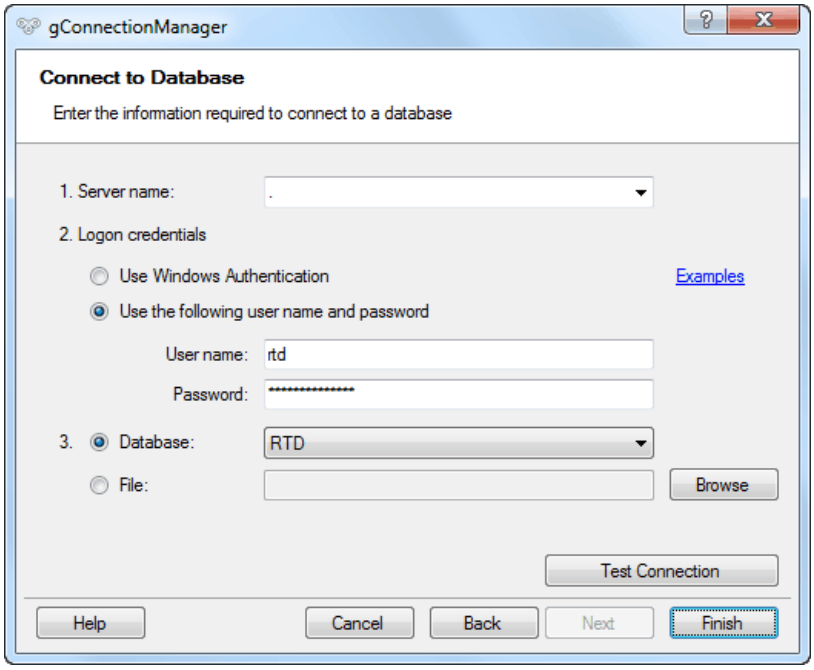
Here is a configuration file example:



Here is an example of selecting a connection provider:



Here is an example of connecting to a database:


gConnectionManager
Connect to Database
Enter the information required to connect to a database
1. Server name:
.
2. Logon credentials
Use Windows Authentication
Examples
Use the following user name and password
User name:
rtd
Password:
3.
Database:
RTD
File:
Browse
Test Connection
Help
Cancel
Back
Next
Finish

Real-Time Database

Overview

RealTimeToExcel is deeply integrated with a companion product RealTimeToDB.

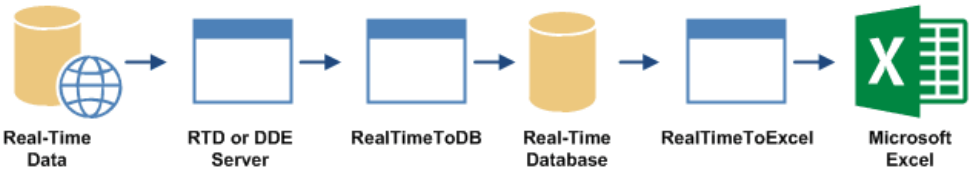
RealTimeToDB allows updating databases with real-time data from RTD and DDE servers including the RealTimeToExcel RTD server.

RealTimeToDB has preconfigured databases for all supported database platforms and several real-time data servers.

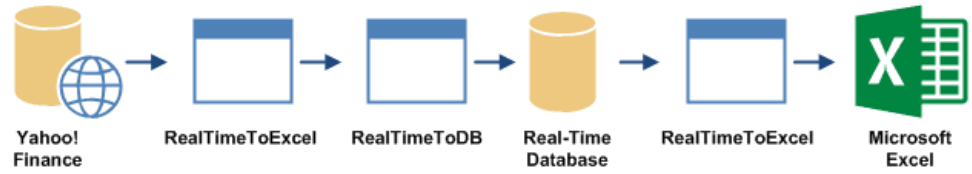
You may use these databases for getting real-time data in Microsoft Excel.

The default RTD database for Microsoft SQL Server Compact is integrated into the SaveToDB add-in and works by default.
You may open the workbook template from the External Tools wizard and get working examples.

The common schema looks like this:



For Yahoo! Finance data, the schema looks like this:



Usage

See RealTimeToDB Help to get the complete list of available tables and Excel formulas.

From the RealTimeToExcel side, you have to configure the real-time database provider in the **DataProviders** directory.

Formulas to get the data are simple. For example:

```
=RTD("gartle.rtd",,"rtd-sqlce","QuotesYahoo","AAPL","Last")
```

```
=RTD("gartle.rtd",,"rtd-mysql","fundamentals_yahoo","AAPL","OneYearTargetPrice")
```

In the example above, the first formula uses **rtd-sqlce** database provider, and the second one used **rtd-mysql** database provider.

The other formula parts are regular for the RealTimeToExcel and described in the RealTimeToDB help.

For example, RealTimeToDB 2.0 includes the following preconfigured real-time tables:

SQL Server and SQL Server Compact	MySQL and MariaDB	Oracle Database, IBM DB2, and NuoDB
FundamentalsDayHistoryYahoo	fundamentals_day_history_yahoo	FUNDAMENTALS_DAY_HISTORY_YAHOO
FundamentalsYahoo	fundamentals_yahoo	FUNDAMENTALS_YAHOO
OptionDayHistoryTOS	option_day_history_tos	OPTION_DAY_HISTORY_TOS
OptionDayHistoryTWS	option_day_history_tws	OPTION_DAY_HISTORY_TWS
OptionDayHistoryYahoo	option_day_history_yahoo	OPTION_DAY_HISTORY_YAHOO
OptionsTOS	options_tos	OPTIONS_TOS
OptionsTWS	options_tws	OPTIONS_TWS
OptionsYahoo	options_yahoo	OPTIONS_YAHOO
QuoteDayHistoryES	quote_day_history_es	QUOTE_DAY_HISTORY_ES
QuoteDayHistoryTOS	quote_day_history_tos	QUOTE_DAY_HISTORY_TOS
QuoteDayHistoryTWS	quote_day_history_tws	QUOTE_DAY_HISTORY_TWS
QuoteDayHistoryVFX	quote_day_history_vfx	QUOTE_DAY_HISTORY_VFX
QuoteDayHistoryYahoo	quote_day_history_yahoo	QUOTE_DAY_HISTORY_YAHOO
QuotesES	quotes_es	QUOTES_ES
QuotesTOS	quotes_tos	QUOTES_TOS
QuotesTWS	quotes_tws	QUOTES_TWS
QuotesVFX	quotes_vfx	QUOTES_VFX
QuotesYahoo	quotes_yahoo	QUOTES_YAHOO
StocksYahoo	stocks_yahoo	STOCKS_YAHOO

Where:

Yahoo	Yahoo! Finance

TOS	Thinkorswim thinkDesktop
TWS	InteractiveBrokers Trader Workstation (TWS)
ES	eSignal FutureSource
VFX	Hybrid Solutions VertexFX Trader (VFX)

Yahoo! Finance Data Provider Settings

Basics

You may change data provider settings in the provider configuration file, like YahooFinanceQuotes.dll.config, in the **DataProviders** subdirectory.

The default installation folder is %ProgramFiles%\Gartle\RealTimeToExcel.

You may also use Start Menu shortcuts in the Gartle\RealTimeToExcel group to open the configuration files.

See Yahoo! Query Language at http://developer.yahoo.com/yql/ and Yahoo! Query Language FAQ at http://developer.yahoo.com/yql/faq/ to learn usage limits before the changes.

In short, this is 1000 calls per hour. Note that all Yahoo! Finance data providers connect to the single Yahoo! web service.
So, if you use two data providers you must divide 1000 calls by two to get the available watched stock number.

For example, you watch stocks using 2 data providers. You can watch 1000 / 2 = 500 stocks with the one hour refresh interval.

If you want to refresh the data twice an hour, divide the number by 2. In this example, your limit is 250 stocks.

The FAQ contains also the recommended limit as 0.2 calls per second. But, 1 call per second is quite good when the 1000 calls per hour limit are kept.

You may increase the usage limit to 10000 calls per hour. Just get your Yahoo! API key and configure it in the RealTimeToExcel settings.

Data Provider Configuration Parameters

RefreshInterval

This time value defines the interval of row data refreshing.
The default value is 01:00:00, a one hour.

NextRequestDelay

This integer value defines the interval between requests to a data source server, in milliseconds.
The default value is 1000, a one second.

DataStartTime

This time value defines the time when the data source server starts publishing data.
For example, this is 09:50:00 -05:00 for free 20-minute delayed Yahoo! Finance data from US exchanges.
This is the default value.

DataEndTime

This time value defines the time when the data source server ends publishing data.
For example, this is 16:20:00 -05:00 for free 20-minute delayed Yahoo! Finance data from US exchanges.
The default value is 16:30:00 -05:00.

LoadEndTime

This time value defines the latest time when today's data can be loaded.
For example, this is 24:00:00 -05:00 for free 20-minute delayed Yahoo! Finance data from US exchanges.
This is the default value.

LoadOnSaturday

This integer value defines the behavior of data loading on Saturday:
0 - Load data as for other working days.
1 - Load Friday's data once.
2 - Do not load the data.
The default value is 1.

LoadOnSunday

This integer value defines the behavior of data loading on Sunday and has the same values as LoadOnSaturday.

AuthProvider

This string value defines a provider used to authenticate requests. "Yahoo" specifies Yahoo! API Key.

Yahoo! Finance Quotes

Usage

Excel formula:

```
=RTD("gartle.rtd",,"YahooFinanceQuotes","<Ticker>","<Data Field>")
```

Example:

```
=RTD("gartle.rtd",,"YahooFinanceQuotes","YHOO","Last")
```

Use http://finance.yahoo.com/ to find tickers. See also the complete list of Yahoo! Finance exchanges.

Data Fields and Excel Formulas

Excel Column	Excel Formula
Symbol	
LastTradeDate	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"LastTradeDate")
LastTradeTime	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"LastTradeTime")
Last	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Last")
Change	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Change")
PercentChange	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ChangeInPercent")
Open	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Open")
High	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"High")
Low	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Low")
Volume	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Volume")
DaysRange	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"DaysRange")
PrevClose	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PreviousClose")
ShortRatio	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ShortRatio")
YearHigh	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"YearHigh")
YearLow	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"YearLow")
YearRange	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"YearRange")
ChangeFromYearHigh	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ChangeFromYearHigh")
ChangeFromYearLow	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ChangeFromYearLow")
PercentChangeFromYearHigh	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PercentChangeFromYearHigh")
PercentChangeFromYearLow	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PercentChangeFromYearLow")
MA50	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"FiftydayMovingAverage")
MA200	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"TwoHundredDayMovingAverage")
ChangeFromMA50	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ChangeFromFiftyDayMovingAverage")
ChangeFromMA200	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ChangeFromTwoHundredDayMovingAverage")
PercentChangeFromMA50	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PercentChangeFromFiftyDayMovingAverage")
PercentChangeFromMA200	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PercentChangeFromTwoHundredDayMovingAverage")
AverageDailyVolume	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"AverageDailyVolume")
OneYearTargetPrice	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"OneYrTargetPrice")
PE	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PERatio")
PEG	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PEGRatio")
EPSEstCurrentYear	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"EPSEstimateCurrentYear")
EPSEstNextQuarter	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"EPSEstimateNextQuarter")
EPSEstNextYear	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"EPSEstimateNextYear")
EarningsShare	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"EarningsShare")
MarketCap	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"MarketCapitalization")
DividendYield	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"DividendYield")
DividendShare	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"DividendShare")
ExDividendDate	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"ExDividendDate")
DividendPayDate	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"DividendPayDate")
BookValue	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"BookValue")
PriceBook	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PriceBook")
PriceSales	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PriceSales")
PriceEPSEstCurrentYear	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PriceEPSEstimateCurrentYear")
PriceEPSEstNextYear	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"PriceEPSEstimateNextYear")
EBITDA	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"EBITDA")
CompanyName	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Name")
StockExchange	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"StockExchange")
Commission	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Commission")
Notes	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"Notes")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"rtd_LastUpdateDate")

rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceQuotes",[Symbol],"rtd_LastUpdateTime")

See Copying formulas about inserting formulas into Excel spreadsheets.

Data Provider Settings

The data provider is configured for loading free 15-minute delayed Yahoo! Finance data from US exchanges every hour.

To load the data from other world's exchanges, you may configure the default settings. See Data provider settings.

Parameter	Value
RefreshInterval	01:00:00, a one hour
NextRequestDelay	1000, a one second
DataStartTime	09:50:00 -05:00
DataEndTime	16:30:00 -05:00
LoadEndTime	24:00:00 -05:00
LoadOnSaturday	1, loading Friday's data once.
LoadOnSunday	1, loading Friday's data once.

Data Source

http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20yahoo.finance.quotes

Special thanks to http://www.philadelphia-reflections.com/blog/2392.htm

Yahoo! Finance WatchList

Usage

Excel formula:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","<Ticker>","<Data Field>")
```

Example:

```
=RTD("gartle.rtd",,"YahooFinanceWatchList","YHOO","Last")
```

Use http://finance.yahoo.com/ to find tickers. See also a full list of Yahoo! Finance exchanges.

Data Fields and Excel Formulas

Excel Column	Excel Formula
Symbol	
LastTradeDateTime	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"LastTradeDateTime")
LastTradeDate	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"LastTradeDate")
LastTradeTime	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"LastTradeTime")
Last	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Last")
Change	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Change")
PercentChange	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"ChangeInPercent")
Open	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Open")
High	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"High")
Low	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Low")
Volume	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Volume")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"rtd_LastUpdateDate")
rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"rtd_LastUpdateTime")

See Copying formulas about inserting formulas into Excel spreadsheets.

The ChangeInPercent value is calculated by RealTimeToExcel.

Data Provider Settings

The data provider is configured for loading free 15-minute delayed Yahoo! Finance data from US exchanges every hour.

To load the data from other world's exchanges, you may configure the default settings. See Data provider settings.

Parameter	Value
RefreshInterval	00:15:00, 15 minutes
NextRequestDelay	1000, a one second
DataStartTime	09:50:00 -05:00
DataEndTime	16:30:00 -05:00
LoadEndTime	24:00:00 -05:00
LoadOnSaturday	1, loading Friday's data once.
LoadOnSunday	1, loading Friday's data once.

Data Source

http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20yahoo.finance.quoteslist

Special thanks to http://www.philadelphia-reflections.com/blog/2392.htm

Yahoo! Finance Stocks

Usage

Excel formula:

```
=RTD("gartle.rtd",,"YahooFinanceStocks","<Ticker>","<Data Field>")
```

Example:

```
=RTD("gartle.rtd",,"YahooFinanceStocks","YHOO","FullTimeEmployees")
```

Use http://finance.yahoo.com/ to find tickers. See also a full list of Yahoo! Finance exchanges.

Data Fields and Excel Formulas

Excel Column	Excel Formula
Symbol	
CompanyName	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"CompanyName")
Sector	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"Sector")
Industry	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"Industry")
FullTimeEmployees	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"FullTimeEmployees")
TradeStart	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"Start")
TradeEnd	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"End")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"rtd_LastUpdateDate")
rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceStocks",[Symbol],"rtd_LastUpdateTime")

See Copying formulas about inserting formulas into Excel spreadsheets.

Data Provider Settings

The data provider is configured for loading free Yahoo! Finance data from US exchanges one or two times a day.

To load the data from other world's exchanges, you may configure the default settings. See Data provider settings.

Parameter	Value
RefreshInterval	01:00:00, a one hour
NextRequestDelay	1000, a one second
DataStartTime	09:50:00 -05:00
DataEndTime	16:30:00 -05:00
LoadEndTime	24:00:00 -05:00
LoadOnSaturday	1, loading Friday's data once.
LoadOnSunday	1, loading Friday's data once.

Data Source

http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20yahoo.finance.stocks

Special thanks to http://www.philadelphia-reflections.com/blog/2392.htm

Yahoo! Finance Historical Data

Usage

Excel formula:

```
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","<Ticker>",[<date>],"<Data Field>")
```

where <date> is a Microsoft Excel date value or a string value as "yyyy-mm-dd".
If <date> is empty or equal to 0 then the last trade date is used by default. It is useful to monitor the last trade date data.

Example:

```
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","YHOO","2013-07-15","Close")
=RTD("gartle.rtd",,"YahooFinanceHistoricalData","YHOO",,"Close")
```

Use http://finance.yahoo.com/ to find tickers.

Important Notes

Do not request the Yahoo! website frequently. Otherwise, your IP can be banned by the Yahoo! website.

Historical data for a one ticker symbol is downloaded by a one request to a web service. This feature significantly reduces amount of requests to the Yahoo! website.

The amount of data depends on the entire data period that is calculated for all stocks in opened workbooks.

Data Fields and Excel Formulas

Excel Column	Excel Formula
Symbol	
Date	
Open	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"Open")
High	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"High")
Low	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"Low")
Close	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"Close")
Change	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"Change")
ChangeInPercent	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"ChangeInPercent")
AdjClose	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"AdjClose")
AdjChange	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"AdjChange")
AdjChangeInPercent	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"AdjChangeInPercent")
Volume	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"Volume")
PrevDate	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevDate")
PrevOpen	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevOpen")
PrevHigh	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevHigh")
PrevLow	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevLow")
PrevClose	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevClose")
PrevAdjClose	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevAdjClose")
PrevVolume	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"PrevVolume")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"rtd_LastUpdateDate")
rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceHistoricalData",[Symbol],[Date],"rtd_LastUpdateTime")

See Copying formulas about inserting formulas into Excel spreadsheets.

Change, ChangeInPercent, AdjChange, and AdjChangeInPercent calculated by RealTimeToExcel.

Data Provider Settings

The data provider is configured for loading free Yahoo! Finance data from US exchanges one or two times a day.

To load the data from other world's exchanges, you may configure the default settings. See Data provider settings.

Parameter	Value
RefreshInterval	12:00:00, twelve hours
NextRequestDelay	1000, a one second
DataStartTime	06:00:00 -05:00
DataEndTime	24:00:00 -05:00
LoadEndTime	24:00:00 -05:00
LoadOnSaturday	1, loading Friday's data once.
LoadOnSunday	1, loading Friday's data once.

Data Source

http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20yahoo.finance.historicaldata

Yahoo! Finance Options

Usage

Excel formula for using option codes:

```
=RTD("gartle.rtd",,"YahooFinanceOptions","<Option Code>","<Data Field>")
```

Option code format:

```
[.]<Option Symbol><Expiration Date><Option Type Char><Strike>
```

Expiration date format:

```
yymmdd
```

Option type char: C or P

Strike format:

```
8 digits with leading zero as strike * 1000 (Yahoo! Finance format)
7 digits with leading zero as strike * 100
6 digits with leading zero as strike * 10
strike as is with or without decimal part (common strike format)
```

Examples:

```
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO130720C00027000","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO130720C00027","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO130720C27","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO130720C27.0","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions",".YHOO130720C27.0","OpenInt") (Thinkorswim format)
```

Excel formula for using option specifications:

```
=RTD("gartle.rtd",,"YahooFinanceOptions","<Option Symbol>",<Expiration Date>,<Strike>,"<Option Type>","<Data Field>")
```

Expiration date formats:

```
yymmdd
yyyy-mm-dd
mmmdd,yy
mmmdd'yy
```

Option type format: C or CALL, P or PUT

Examples:

```
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO", "130720", 27, "CALL","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO", "2013-07-20", 27, "C","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO", "JUL20,13", 27, "PUT","OpenInt")
=RTD("gartle.rtd",,"YahooFinanceOptions","YHOO", "JUL20'13", 27, "P","OpenInt")
```

Use http://finance.yahoo.com/ to find option codes. Options data is available for US exchanges and may be not available for other world's exchanges.

Important Notes

Do not request the Yahoo! website frequently. Otherwise, your IP can be banned by the Yahoo! website.

RealTimeToExcel loads a one page to get the data for all options of the month. This feature significantly reduces amount of requests to the Yahoo! website.

Data Fields and Excel Formulas

Formulas for getting data by option codes:

Excel Column	Excel Formula
Code	AAPL150117C00500000
OptionCode	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"OptionCode")
Symbol	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Symbol")
OptionSymbol	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"OptionSymbol")
ExpDate	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Exp")
Strike	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Strike")
Type	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Type")
Last	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Last")
Change	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Change")
PercentChange	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"ChangeInPercent")
Mark	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Mark")
Bid	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Bid")
Ask	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Ask")
Volume	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"Volume")
OpenInt	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"OpenInt")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"rtd_LastUpdateDate")
rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceOptions",[Code],"rtd_LastUpdateTime")

Formulas for getting data by option contact specifications:

Excel Column	Excel Formula
OptionSymbol	AAPL
ExpDate	150117
Strike	500
Type	CALL
OptionCode	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"OptionCode")
Symbol	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Symbol")
Last	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Last")
Change	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Change")
PercentChange	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"ChangeInPercent")
Mark	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Mark")
Bid	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Bid")
Ask	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Ask")
Volume	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"Volume")
OpenInt	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"OpenInt")
rtd_LastError	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"rtd_LastError")
rtd_LastMessage	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"rtd_LastMessage")
rtd_LastUpdate	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"rtd_LastUpdate")
rtd_LastUpdateDate	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"rtd_LastUpdateDate")
rtd_LastUpdateTime	=RTD("gartle.rtd",,"YahooFinanceOptions",[OptionSymbol],[ExpDate],[Strike],[Type],"rtd_LastUpdateTime")

Symbol, OptionSymbol, Exp, Strike, and Type are calculated by parsing the option code.

OptionCode is the option code in the standard Yahoo! Finance format.

OptionSymbol ends with 7 for Mini Options, and with 1 for some options before splits.

The ChangeInPercent value is calculated by RealTimeToExcel. The Mark value is calculated as (Bid+Ask)/2.

See Copying formulas about inserting formulas into Excel spreadsheets.

Data Provider Settings

The data provider is configured for loading free 15-minute delayed Yahoo! Finance data from US exchanges every hour.

To load the data from other world's exchanges, you may configure the default settings. See Data provider settings.

Parameter	Value
RefreshInterval	01:00:00, a one hour
NextRequestDelay	1000, a one second
DataStartTime	09:50:00 -05:00
DataEndTime	16:30:00 -05:00
LoadEndTime	24:00:00 -05:00
LoadOnSaturday	1, loading Friday's data once.
LoadOnSunday	1, loading Friday's data once.

Data Source

http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20yahoo.finance.options

Copying Excel Formulas

The documentation contains tables with Excel formulas like this:

Excel Column	Excel Formula
Symbol	
LastTradeDate	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"LastTradeDate")
LastTradeTime	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"LastTradeTime")
Last	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Last")
Change	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Change")
PercentChange	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"ChangeInPercent")
Open	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Open")
High	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"High")
Low	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Low")
Volume	=RTD("gartle.rtd",,"YahooFinanceWatchList",[Symbol],"Volume")

You may select the required formula and paste it into Excel spreadsheet.

You may also copy the entire table and quickly create a table in Excel.

Do the following:

1. Click the **Copy** or **Copy(;)** link in the upper right cell.
   Use Copy(;) if the semicolon is used as a parameter separator in your version of Microsoft Excel.
2. Switch to Microsoft Excel, select the cell to insert the table, and click **Paste**.
   The data will be inserted from the Clipboard and the region will be selected.
3. Select the **Insert** tab of Microsoft Excel, click **Table**, check **My table has headers**, and click **OK**.
   The regular Excel region will be converted to an Excel table.
4. Type the value in the first column empty cell. For example, YHOO for the Symbol column.
5. Press **F2** and then **Enter** on each formula in row.
   You will get updatable cells with working real-time formulas.

When you create the table as described, you may add next symbols in a second. Just type the ticker below the table.

For the documentation on the website use Internet Explorer to copy tables.

The setup package contains example workbooks. You may also copy example tables into your spreadsheets.

Product Registration

RealTimeToExcel has several editions. See Edition comparison.

The registration process is required to register the desired edition.

To start the registration process, click the **Register Product** shortcut in the **RealTimeToExcel** group of the **Start** menu.

You may find the RealTimeToExcel group in one of the parent groups depend on the setup package:

- Gartle\SaveToDB\RealTimeToExcel
- Gartle\RealTimeToDB\RealTimeToExcel
- Gartle\RealTimeToExcel

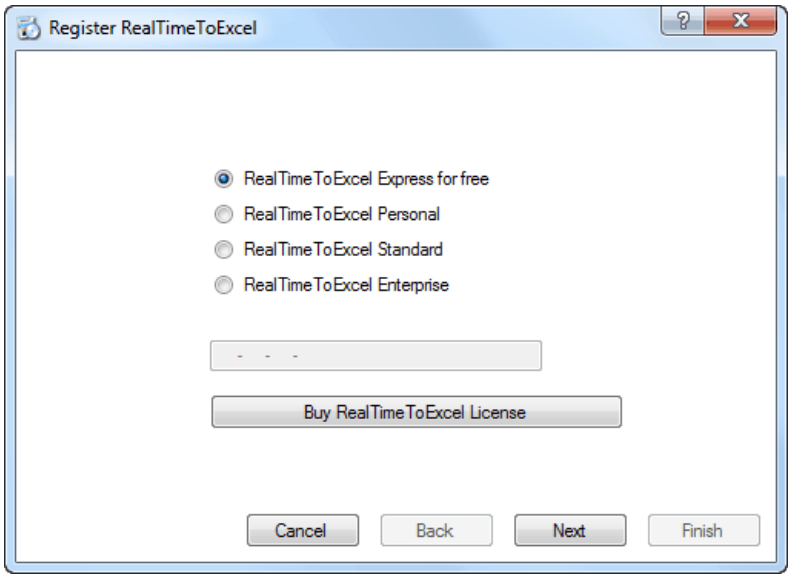
A product code is required to register the Personal, Standard, or Enterprise edition.

The product code is sent by email after purchasing.

You may register the RealTimeToExcel Express edition for free.

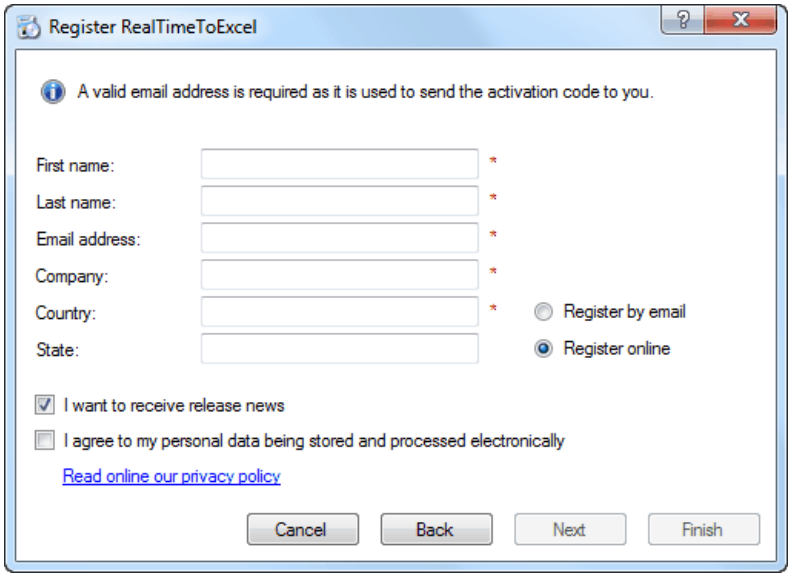
Selecting Edition

Select an edition and fill in the product code for the Personal, Standard, or Enterprise edition.



Licensee Data

Please fill in the registration form carefully.



The **Next** button is enabled when all the required fields are filled.

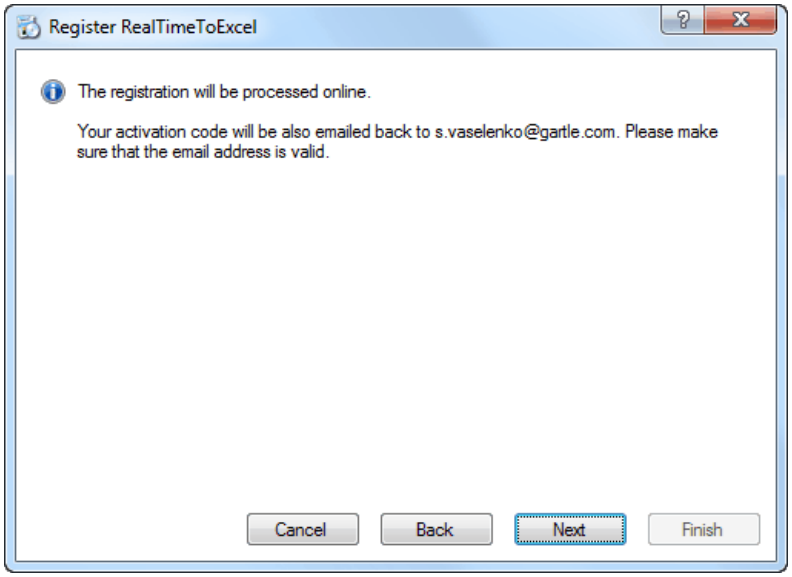
Don't forget to check the required field about the personal data use.

Online Registration

This step allows you to check your email address and to pause before the final step.

If the licensee data is valid, click **Next**.

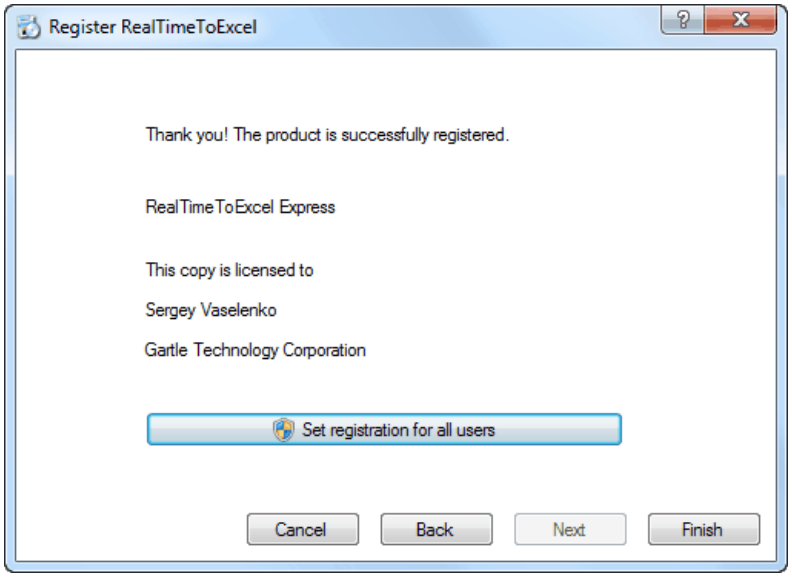
You may return to the previous step using the **Back** button.



After clicking the **Next** button, the RealTimeToExcel connects to the registration server.

If the connection is successful, the final step screen is shown.

If any error occurred during connection, you may try to register the product later or to register the product by email.

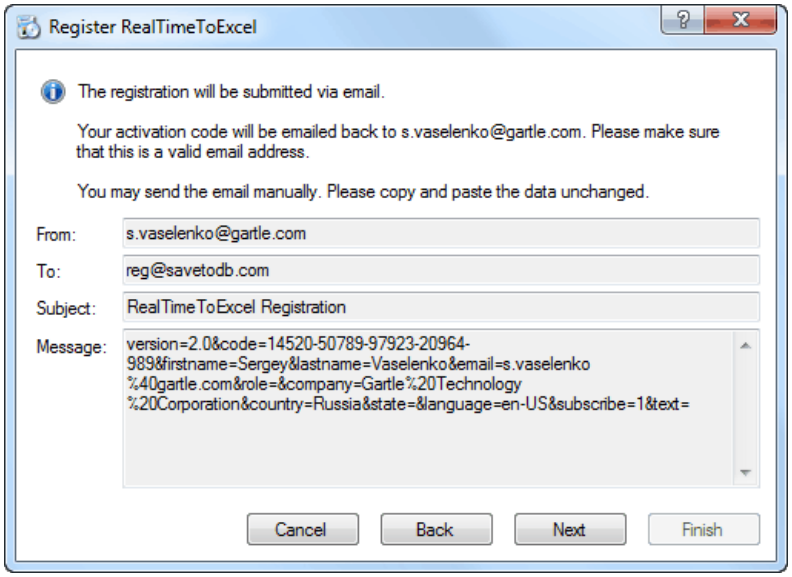


You may set the registration for all users of the computer. This action requires administrator privileges.

Click **Finish**.

Registration by Email

If you choose the **Register by email** option on the **Licensee Data** step, the following screen is displayed:

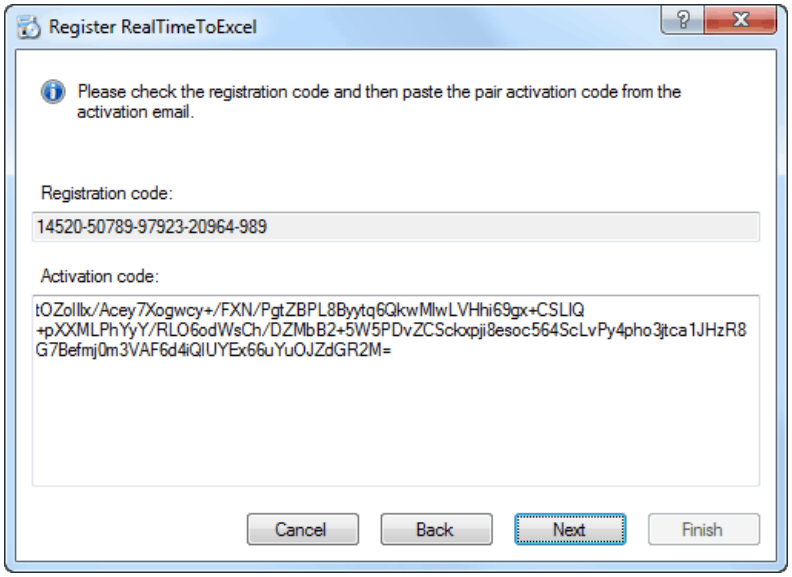


The **Next** button starts the default email program, creates a registration email, and activates the next step.
Don't forget to send the email.

If starting of the email program has failed, you may create the registration email manually using the shown registration data.
Please carefully copy the **To**, **Subject**, and the **Message** fields.

The registration server sends the reply in a couple of seconds; but you may close the dialog box and open it again, on the same step.

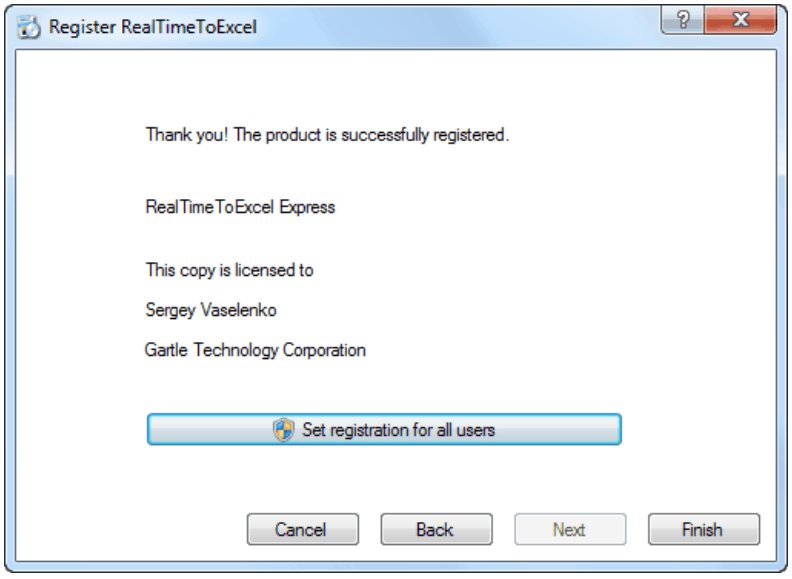
Please copy the activation code from the received registration email and paste it to the **Activation code** field.



The **Next** button is enabled when the pasted activation code is valid.

Click **Next** to continue.

The RealTimeToExcel checks the registration data and confirms the registration.



You may set the registration for all users of the computer. This action requires administrator privileges.

Click **Finish**.

Technical Support

You may download the latest releases at www.savetodb.com.

You may contact us via email support@savetodb.com.

See also Frequently Asked Questions.

Frequently Asked Questions

Microsoft Excel shows #N/A values. What to do?

#N/A means that the data is "Not available".
Possible reasons are:
1. An error server in the formula. Check the correct value: "gartle.rtd" (lowercase is correct too).
2. An error in arguments. Check the provider, symbol, and the data field.
3. A bad ticker. Check the ticker at http://finance.yahoo.com/.
4. Data absent in a data source. For example, Open, DaysHigh, and DaysLow can be not available during non-trading hours.

The data are not refreshing. What to do?

Add formulas to monitor data status: rtd_LastUpdate, rtd_LastError, rtd_InQueue, rtd_RefreshInterval.
See complete description in RealTimeToExcel Fields.
If you work with non US exchanges check Data provider settings. Possibly, the DataStartTime is incorrect in your case.

Can you add another data source?

Yes, definitely.
Please write us a request.

Can we add another data source?

Yes, definitely.
Please write us a request. We will send you data provider source.

How to get historical prices into Microsoft Excel table for a specific period at once?

You may use our product SaveToDB, a Microsoft Excel add-in, for getting web data into Microsoft Excel.
You may load web data in HTML, XML, JSON, and CSV formats. Yahoo! Finance and Google Finance publish historical prices for free.