



Trading Analytics and Infrastructure: Blue sky between the clouds?

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Who we are

Based in the UK with an international network of 19 hosting locations.

Beeks provide shared and dedicated cross connects in the major international finance hubs across 200+ trading venues.

Infrastructure as a Service

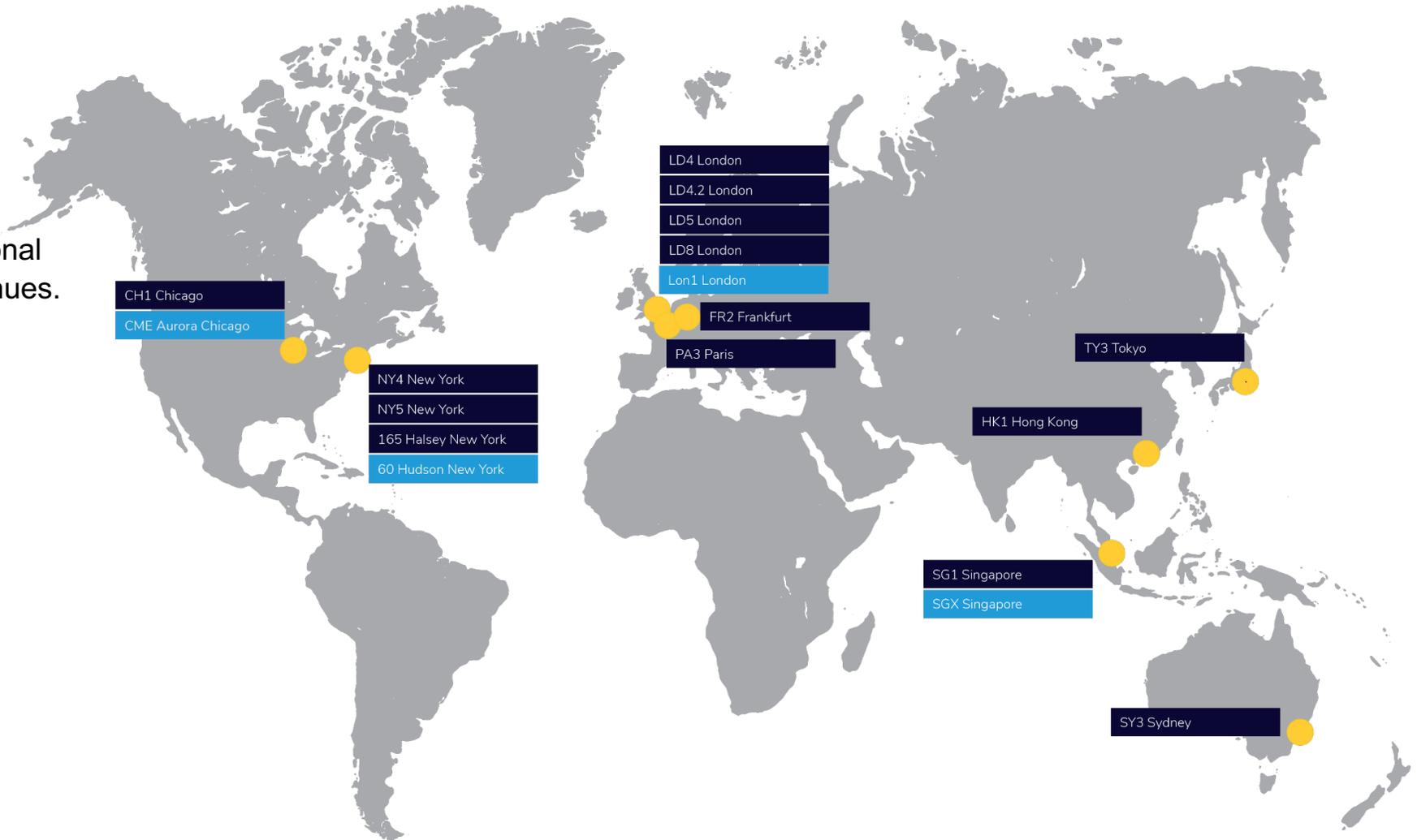
- Virtual Private Servers
- Dedicated Servers

Connectivity as a Service

- Cross connects
- Public cloud connectivity

Analytics

- Wire-level performance insight
- As a Service or Onsite



What we do



Cloud benefits

- ▶ Switch from capex to opex
- ▶ Pay as you Go
- ▶ Elastic scaling
- ▶ Agility
- ▶ Reliability
- ▶ Security



Sources: Oracle Architecture Center Solutions Playbook, IBM Cloud Learn Hub, Azure Cloud Adoption Framework, Google Cloud Adoption Framework, AWS Cloud Migration Overview

Cloud challenges for Trading

Challenges (May 2021)

- ▶ Precision timing
- ▶ Network timing visibility
- ▶ Data egress cost
- ▶ Security concerns
- ▶ Physical location
- ▶ Resilience model
- ▶ Full stack visibility

Commentary

RTS-25 compliant timing should be possible on Linux with care, but under 100us accuracy not possible currently as part of standard stack. May be enough for compliance, unlikely to be good enough for trade or price monitoring. ML approach may allow 100s of ns accuracy, given sufficient compute nodes.

Not available from any vendor. Traffic mirroring even without time has inconsistent support on the public clouds.

Well known cloud commercial issue. A challenge if you ever want to leave your chosen cloud, and you don't have the data stored anywhere else.

Cloud vendors gaining good accreditation and regulators are starting to think of the challenges. Ultimately, any organisation implementing in cloud needs to accept a trade-off between how much flexibility they allow their development teams, and how tight their security controls are.

You get to choose the country, and if lucky you choose the city. You don't get to choose the building.

Rightly or wrongly, exchanges have a strong interest in ensuring continued operation at their primary site. This is because a change in latency profile (which a physical switchover would cause) may result in business going to an alternative venue (or not trading) – even if the service is operating fine from the recovery site. This is not the model that cloud vendors encourage with Availability Zones etc.

Many challenges here. Maintaining a consistent latency profile is a challenge when you don't know the traffic profile going on underneath you. Some exchanges manage participant fairness by imposing consistent cable length requirements for client connections – allows 10s of nanosecond control (depending on tolerances). Some cloud native solutions are conceivable here, but not until network timing visibility improves in the cloud.

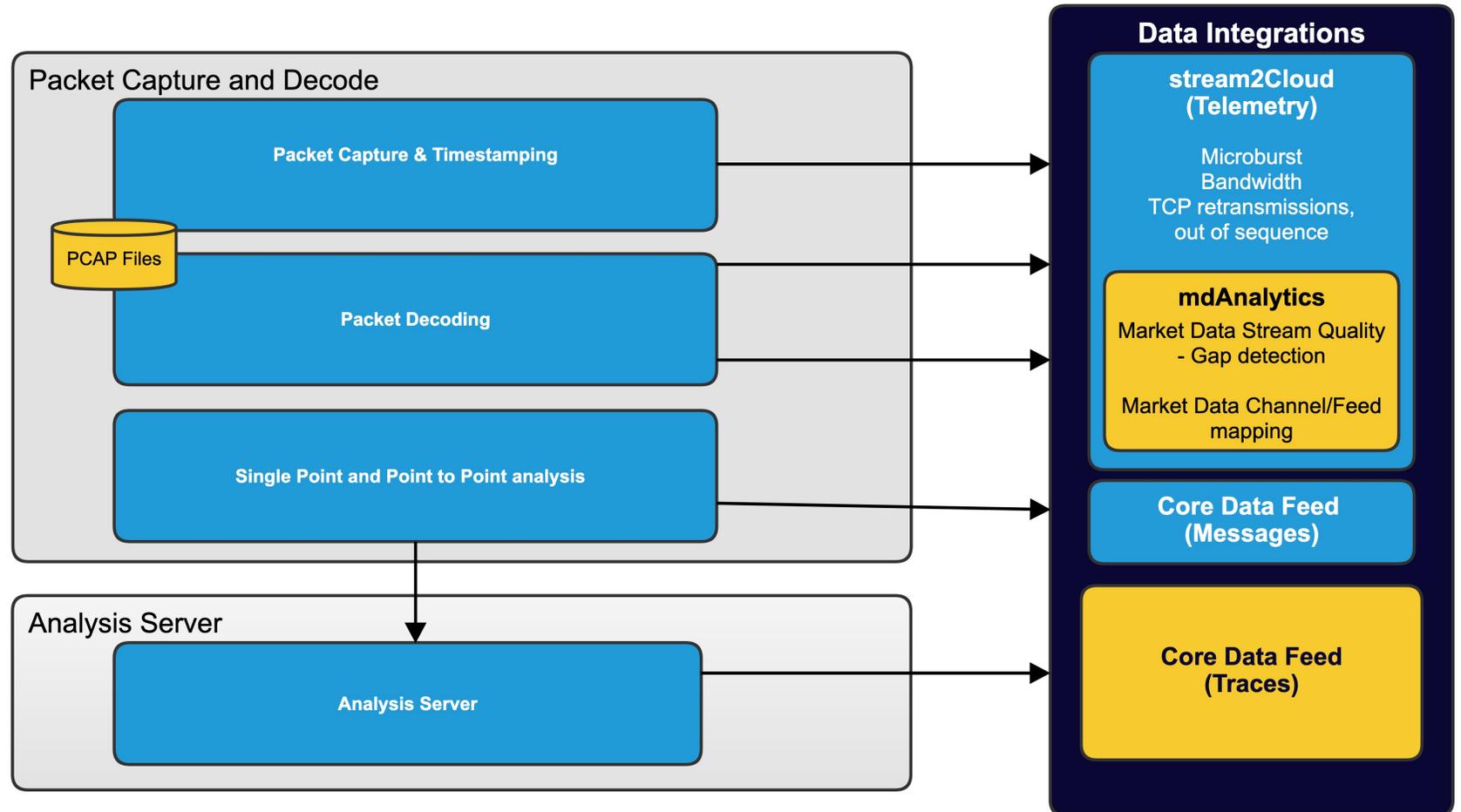


Beeks Analytics Architecture

Progressively richer analytics

Modular architecture allows unified view across diverse architectures.

Translate network traces into business-level knowledge



Pricing/Matching Engine performance

Feed Handler performance

Client performance reporting e.g. fill ratios/order to ack/order lifecycle analysis

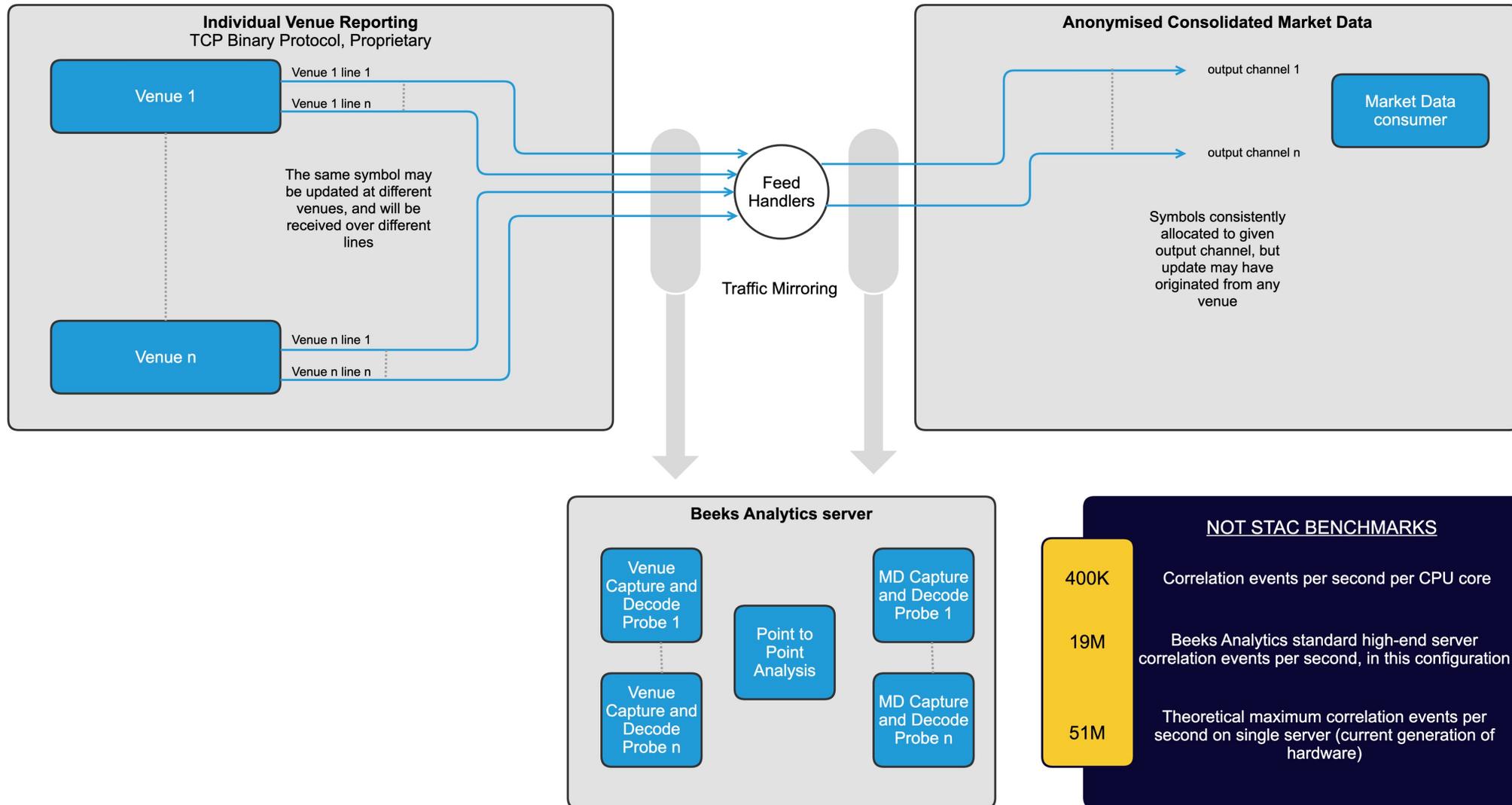
Market data feed latency and quality

Dynamic aggregation: slice and dice by symbol by venue, etc.

Proof of Innocence



Beeks Analytics example use case



Recap

Cloud Challenges for Trading

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For more information, further reading or to talk some more, please tick/check Beeks on your response card!



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