

Trading platforms

Fill Rate Analytics

In today's competitive trading landscape, a millisecond delay in a quote as a result of latency can make the difference between a successful trade and a lost one. The ability to understand the value of a millisecond and quantify the relationship between latency and the resulting order fill rate is a key enabler for driving more profitable trading. Answering this challenge, Sumerian's Fill Rate Analytics provides deep insight to understand the hidden factors at play – enabling IT teams to target latency optimisation to the right places and demonstrate measurable, tangible gains back to the business.

The challenge

Demonstrating how latency is impacting trading performance can be a costly and resource laden undertaking, with a number of common challenges making it hard to make real progress:

- **Complexity of trading environments and the sheer scale of quote/trade volumes being processed** – makes it difficult to collate and identify if latency is impacting the fill rate, even with the help of latency monitoring tools and rudimentary analysis capabilities
- **Multiple sources and causes of latency** – difficulty identifying which instruments are sensitive to latency – and what, when, where and how is it impacting the fill rate
- **Lack of evidence** – compounded by the above issues, gaining support for investment from the business can be weakened due to a lack of quantified evidence on whether business is being lost due to latency

How our service works

Answering these challenges, Sumerian takes a unique approach to quantifying the impact of latency on the fill rate. Using our highly powerful analytics platform, we capture, model and analyse vast quantities of data generated by your trading systems, revealing the distribution of quote latency through the platform and the latency experienced by each instrument.

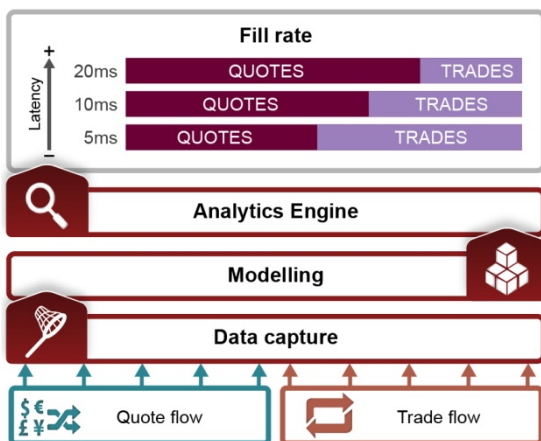


Fig. 1 – Fill Rate Analytics methodology

- **Holistic latency and fill rate visibility for targeted improvements** – supplies you with the insight to understand the complete landscape of where latency is impacting the fill rate and what is causing it
- **Ongoing optimisation to remain competitive** – fast, repeatable analysis to track and monitor your latency position for continual, proactive improvements to your fill rate
- **Aids IT-business alignment and communication** – with quantified, business focused evidence that demonstrates the effectiveness of your latency reduction and fill rate strategy

By correlating these findings against the volume of successful trades, our service accurately calculates how the fill rate is influenced by latency and which components and/or conditions are contributing towards it - enabling teams to take corrective action, target investment to the right places and demonstrate value back to the business.

We use an explicitly statistical approach to determine the holistic distribution of latency and how it is impacting the fill rate, calculating:

- The end-to-end latency of each quote/ trade processed and how components or certain conditions and criteria contributes to fill rate performance
- What percentage of trading transactions (quotes and trades) fall within any given latency band
- Which component(s), instruments or trading criteria should be targeted for attention
- Quantifying whether changes made to your platform or processes have resulted in improvements to your latency position and fill rate

This advanced insight enables us to answer any number of questions surrounding your specific latency and fill rate objectives, for example:

- *Where is latency most prevalent and what components are contributing the most to lost trades?*
- *Are certain instruments more sensitive to latency and hence fill rate success than others?*
- *Do certain conditions or criteria such as different client streams or times of day have an impact on our latency and fill rate?*

What you get

We deliver a hosted, subscription-based analytics service, requiring minimal time from you and your team to get underway – delivering our analytics in as little as 6 weeks.

Fast, secure data cleansing and integration

Using our pragmatic data collection techniques, we capture granular data in its raw form from across your trading environment - verifying, cleansing and storing it securely in our world class data warehouse facilities. Typical data sources collected for trading latency analytics can include:



- **Application logs** – Market Data Handlers, Tick database, FIX logs, bespoke application logs
- **Performance monitoring logs** – CA Unicenter, IBM Tivoli, BMC Patrol, Perfmon, SAR, Teamquest
- **Low latency monitoring logs** - Correlix, Corvil, Endace, SeaNet, TS-Associates, ITRS Geneos
- **Network traffic logs** -Wireshark, IP SLA, Netflow, Wildpackets

Application log data is translated into business metrics (quotes, trades and fill rate). Performance monitoring logs supply us with information on the usage of the trading platform (CPU, memory, Disk IO, database transactions and so on).

Statistical modelling of end-to-end latency

Using our analytics platform, we build a baseline model of your trading system, examining the volumes of quotes and trades being processed by each instrument. By applying an explicitly statistical approach, we connect and track every single quote and trade across your trading platform, determining the round trip latency. This enables you to understand what percentage of quotes and trades fall within any given latency band, providing visibility of the all-important latency tail (greatest latency).

Correlation of latency to fill rate to pinpoint causes

By then analysing the volume of successful trades, we determine how the fill rate changes with latency, identifying the relative and absolute contributions at each component step of the trading flow. With the use of our Fill rate visualisations, we show you how certain conditions, criterias or components contribute to latency across and where attention should be focussed to get the most beneficial gains.

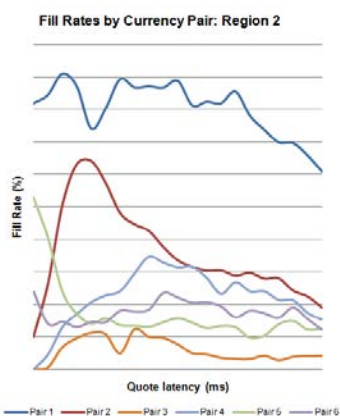


Fig. 2 – Sumerian visualisation showing comparison of FX currency pairs quote latency and fill rate %

Scenario modelling latency

The baseline model of your latency and fill rate position offers a powerful platform for you to leverage and further capitalise on. Using sophisticated “what if?” scenario modelling, we can answer any number of questions around your trading optimisation objectives. For example, by modelling the behaviour of your system, we can assess the risk, impact and cost of any rise in quote/trade volumes, architectural and infrastructure changes or adaptations to the trading mix – helping you to de-risk change and manage business growth effectively, answering questions such as:

- *What impact will a 20% increase in trade volumes have on latency, and what will this mean for our fill rate?*
- *How will a proposed co-location solution improve our latency and fill rate position?*
- *What is the value of 1 ms second latency reduction?*

Once changes to your trading environment have been implemented, our analysis can be repeated to quantify the actual outcome and what impact this has made on the fill rate. This enables teams to categorically understand whether the adjustments made have been successful in improving trading profitability, and if not, guide further action to resolve.

Expert reporting – on demand, repeatable

Our analytics and recommendations are presented to you using a variety of methods depending on your requirements, from a tailored, secure Web portal to regular reporting from our data scientists. Key to our reporting is clarity, ease of use and precision - so you can make fast decisions and drive proactive, positive improvements to your trading quickly. Our service is very flexible and easy to re-align - we keep pace with your changing environment, adapting our analytics to meet your changing priorities.

The outcomes you can expect

Our services will enable your organisation to significantly advance your trading optimisation and fill rate objectives– ensuring you deliver continually high levels of performance.

- **Holistic latency and fill rate visibility for targeted improvements** – supplies you with the insight to understand the complete landscape of where latency is impacting the fill rate and what is causing it.
- **Ongoing optimisation to remain competitive** – fast, repeatable analysis to track and monitor your latency position for continual, proactive fill rate improvements.
- **Improve IT-business alignment and communication** – with quantified, business focused evidence that demonstrates the effectiveness of your latency and fill rate strategy.
- **Predictive scenario modelling** – enabling you to determine in advance the impact of business, application or infrastructure changes on latency and fill rate.

Intelligent analytics, smarter decisions

Our Fill Rate Analytics is just one of a suite we can apply to your trading systems. Sumerian has a broad range of capabilities that may be applied to a number of your complex trading challenges. Other analytics we can supply include:

- Capacity Analytics
- Latency Analytics
- Performance Analytics
- Batch Analytics
- Grid Analytics

More information

For further information on Sumerian or to arrange a demonstration of our services, contact us on 0141 229 7580, e-mail us at info@sumerian.com or visit our Web site at www.sumerian.com

