



FINANCIAL  
SERVICES  
**INFOPAPER**

# Introduction

Data centres can make the critical difference for buy-side financial services organisations. Whether practicing High Frequency Trading (HFT), Smart Order Routing (SOR) or both, getting the infrastructure right or wrong can make or break millions of pounds. So how can you tell if your data centre is working as hard as it should be for your business?

By looking at five key areas, location / latency, Total Cost of Service (TCS), on-ramp to cloud, connectivity and security, you can ensure your data centre is bringing you the best competitive advantage.

This infopaper examines each area in turn so you can make an informed decision and choose the most effective, efficient data centre that is right for you.





# 1 Location/Latency

Many finance organisations are now considering alternatives to the premium city centre providers. A hybrid model is the ideal solution where execution / matching engine servers are left in expensive ecosystem locations, but up to 80% of the remaining IT infrastructure is deployed at a more cost effective location. The savings on both space and power are so dramatic that even when the connectivity to virtualise the two locations is calculated, there is still a significant overall reduction in cost.

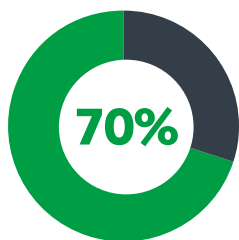
Although HFT has traditionally been the dominant strategy for buy-side financial services – accounting for over 70% of trade volumes in 2010 – the trading landscape is shifting. Today it makes up 50% of trade volumes with Smart Order Routing (SOR) principles becoming more popular.

HFT uses sophisticated technological tools and computer algorithms to rapidly trade securities. Its success depends on second-by-second trades and is reliant on technology to buy and sell huge volumes. The ability to move in and out of trading positions in fractions of a second is imperative and close proximity to trading exchanges essential. Because of this, many firms deployed entire IT systems at very expensive retail data centre facilities. These facilities, aware of the advantages of their proximity, charged premium rates for their “finance ecosystems”.

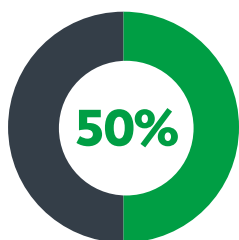
But don't be fooled. The distributed nature of the asset classes across the London metro footprint - from Slough, through the City and the Docklands - means that a data centre located in or around the M25 can just as efficiently provide the low latency connections required for fast access to exchanges in a colocation environment. And this can be achieved without the need to pay the ecosystem premium.

SOR is more about longer term trading strategies and could be more cost effective than those used by HFT. Financial services practicing SOR don't need to be so close to the exchange and techniques rely instead on deterministic latency connections. This being the case, many cost conscious firms would be well placed to put their SOR engines at the heart of the asset class being traded.

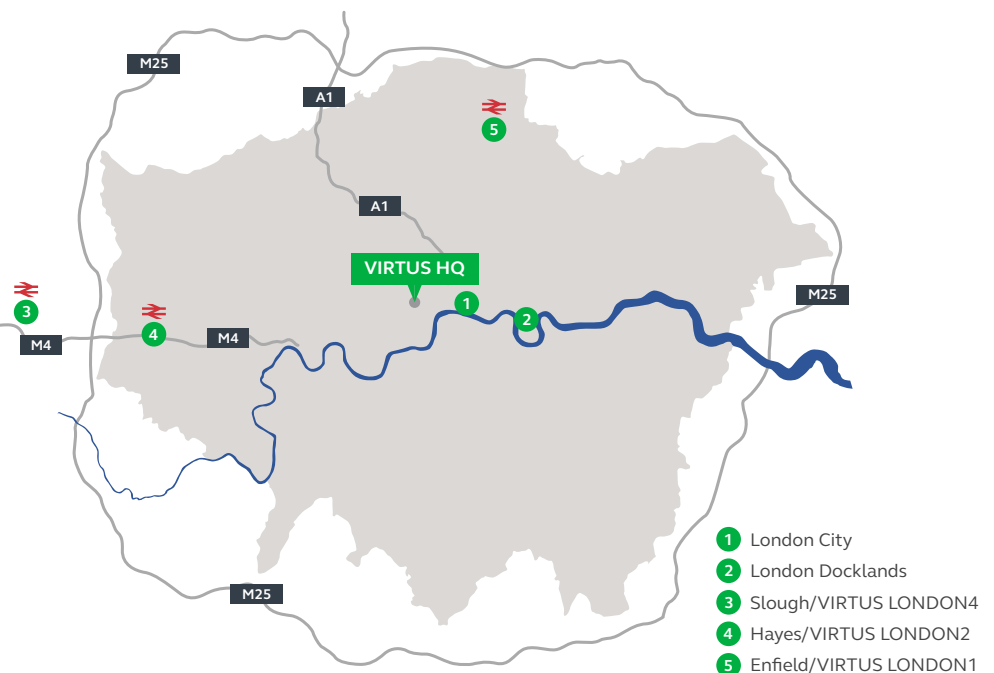
However, due to the different infrastructure needs of diverse strategies, it isn't necessary to operate all applications and back office functions from a premium priced location. With the rapid changes in technologies at every level of the IT stack there is value in challenging the traditional “all your eggs in one basket” deployment models of the past. Not only can significant savings be made by adopting a distributed IT deployment, increased resilience is achieved by using multiple sites.



70% of trade volumes in 2010



50% of trade volumes in 2016



# 2 Total Cost of Service



Historically, many larger financial services organisations built their own private data centres for proximity, security and control. However, recent independent industry reports indicate that it isn't financially viable to build a data centre for requirements of less than approximately 12MW of capacity.

Today, the data centre market has matured and buying colocation space has become the strategy of choice. Purchasing space brings additional benefits such as provider expertise, IT ownership, huge access to carriers, availability of contiguous spacing, no capital cost, lower Total Cost of Service (TCS), an ecosystem of partners and a predictable operational expenditure model.

But even data centres that were built 12 months ago are unlikely to offer the dramatic cost efficiencies that newer data centres achieve in running overheads such as cooling technologies. Modern data centres should be hyper efficient and provide a Data Centre Information Management (DCIM) capability - including power usage to-the-rack information - as part of a standard service. DCIM can provide the same level of control over a data centre deployment as if it were owned.

## Things to look out for when calculating TCS:

### 1. Lower build costs per MW of IT load

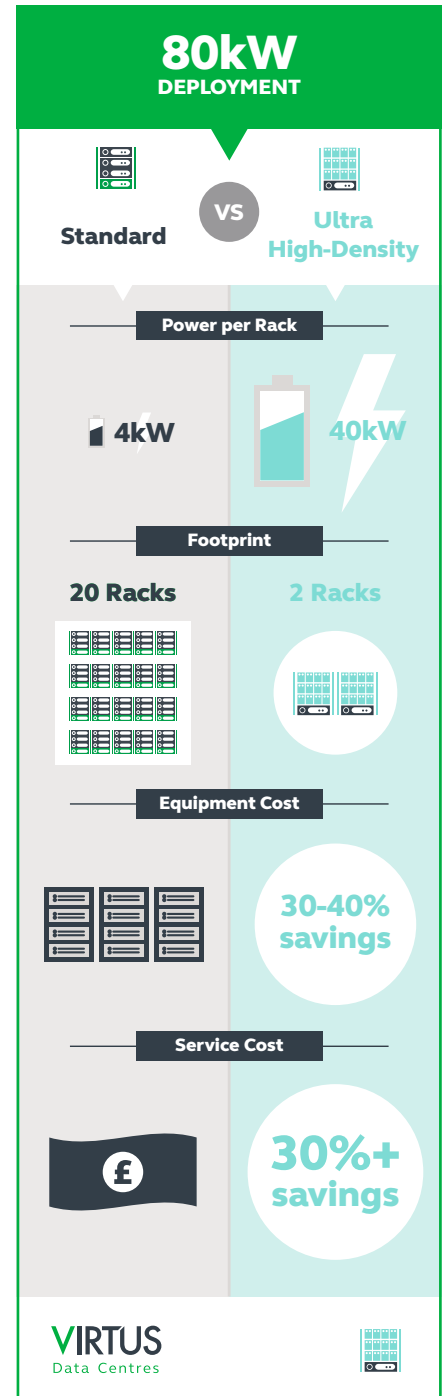
– Data centre providers can maximise the use of the latest modular development techniques based on years of experience. Having built strong relationships with suppliers over time, they can negotiate and drive down tender pricing. By using more cost effective, high-quality components, providers can build data centres at lower cost per MW, and the benefits are passed on to customers.

### 2. Reduced energy costs through low PUEs and ultra-efficient cooling technology

– New generation data centre providers use highly efficient cooling technologies such as indirect evaporative fresh-air cooling. The modular nature enables it to be scaled up in line with the number of servers that need cooling. Importantly, the data centre can achieve design PUE much sooner once operational – it could be years before less efficient data centres are able to do the same.

### 3. Flexibility to provide high-density cooling capability

– Generally, costs are driven on a per square metre basis, whilst power is charged on a per kW or rack basis. New generation data centres can cool racks drawing over 40kW (c. 5-6x conventional power densities) enabling colocation providers to charge less per rack or kW while achieving higher rents per unit of build cost. Pricing can be significantly reduced per kW or rack when higher densities are needed.





# 3 On-ramp to cloud



There is no doubt that clouds are growing and becoming more mainstream. To operate cloud infrastructures efficiently, financial services organisations should look to use both public and private cloud together; public cloud for access to massive compute capability for on demand computing when needed; and private cloud for processing and adding value to the data that they collect and the computations they do.

This is known as bimodal IT, which, according to Gartner's definition, "is the practice of managing two separate, coherent modes of IT delivery, one focussed on stability and the other on agility. Mode 1 is traditional and sequential, emphasising safety and accuracy. Mode 2 is exploratory and nonlinear, emphasising agility and speed."

In the case of cloud, Mode 1 would be a company's private cloud and owned data (for financial services it could be SOR or HFT) - which stays inside the company's domain. It could be colocation in a data centre that's been bought with owned servers or housed in a private building. Mode 2 would be where organisations take advantage of the huge, low cost compute power of public clouds such as Amazon or Google and access massive amounts of data.

Connectivity to the right networks is critical to make the cloud work, ensuring that multiple public clouds can be accessed to increase performance. This is termed "on-ramp to cloud". Companies should be aware that providers can build the best high performance computing platform and a data centre that is cost effective to run, but without connectivity to other clouds, businesses won't be able to introduce a hybrid cloud strategy.

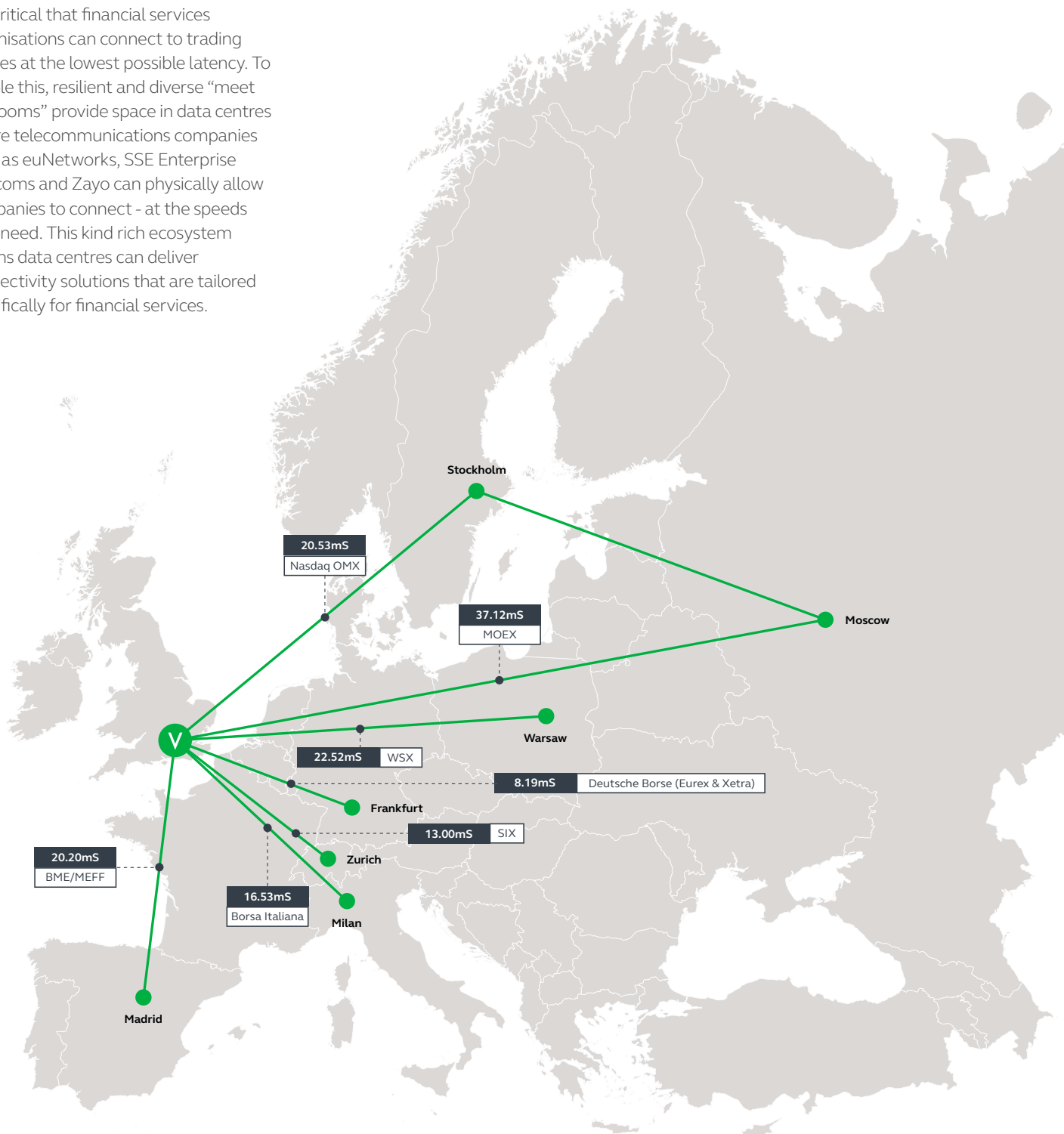
Specialist data centres will offer on-ramp to the cloud, providing cross connects to every public cloud needed. These data centres will also deliver high performance compute solutions, resulting in the perfect environment for financial services.

# 4 Connectivity



The financial services industry expects and requires ultralow-latency and reliability from data centre providers, with zero tolerance for downtime. As connectivity is so important to the sector, some providers have made it their mission to develop innovative networking services that deliver ultra-resilient solutions. Forward looking data centres have made the investment to introduce a fully diverse multi sub-duct network so carriers can easily interconnect.

It is critical that financial services organisations can connect to trading venues at the lowest possible latency. To enable this, resilient and diverse “meet me rooms” provide space in data centres where telecommunications companies such as euNetworks, SSE Enterprise Telecoms and Zayo can physically allow companies to connect - at the speeds they need. This kind rich ecosystem means data centres can deliver connectivity solutions that are tailored specifically for financial services.





# 5 Security

Security is one of the main reasons that financial services organisations traditionally preferred to build their own data centres. As this is becoming financially unviable, data centre providers must demonstrate that security is one of their highest priorities.

Businesses in specialist data centres are reassured by a Tier III certified, ultra-secure facility that provides 100 per cent uptime; protecting and connecting data, applications, networks and clouds and the global digital economy.



## Security requirements should be looked at in three key ways:

### 1 Physical

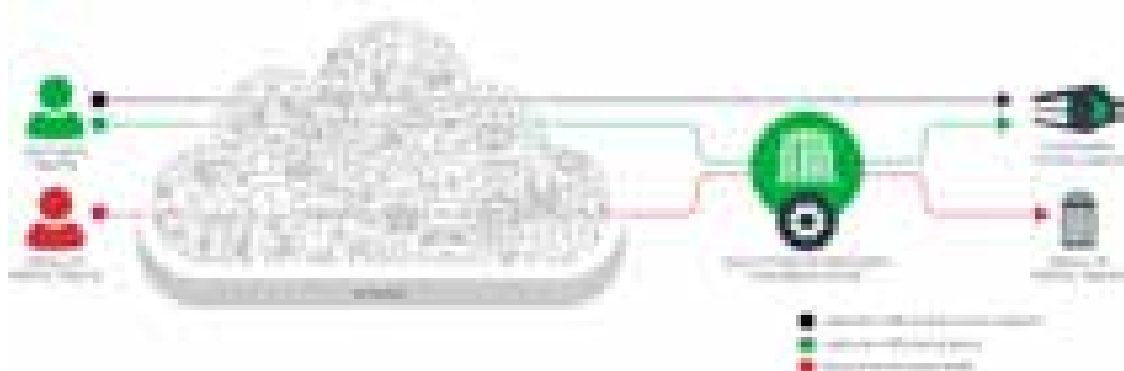
There should be at least seven layers of physical security that can be tailored for enhanced levels, as required. From perimeter fencing with intruder detection, access control, CCTV - external and internal - restricted pass code access, man and vehicle traps; data centres can guarantee the highest security needs that the financial services industry needs.

### 2 Process

ISO27001:2013 certification should be in place to evidence processes and procedures and show that every aspect of security is tested regularly.

### 3 Digital

Easy access to a choice of DDoS mitigation services should be available through an ecosystem. Providers that partner with key digital security vendors create a strong defence so businesses can deal with attacks should they materialise. DDoS Mitigation services deliver an enhanced network-based detection and mitigation scrubbing solution alongside network routing, rate limiting and IP filtering; as well as additional capabilities for application layer attacks including advanced behavioural analytics technology.





# Why VIRTUS?

We know that IT departments in the financial sector need to continue to drive revenues whilst tightly controlling costs to maximise margin and profits. VIRTUS has the solution to deliver the highest quality data centre for finance IT Infrastructures and exceptional market leading customer service with the brand promise of lowest **total cost of service**. Customers benefit from specialist attention for their own proposition growth within a superior colocation environment.

Located within London's metro, our data centres are in the right **locations** offering **security**, low latency and high **connectivity** for **on-ramp to cloud**. They are designed specifically to deliver flexibility.

VIRTUS customers have access to a host of features to detect and mitigate multi-vector DDoS attacks with unprecedented performance scalability and deployment flexibility, including features which validate, block or rate-limit traffic entering the network. This guarantees customer service availability is maintained no matter what attack type is used, be it: volumetric, protocol, resource or even an application-level attack.

Due to high customer demand, VIRTUS has become the UK's fastest growing data centre provider. We own, design, build and operate the country's most efficient and flexible data centres which have been recognised by the industry for being hyper efficient, delivering ultra-high density and providing highly interconnected facilities. Our goal is to invest in technology to optimise solutions and customer infrastructure support systems with minimum impact on the environment. In this way, cost savings can be transparently passed on to our customers. Financial services organisations can use our scalable infrastructure platform like a utility and plan ahead thanks to certainty over costs.

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## About VIRTUS

VIRTUS Data Centres, the UK's fastest growing data centre provider, owns, designs, builds and operates the country's most efficient and flexible data centres. VIRTUS leads the industry with award winning innovation in hyper efficient, Ultra High Density and highly interconnected facilities.

Located in and around London's metro, VIRTUS offers the best of traditional retail and wholesale colocation models, combining dedicated support and complementary ecosystems with low cost, scalable and custom solutions, in uniquely flexible and customer friendly packages. Customers also benefit from Tier III certified, ultra-secure facilities, that provide 100 per cent uptime; protecting and connecting data, applications, networks and clouds within VIRTUS Data Centres and the global digital economy.

**For more information please go to: [www.virtusdatacentres.com](http://www.virtusdatacentres.com)**

