OneTick & R
Handling High & Low Frequency Data

Historical & Real-Time

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6 Minute Crash Course
What is OneTick?

ONETICK time series database & analytics

Tick data management and super fast analytics for Finance. *Capture, store, retrieve and analyze* real-time and historical tick data for *any asset class*, *any size* & *period* of time, *any granularity*.

ONETICK CEP real-time analytics

Low latency *Complex Event Processing* seamlessly integrating the analysis of *real-time streaming* and *historical* market data.

ONETICK reference data file - Smooth time series data with *Corporate actions*, symbol name changes and more.
### Who is using OneTick and why?

#### Our clients:
- Hedge Funds & Proprietary Trading Firms
- Market Makers
- Large Asset Managers
- Banks & Brokers
- Marketplaces / Exchanges
- Technology & Information Providers
- Universities

#### Business Cases:
- Backtesting & Quantitative Research
- High frequency trading signal generation
- Pre- & Post- Trade TCA
- Venue Analysis
- Backbone for Charting / Time and Sales
- Compliance & Regulatory Reporting
- Risk & Portfolio Analytics
- Generic time series analysis
OneTick GUI: Query Language

**Query Example:**
Bollinger Bands Buy/Sell Signals

- **Runs Historical** (for research & backtesting)
- **Real-Time** (alerts & signal generation)

A "Nested query" for Bollinger Bands calculations

**NOTE:** One of the nodes can be a custom function coded in **R**, **C++**, **C#**, **Java**, **Python**, **Perl**
High Frequency Time Series? Yes.

- Tick data with milli-, micro-, nano-second granularity
- Trades, prices, orders, executions & any other time series
- Aggregate, filter, adjust, join, compute in OneTick
- Mix OneTick analytics with R code as needed (see below)
- Historical & Real Time continuous queries

Some facts:

- Processing rate – more than 6 million ticks/second/core
- Ability to capture, store & analyze all ticks globally (currently over 7 billion ticks/day)
- Linux, Windows, etc 64 or 32 bit
- Multi-threaded processing

- Create running (a.k.a. sliding) aggregation of 32 ticks
- Call R function acf(...) for each sliding group
- Pass values of MID and LAG from tick fields or query parameters
- Process the results of R function output
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- Mix OneTick analytics with R code as needed (see below)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Type</th>
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<tbody>
<tr>
<td>BUCKET_INTERVAL</td>
<td>32</td>
<td>sec/ticks</td>
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<tr>
<td>BUCKET_INTERVAL_UNITS</td>
<td>TICKS</td>
<td></td>
</tr>
<tr>
<td>OUTPUT_INTERVAL</td>
<td></td>
<td>seconds</td>
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<tr>
<td>OUTPUT_INTERVAL_UNITS</td>
<td>SECONDS</td>
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<td>BUCKET_END</td>
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<td>BUCKET_END_CRITERIA</td>
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<td>BUCKET_END_PER_GROUP</td>
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<tr>
<td>R_INITIALIZER</td>
<td>x=MID, y=LAG</td>
<td>Expression in R</td>
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<tr>
<td>INPUT</td>
<td></td>
<td>Mapping from tick</td>
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<tr>
<td>R_CALCULATOR</td>
<td>result &lt;- acf(x,y,lag=FALSE); lag &lt;- result[lagcor]&lt;result[lag]; acf</td>
<td>Expression in R</td>
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<tr>
<td>OUTPUT</td>
<td>MID, AC = corr, LAG = lag</td>
<td>Mapping from R</td>
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<td>For running</td>
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</table>

- Load & store time series for unlimited range of dates
- Enrich daily prices with corporate actions and more
- Aggregate, filter, adjust and return results back to R

Sample Data in OneTick GUI charts: Disney PRICE and DAILY VOLUME since 1968

Note: Query execution time on a laptop = 0.035 seconds
STOP BY OUR STAND FOR A LIVE DEMO!

THANK YOU

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