

# The Race to Zero

## Ultra-low Latency Trading – Industry Context and Challenges

### Industry Context

A combination of increased competition, changing regulation and the growth of electronic trading has resulted in a massive growth and fragmentation of market data and order traffic in the financial markets.

In order to cater for this ever-increasing volume growth, trading firms and execution venues (Exchanges, ECNs, MTFs) are adapting their trading architecture for ultra-low latency, removing unnecessary network hops, increasing market data distribution bandwidth and developing optimized software solutions on horizontally scalable, low cost server platforms. In the search for ever lower latency trading firms are reducing:

- **Propagation latency** (the time it takes to deliver data from the trading venue)
- **Transmission latency** (relating to the speed of packet transmission, bandwidth and throughput)
- **Processing latency** through the use of multi-core servers and specialized low latency software architectures.

### Challenges

The challenges facing trading firms & execution venues can be summarized in terms of:

- **Capacity** – which is moving from 100s of millions to billions of order messages/day
- **Throughput** – which is moving from 100,000+ messages/sec to millions of messages/sec
- **Footprint** – which poses challenges in terms of data centre space, power and cooling.

While progress has been made in the development of low latency trading architectures, software-only solutions suffer from higher intrinsic latency, degraded performance in faster markets and micro-bursts, and the need for higher server capacity (increasing footprint).

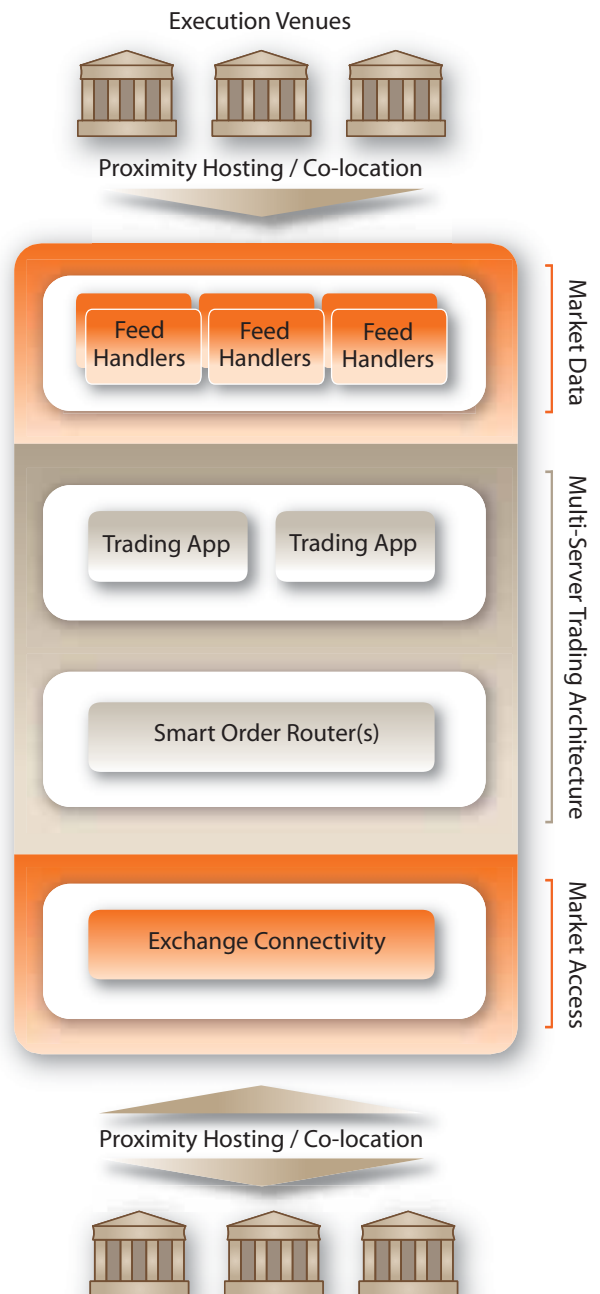
### Celoxica Accelerated Trading Solutions

Through a combination of leading edge software design and hardware acceleration our Container™ solutions offers:

- Deterministic performance (zero jitter)
- Ultra-low latency (measured in microseconds)
- Ultra-high throughput up to millions of messages per second
- Accelerated market data
- Accelerated market access

on a single server for both single and multi-market use cases.

### Single server, multi-market Celoxica Container™



# Global support, maintenance and professional services

## Support

On-going feed management and upgrade services ensure that your Celoxica solution is always up-to-date with the latest improvements. We also keep you current of any protocol or formatting changes instigated by the exchanges.

Our professional services team are on hand to provide implementation, project support and customized solutions' development to maximize the return on your investment with Celoxica.

## Service desk

Due to increasing demand for our solutions across different time zones and markets we have extended the operating hours of the service desk. The standard service is available during the market trading hours of all supported exchanges. Please contact us for information on our extended service options.

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If you are a proof of concept (POC) client, please channel all queries via your account manager or send an email to [POC@Celoxica.com](mailto:POC@Celoxica.com)

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