

# Monitoring High-Performance FX Trading

## The Project

Monitoring high-performance FX trading environments

## Challenges

- Platform Arms Race – need to invest as competitors increase their FX trading speeds and volumes
- Complexity of FX landscape – proliferation of competitors and fragmentation of liquidity
- Managing Risk – arbitrage due to slow pricing is magnified by the increase in FX trading speeds

## Why Corvil

- Proven solution for trading performance monitoring
- Support for all major FX market-data feeds and order-flow protocols
- Faster troubleshooting
- Cost effective solution – single platform for monitoring, analytics and troubleshooting across business, applications and infrastructure teams

## Benefits

- Complete monitoring of FX platform, assuring consistent performance of pricing and trade execution
- Reduces risk exposure from technology failure or anomalous trading events
- Improved customer retention with increased service transparency, reliable performance and faster troubleshooting
- Hold market-data service providers to account and resolve issues fast, with upstream latency alerting and gap detection
- 100% decode and capture for compliance and forensics

Our customer, a global bank and FX broker, with a significant presence in the inter-dealer markets, set a strategic goal to increase their FX volumes over the next 12 months. Their existing platform was perceived to be losing market share to faster competitors. As part of this focus, they identified the need to upgrade their FX liquidity platform. The business drivers for the project were:

1. Maintaining and attracting new order-flow from the growing high performance FX trading sector
2. Demands for faster quoting, tighter spreads and higher execution speeds from their clients and prospects
3. Remaining competitive and managing risk as the trading speeds and volumes increase

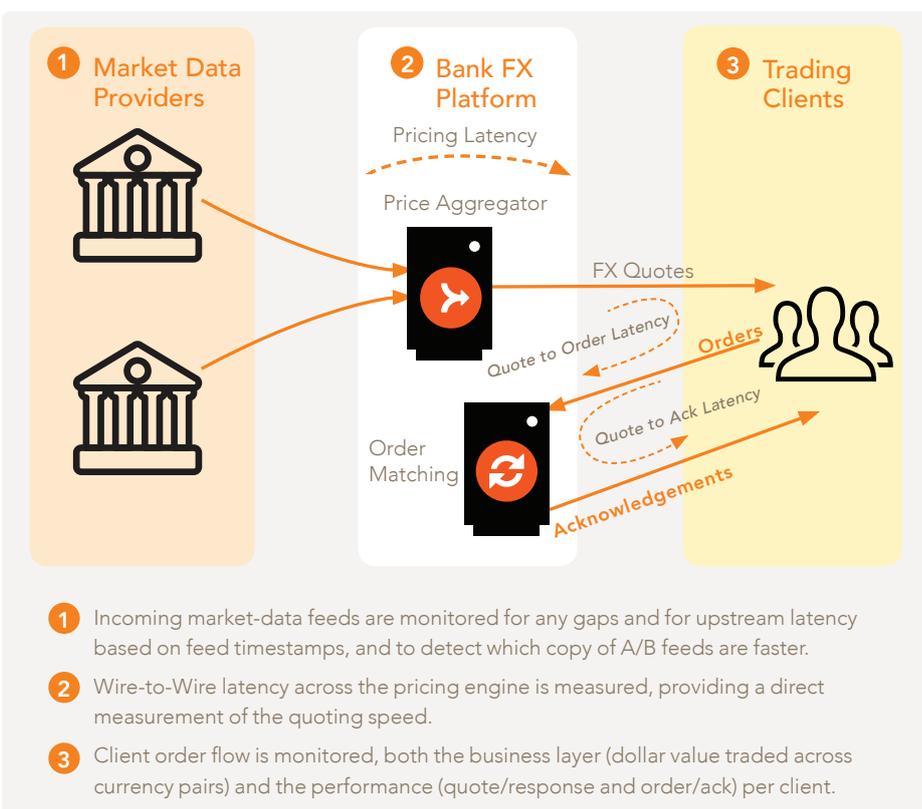
The business and operations teams required a real-time view into all trading, backed by a complete and forensic view of activity for compliance and dispute resolution. The IT team, tasked with delivering, also wanted a solution that could greatly accelerate troubleshooting with reliable visibility across the technology stack from network to applications.

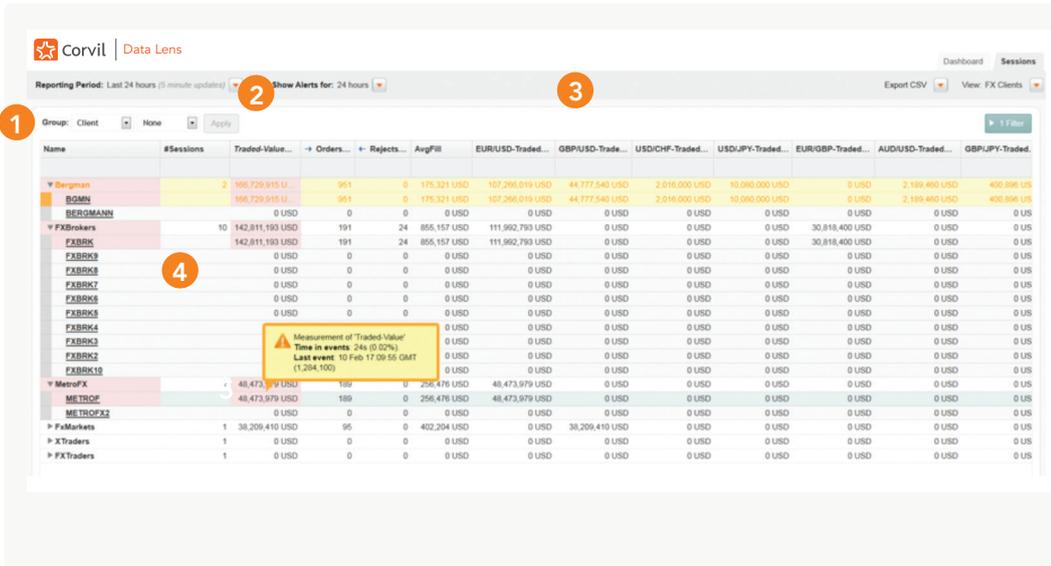
An internal team recommended Corvil, as they were already using Corvil in their Equities environment and were familiar with the trends now hitting FX: competition for order-flow driven by platform performance, increasing message rates, arbitration between venues and narrowing spreads that increase the pressure on market-makers.

## The Solution

Corvil's Streaming Analytics platform for FX Trading was deployed using a network tap to passively monitor all traffic in and out of the pricing engine. This provided a view of all the market data and order flow:

- Incoming market-data feeds including ICAP EBS, Reuters and Currenex.
- Quotes sent from the pricing engine to each client
- Incoming order-flow from clients and executions





The view is fully configurable, with the ability to show business, infrastructure and mixed views.

- 1 Flexible monitoring hierarchy, for example summarised by FIX gateway and Firm with per-session breakdown
- 2 USD-normalised total traded value, with counts of orders, rejects and average trade value.
- 3 Traded-value broken down by principal currency-pairs.
- 4 Real-time alerting per session (example: single-order value over threshold)

Streaming Analytics processed the network data to present a complete, accurate and independent view of the real-time state of the FX platform, from the business down to the infrastructure layer. The data produced was of value to multiple teams, and quickly became the reference data for troubleshooting customer issues.

For the Business and Trade Support teams, the solution provided:

- Real-time business view of the trading activity including total value traded per client, broken down by currency pair and normalised to a single currency for ranking and trending.
- Complete capture of all trading activity backed by per-packet and per-message records, accurately timestamped, and available for compliance and dispute resolution.
- Fast retrieval of individual client orders, including multi-hop views showing the path from inbound market-data, through pricing to the quote and subsequent orders.
- Streaming analytics feeds of all data, providing up to date visibility for self-service client portal.
- Alerts for numerous anomalous events, including fills of stale quotes, single-order-value over threshold, excessive quoting, rejected orders, as well as the infrastructure alerts used by the IT team.

For the FX Platform IT team, the solution provided:

- A single platform with complete visibility of all network and application traffic, with per-message latency across the pricing engine to each client. As well as being used for continuous monitoring of production, this was also used during the platform development to optimise all aspects of performance.
- Market Data quality monitoring, with the ability to detect missing multicast market-data at the perimeter, and to monitor the latency of the market-data service providers by comparing published timestamps to the received time.
- Troubleshooting times were greatly reduced following deployment, because issues could quickly be isolated to their root cause.

For example, when a client complained of slow prices, the team were quickly able to confirm the issue. Further, they could show the issue was affecting a single client session and was due to TCP retransmissions caused by client-side loss, and not due to a slow pricing engine. Root-cause analysis was accelerated by drilldown into combined network and application performance.

### Key Benefits

**Assure FX platform performance with complete visibility**  
Corvil monitors the performance of every pricing event and every client order, ensuring that any performance degradation is immediately visible. This visibility provides the intelligence necessary to assure faster quoting, maximize order execution speed, provide tighter spreads and increase service transparency. Because Corvil monitors the network traffic directly, it delivers complete visibility without the performance hit of logging loads on servers.

**Reduced FX Trading and Technology Risk**  
Corvil's on the wire position ensures there is nowhere to hide. All trading activity is monitored, giving a complete and independent record backed by per-packet and per-message records. This data provides a forensic view for compliance and dispute resolution in real-time and after the fact. In addition, Corvil provides alerts to help manage technology and business risk in real-time. Alerts include stale quotes, single-order-value over threshold, excessive quoting, rejected orders, slow market-data, plus comprehensive network-layer infrastructure alerts.

**Rapid troubleshooting and root cause analysis**  
Improve your customer relationship with greatly accelerated troubleshooting. Rapidly identify root causes by drilling into combined application layer visibility (pricing, quote-to-order and order-to-ack latency) and network performance (microburst, TCP roundtrip times, retransmissions, zero-window events). All troubleshooting teams use the same high-integrity dataset, improving collaboration and time-to-resolution. Troubleshooting with third parties such as clients and service providers is greatly helped by the use of authoritative wire data.

**Hold Service Providers to account**  
There is no point in building a fast pricing engine if the market-data feeding it is slow. Corvil monitors the latency of the market-data service providers by comparing published timestamps to the received time, and the delta between A and B feeds. Gap detection in multicast data, plus TCP latency and retransmissions, complete the inbound picture. This enables SLAs to be established and dynamically monitored for compliance, ensuring best-quality market-data.