# History Server

The history server processes price and news data. This server performs the following functions:

* Receiving and filtering price and news data from gateways and datafeeds.
* Packing price and news data.
* Storing and providing price history in the form of 1-minute bars and ticks to other components of the platform.
* Storing and providing the news thread.
* Receiving, checking and distributing Live Updates among the MetaTrader 5 platform components.

Structure of Directories and Files

The history server is installed to folder "*history\_server*". It contains the following executable files:

* **mt5srvupdater64.exe** — the executable file of the live update system of the history server. This component has a number of console commands;
* **mt5history64.exe** — the executable file of the history server.

The main directory of the history server contains the following folders: bases, config, datafeed, gateway, history, liveupdate, logs, plugins.

The ***bases*** directory contains different data bases:

| **Files and folders** | **Description** | **Files and folders** | **Description** |
| --- | --- | --- | --- |
| **ecn\** | ECN data directory. | executions\ | Bases and indexes of ECN trade executions by trade servers. |
| history\ | Bases and indexes related to the history of client order execution in ECN, by months. |
| symbols\{Symbol}\matching.dat | Symbol databases related to client orders placed in ECN for matching. |
| symbols\{Symbol}\filling\_items.dat | Symbol databases of matching operations processed in ECN. |
| symbols\{Symbol}\books\yyyymmdd.book | ECN Market Depth journals by days. |
| filling\_orders.dat | Databases of internal ECN order which are executed on gateways. |
| **performance\** | Monthly history server performance databases and data indexes, which are displayed on the Monitoring tab. | | |
| **news.dat** | News data base. | | |
| **news.idx** | The index file of the news database. | | |

The ***config*** directory contains different configurations as \*.ini files:

| **Files** | **Description** |
| --- | --- |
| **common.ini** | Common History Server settings. |
| **ecn\_symbols.ini** | ECN symbol settings. |
| **mt5srvupdater.ini** | Update settings. |
| **history\_sync.ini** | Settings of history data synchronization. |
| **server.ini** | Individual settings of the access server. |
| **servers.ini** | Settings of the internal network of servers. |
| **symbol\_groups.ini** | Individual settings of symbols for groups. |
| **symbols.ini** | Symbol settings. |
| **time.ini** | Time settings. |

The ***datafeed*** directory contains files for working with data feeds:

| **Files** | **Description** |
| --- | --- |
| **[datafeed\_name]\logs\yyyymmdd.log** | Journal files in which records regarding data feed operation are stored. For each data feed which has been added through the relevant section of the Administrator terminal, a separate journal file is created. The file name is set in accordance with the data feed name. |
| **[datafeed\_name]\\*.dat** | Data files with data feed settings. |
| **\*.exe** | Data feed executables. It is not allowed to have several datafeed executable files with the same name in the history server directory. If you place several identical files in different subdirectories, this may lead to conflicts in the operation and display of modules in the Administrator terminal. |
| **MT5APIGateway.dll, MT5APIGateway64.dll** | Libraries for data feed operation. |

The ***gateway*** directory contains files for working with gateways:

| **Files and folders** | **Description** |
| --- | --- |
| **[gateway\_name]\[gateway configuration name]\logs\yyyymmdd.log** | Journal files in which gateway operation logs are stored. For each data feed which has been added through the relevant section of the Administrator terminal, a separate journal file is created. The file name is set in accordance with the data feed name. |
| **[gateway\_name]\[gateway configuration name]\\*.dat** | Data files with gateway settings. |
| **\*.exe** | Gateway executables. It is not allowed to have several datafeed executable files with the same name in the history server directory. If you place several identical files in different subdirectories, this may lead to conflicts in the operation and display of modules in the Administrator terminal. |
| **MT5APIGateway.dll, MT5APIGateway64.dll** | Libraries for gateway operation. |

The ***history*** folder contains history data divided by symbols:

| **Files** | **Description** |
| --- | --- |
| **yyyy.hsc** | History data on a symbol, divided by years. |
| **yyyymm.tkc** | Tick data on a symbol, divided by months. |

The ***liveupdate*** folder contains the latest updates of all the platform components:

| **Files** | **Description** |
| --- | --- |
| **mt5adm.build** | Live update of the administrator terminal. The build number is specified after the point. |
| **mt5as.build** | Live update of the access server. |
| **mt5bs.build** | Live update of the backup server. |
| **mt5clw.build** | Live update of the client server. |
| **mt5clwide.build** | Live Update of MetaEditor. |
| **mt5clwmql.build** | Live Update of the MQL5 compiler. |
| **mt5hs.build** | Live update of the history server. |
| **mt5hsu.build** | Live update of the update system of the history server. |
| **mt5man.build** | Live update of the manager server. |
| **mt5ts.build** | Live update of the trade server. |

The ***logs*** folder contains log files of the history server operation, as well as crash logs:

| **Files and folders** | **Description** |
| --- | --- |
| **Crash\crash.log.\*** | The /crash directory contains server crash files. These files are automatically sent to the software developing company for detecting reasons of the crash and eliminating them. |
| **yyyymmdd.log** | Journal files that contain all the information about events that occur on the history server. Server logs are stored in separate files for each working day. Here yyyy — year, mm — month, dd — day. |
| **mt5srvupdater.log** | Journal files of the platform updates. |

# Interaction with Quote Providers

In MetaTrader 5, gateways and data feeds can be used as providers of quotes. Their interaction with the history server is identical. This interaction can be analyzed in terms of the physical connection and at the level of quotes streaming.

## **Physical Connection**

The physical connection must be established for each source of quotes enabled in the appropriate settings of the platform. The physical connection details can be configured on the "Timeouts" tab of gateways and data feeds. Let's consider the following configuration example:

* Interval between reconnections = 5 seconds.
* Number of reconnection attempts = 10.
* Interval between series of reconnections = 60 seconds.

If a gateway/data feed loses connection with an external server, a reconnection attempt is made in 5 seconds. If it fails, another one is made in 5 seconds. The total number of attempts is 10. If unable to reconnect, a series of attempts is repeated after a pause of 60 seconds.

## **Stream of Quotes**

A stream of prices for several symbols goes through each physical connection to a quote provider.

At each point of time, the history server accepts the stream of prices for a certain symbol only from one quote provider, while other price streams of the same symbol are ignored. The source selected for the stream of prices for a symbol is considered a current (active) source for this symbol.

During operation the active source for an instrument may change. It is changed in accordance with priority settings. The priority of data feeds and gateways is determined by their position in the list.

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| --- |
| The priority of gateways, if they are used as a source of quotes, is always higher than that of data feeds. |

The stream of prices switches to the source with a higher priority as soon as the first quotes for a symbol is received from that source.

It switches to the source with a lower priority by a timeout. In case no quotes are received from the active quote source during a certain time period (it is specified in the "Datafeeds timeout" parameter in history server settings), then the history server switches to a source with the lower priority that provides quotes for the same symbol.

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| The time to wait for a quote for a symbol is defined in the "Datafeeds timeout" parameter in history server settings. |

After a new quotes source is selected, it is considered active. All cases of server switching to streams from other sources are reflected in the journal in the form of the following entry:

|  |
| --- |
| 2011.03.10 10:11:05    Ticks    datafeed 4:  CHFJPY activation |

Here the entry means that for CHFJPY, a stream of quotes from the fourth data feed (a position in the list of data feeds at the moment the entry is made) is selected.

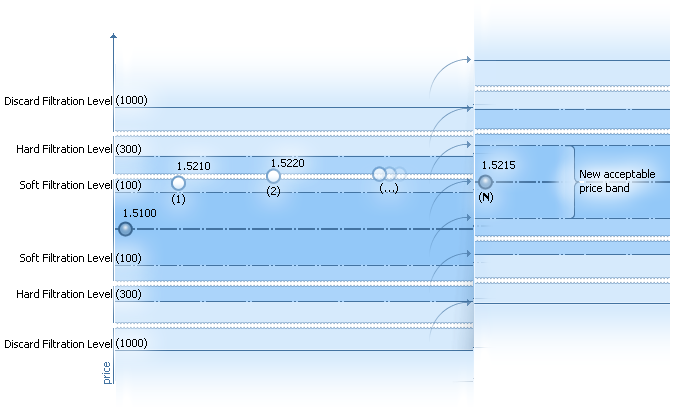
# Quotes Filtration

The filtration system is intended for controlling the correctness of quotes on financial symbols from data feeds. Filters can be set upon the "Quotes" tab of each symbol.

|  |
| --- |
| * Filters cannot be applied to instruments with the enabled Depth of Market **and** with the one of the following properties: Exchange calculation type (begins with "Exchange") **or** Last price based charting mode. Also, filtering is not applied to splice symbols. * To completely disable filtering, set 0 for all levels: mild, strict and exclusive. * The platform automatically filters out negative and zero Bid and Ask prices of OTC instruments, regardless of whether their Market Depth is enabled or not. OTC (over-the-counter or off-exchange) symbols include financial instruments whose calculation type does not start with "Exchange". * Analysis and filtration are performed separately for Bid and Ask. * Filters are not applied to the first tick after a break in the quotes stream: after platform restart, after a break in quoting sessions, after off-hours and after holidays. Filtration cannot be applied because it is not known in advance what was the price preceding the break. This rule does not apply to other price checks, including allowable spread. |

Three levels of quote filtration are available:

* **Soft filtration** — the soft filtration level is the first border of the channel of allowed symbol prices. If a new price (Bid or Ask) differs from the previous one by more than the specified value (in points), it is deleted from the thread translated to clients. However, if such a price difference appears again the number of times specified in the "Filter" field, the new price level is accepted, and the filtration level is shifted by the specified value. Such quotes will be translated again.
* **Hard filtration**— the hard filtration level is the second border of the price channel. If a received quote exceeds the level both of the soft and of the hard filtration, it is cut out from the thread translated to clients. For a new level of accepted price to be set, the quotes must be repeat the number of times specified in both levels;
* **Discard filtration level** — if the difference between prices of the previous and new quote exceed the specified value, such new prices are definitely removed from the thread.



| **Channel of allowed prices** | **— channel of allowed prices** | **Previous quote** | **— previous quote** |
| --- | --- | --- | --- |
| Soft filtration zone | — soft filtration zone | New quote | — new quote |
| Hard filtration zone | — hard filtration zone | **N** | — number of quotes (set in the "Filter" filed) required to move to a new level |
| Discard filtration zone | — discard filtration zone |  |

It is considered that there is a certain acceptable channel of price data fluctuation. This channel is limited by the set level of soft filtration. If the Bid or Ask price of the newly received quote differs from appropriate prices of the previous quote by the value of the specified soft filtration level, it is discarded. If several following quotes (the number is specified in the "Filter" parameter) also exceed the soft filtration level, the new price channel is set.

| **Example:** |
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| The last EURUSD quote was 1.50213/1.50231 (Bid/Ask). The soft filtration level is equal to 150, "Filter" parameter is equal to 3. The following quotes are received: 1.50373/1.50391, 1.50370/1.50388, 1.50372/1.50390, 1.50374/1.50392. In this case the first three quotes will be filtered away, because they exceed the previous one by more than 150 points. The last quote will be let in, and the new filtration level will be set 1.50374/1.50392 ± 150. |

The hard filtration level is an additional way to protect from incorrect quotes. If a new quote differs from the previous one by the value that is higher than the specified hard filtration level, it will be filtered away. The additional hard filtration protection is a more complicated mechanism of setting the new price channel. To confirm the new level, first the soft filter (specified number of quotes that exceed this value) must be passed, and then the hard one.

The discard filtration implies the unconditional filtering away of quotes that differ by this value. Such prices are deliberately considered incorrect.

## **Filtration of Similar Quotes**

The trading platform filters similar quotes received from data sources. If the platform receives the same quote as the previous one within a minute, it skips the quote. If the time interval is greater than one minute, the platform accepts the quote. The same quote is also accepted if the minute has changed. It allows plotting the charts correctly on a low liquidity market.

Example:

* 13:01:15 a quote is received
* 13:01:32 the same quote is received, it is not accepted
* 13:01:50 the same quote is received, it is not accepted
* 13:02:01 the same quote is received, it is accepted (the interval between quotes is less than 60 seconds, but the minute has changed)

## **Spread Control**

The Minimum Spread and Maximum Spread parameters in the Quotes tab are provided for additional protection. If the difference between the Bid and Ask prices in the incoming quote does not fall within the specified values, such a quote is removed from the stream.

The check only applies to over-the-counter (OTC) financial instruments with the floating spread. OTC instruments have one of the following calculation types: Forex, Futures, CFD, CFD Leverage or CFD Index.