



CAPITAL MARKETS: TRADING IN THE CLOUD ADVISORY

Defining the right architecture and cloud migration strategy to meet your trading business goals.



CONTEXT

Cloud offers many benefits for trading organisations

- Capital Markets trading participants such as investment banks, asset managers, hedge funds and trading exchanges are seeking to realise the benefits of cloud technology such as agility, elastic scalability, resiliency and use of cloud native capabilities and services. This will enable them to better cope with things like volume growth and market volatility and enable them to accelerate innovation.
- Trading businesses traditionally have maintained large amounts of specialist infrastructure that must be refreshed on a 3-4 year cycle and have redundancy to cope with peaks in demand, DR etc along with teams to manage and support this. A move to cloud can help to significantly reduce this cost.

The move to cloud needs expert guidance

- Traditionally trading systems have been architected and engineered to run on on-premise infrastructure and feature advanced engineering techniques to optimise architecture, technical design and code along with infrastructure and networks to achieve high throughput, low latency and predictable performance.
- The move to cloud is non-trivial, on top of the typical considerations for application migration (e.g. 6 R's), expertise is required to ensure that the low / deterministic latency and high throughput needs of trading systems can be achieved in a cloud environment, and how hardware and network level specialist engineering techniques can translate to cloud.

BJSS have decades of experience in trading systems development and deep expertise across all major cloud service providers. We provide our clients with expert advice and guidance in building, migrating and running trading systems in the cloud.

TRADING IN THE CLOUD WORKSHOP

How do you migrate existing or build new trading solutions to run compliantly, securely and performantly in a cloud environment?

BJSS offers a free 1 hour for banks who are looking to:

- Improve the scale of their trading platforms.
- Optimise infrastructure costs.
- Achieve low-latency on the cloud.
- Leverage the opportunities of cloud technology for trading.
- Understand the technology options available and make the right choices.
- Take the optimal migration path.
- Deliver value iteratively and adapt as needed.

A PROVEN APPROACH AND FRAMEWORK

1

We will present the BJSS trading in the cloud framework, market insights and best practice recommendations.

UNDERSTAND YOUR TRADING BUSINESS

2

We will work together to understand and prioritise your business objectives and core performance requirements (e.g. latency, scalability, resiliency, availability, security).

IDENTIFY THE PRIORITY AREAS OF FOCUS

3

We will help you to identify areas that need further analysis in order to design and validate the target state architecture and roadmap

TRADING IN THE CLOUD ADVISORY CONSULTING

Building and migrating trading systems to run in a cloud environment

Needs and pain points

- Existing trading systems have **struggled to scale** to cope with increased trading activity leading to **performance and resiliency issues**.
- Desire to move to cloud for **infrastructure cost optimisation**.
- Existing systems are **optimised to run on physical** infrastructure and rely on multicast.
- Requirement to achieve **low-latency on cloud**.
- Desire to **optimise market data costs**.

Outcomes

- Precise definition of **performance and scale requirements**.
- An architecture to achieve **non-functional requirements needed whilst leveraging cloud benefits**.
- Engineering strategy for **performance optimisation**.
- **Reduced infrastructure cost base**.
- Improved **supportability / observability**.
- **Migration strategy and roadmap** for existing systems.
- **Make the right solution choices** through market knowledge and rigorous assessment.

Scope

- Existing architecture and system evaluation.
- Solution and infrastructure architecture.
- Delivery and migration strategy.

Team

- 1 x Enterprise Architect / Senior Tech Consultant
- 1 x Tech Consultant
- 1 x Cloud consultant

Discovery & Capture

SPRINT 1 (2 Weeks)

- Trading strategy and business objectives.
- Current pain points and constraints.
- Non-functional requirements.
- As-is solution landscape.
- Assess current cloud infrastructure.

Analyse & Assess

SPRINT 2 (2 Weeks)

- Current state solution assessment.
- Target state architecture – choices, trade-offs, solution options.
- Migration roadmap options development.

Finalise & Recommend

SPRINT 3 (2 Weeks)

- Target state architecture – finalise solution blueprint.
- Delivery approach and sequencing aligned to business objectives.
- High-level backlog definition.

TRADING IN THE CLOUD WAR REVIEW

The BJSS Well-Architected Review (WAR) for trading systems adapts the Microsoft WAR framework



Regulatory compliance

Architect for extreme and predictable performance

- Round-trip latency.
- Minimal jitter.
- High throughput.
- Consistent performance under during spikes.
- Scalability.
- Performant data distribution / messaging.

Ensure high-availability under market spikes and resiliency

- Fault-tolerant clustering.
- Seamless CR replication and failover.
- Automated recovery.
- Reliable messaging.

Ensure the highest levels of security and data encryption

- Authentication.
- Authorisation.
- Data encryption in transit and at rest.
- Domain and data segregation.
- OWASP compliance.

Management and monitoring of trading businesses

- Deployment and configuration automation and IaasC.
- Market operation (business monitoring, APIs and admin).
- Technical operation (monitoring, alerting, backups, logging, data mgmt).
- Performance monitoring.

Optimise compute and storage usage and costs

- Efficient compute management.
- Cost effective storage.
- Cost effective DR.

CASE STUDY

LOW LATENCY FX MATCHING ENGINE

TIER 1 TRADING VENUE

Strategy &
Architecture

UX design

Tech & Engineering

Data & analytics

A top tier global trading firm were **unable to respond to rapid changes in the market** to deliver better performance and new functionality due to the **lack of agility and scalability and high cost to change** of their existing technology platform

Low latency FX Trading Venue

A cross-functional BJSS team designed and built a robust low latency / high frequency (sub-millisecond) trading platform.

The platform was precision engineered from the ground up, designed for performance, scalability and extensibility to additional asset classes. The team hit aggressive delivery dates for a phased global roll-out.

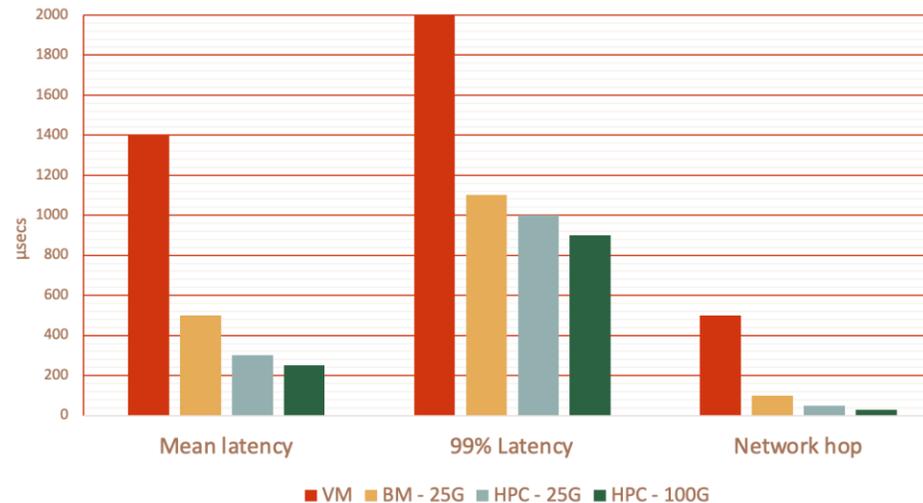
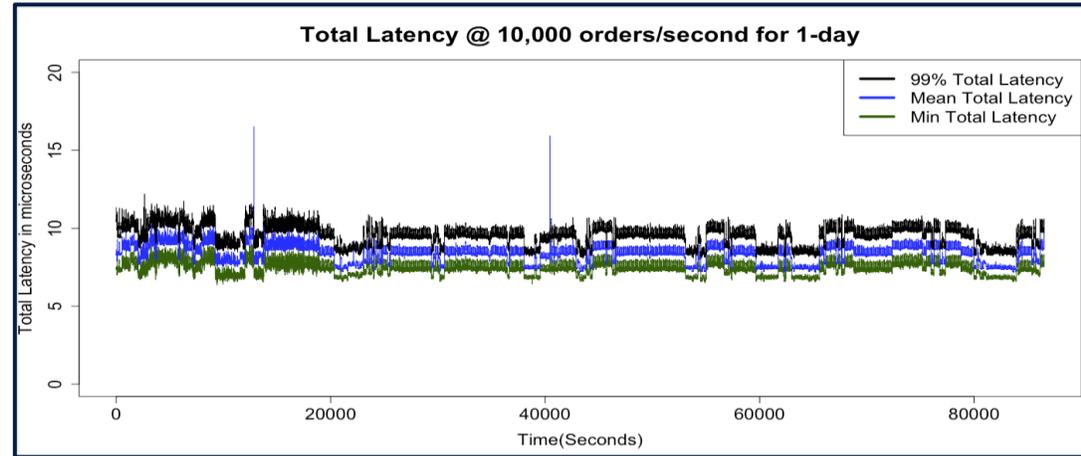
- Platform enabled client to grow to be market leader
- \$900Bn daily trading
- 60% of global interbank FX trades
- 1000's of transactions per second at sub-millisecond latency
- Phased replacement of existing solution

BJSS RESEARCH: TRADING IN THE CLOUD

BJSS have extensive experience building and optimising trading platforms to run in public cloud environments with low latency and predictable jitter.

BJSS published a [whitepaper](#) documenting our performance testing of an FX Trading System in three public clouds (AWS, Azure and OCI). We demonstrated that we could achieve deterministic latency for an FX Trade flow between an Order Book and Matching engine sub-millisecond at an order rate of 10,000 orders/second over standard TCP/IP.

Tested a real FX trading system in the public cloud and showed higher throughput and lower deterministic latency.



BJSS & MICROSOFT PARTNERSHIP

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**Microsoft
Partner**



Gold Application Development
Gold Application Integration
Gold Data Analytics
Gold Data Platform
Gold Cloud Platform
Gold Cloud Productivity
Gold Datacenter
Gold DevOps

- > Executive sponsor Derrick McCourt, Microsoft MD CSU UK
- > 28+ years working with Microsoft Technology
- > Over 330 Microsoft Certifications across 150+ people
- > Microsoft Co-Sell Ready, UK & US ECIF enabled
- > Close account alignment across industry and technology

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Migration & Modernisation
Programme Certified

Microsoft
Cloud Adoption Framework
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Kubernetes

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