

GFT > GET STARTED



# HPC in the cloud



## Is this you?



**Do you have a sprawling legacy grid platform in need of modernisation? Are you under-using expensive infrastructure in mutually incompatible silos? Do you face ever-increasing regulatory compute workloads that are hard to predict and costly to deliver to the business? If so, read on!**

**Working with GFT to deploy high performance computing (HPC) workloads to the cloud lets you deliver computing power to the business when they need it and react flexibly to uncertain markets and increasing regulation.**

**Many financial institutions are seeing ever-increasing demands for more compute power, to deal with: incoming regulation such as FRTB, increased business volumes, and market disrupting events such as Covid-19 and Brexit. Laser-focused on cost, our banking clients are looking to streamline or retire ageing server fleets, recover expensive datacentre space, remove on-premise operational complexity whilst bringing their internal grid platforms right up to date.**



The 'why?'

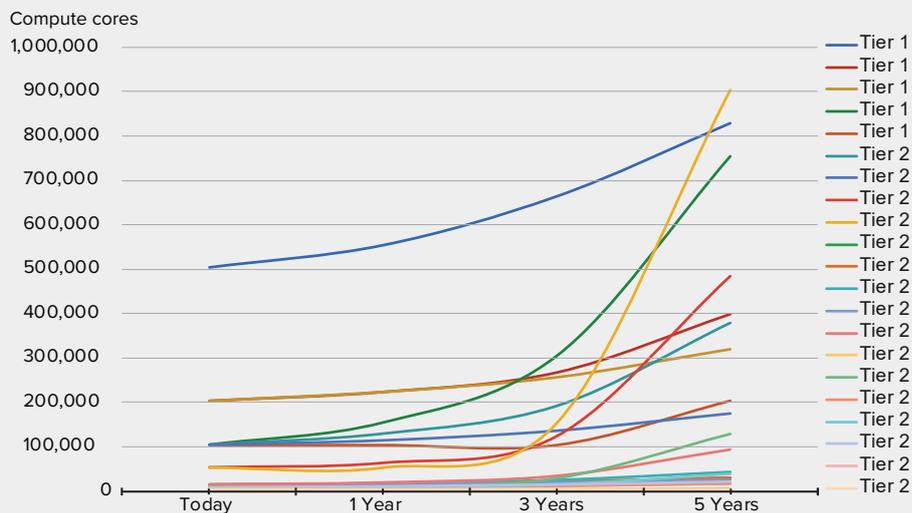
## Riding the HPC escalator



More than ever, accurate timely risk calculations for the desk and the regulator have a direct impact on the bottom line and are a major business enabler. The competitive advantage of precise risk and better capital management drives compute growth. With compute demands projected to exceed hundreds of thousands of cores, it is increasingly untenable trying to maintain traditional grid environments; moving grid computing to cloud can reduce operational complexity, dramatically improve scalability, resilience and agility, whilst offering bottom-line savings through the use of heavily discounted bulk usage cloud pricing.

Over the past decade, the importance of risk management within financial institutions has risen dramatically, as have the prevalence and sophistication of the tools that service it. High performance computing (HPC) grids have enabled financial institutions to dramatically increase the efficiency of their front office and risk calculations. Cloud computing now offers scalability and flexibility to HPC grids, and the ability to move away from those restrictive, legacy, on-premise architectures.

### HPC forecasted growth over one, three and five years amongst tier 1 and 2 banks



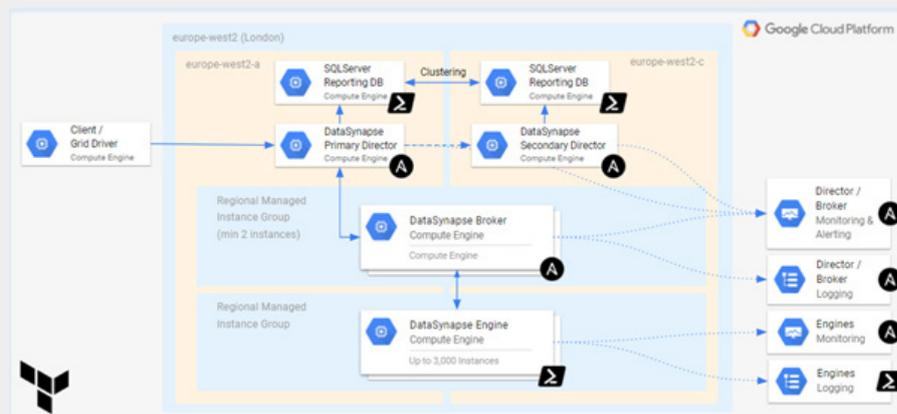
The 'how?'

## GFT HPC accelerator



GFT has extensive experience with tier one banks in HPC operations, deployment and modernisation on-premise and in the cloud. We can help optimise and enhance on-premise environments, build new environments in the cloud or architect hybrid solutions with a managed migration service to deliver a fully cloud-based solution. Partnering with the major public cloud vendors GCP, AWS and Azure and with grid middleware vendors TIBCO, GFT's engineers fuse cutting-edge DevOps tooling and methodologies with solid traditional infrastructure management skills.

### Example of a highly resilient scalable GridServer implementation



## Getting started



GFT has made substantial investments in tools and people and has a strong HPC practice. Our HPC accelerator tools can create TIBCO GridServer environments in minutes, run compute at scale, then tear them down when workloads are complete. Our open source cloud landing zone product, Tranquillity Base, automates building your cloud framework and our HPC accelerator automates grid builds. Whatever your cloud ambitions and the scale of your application requirements, we can work with you to **assess, plan and implement** your cloud migration on every step of your cloud journey.



## Size of engagement



### EXTRA SMALL (Proof of concept) 2 days

- Introduction to high performance computing (HPC)
- Review of business needs and existing infrastructure
- Demonstration of GFT's HPC accelerator in a sandbox

Hold an interactive workshop with the customer to develop understanding of requirements, explore the marketplace for HPC on the cloud and demonstrate GFT's HPC accelerator technology.

### SMALL (Proof of value) 4 – 6 weeks

- Senior architect with DevOps support
- Build out proof of concept landing zones
- Deploy sample cloud infrastructure and HPC components
- Demonstrate immediate business value by running your test benchmarks

Working with your developers and engineers to create a functional POC cloud-only or hybrid HPC deployment.

You will be able to benchmark cloud resources versus on-premise and demonstrate 'proof of value'.

### MEDIUM (Production pilot) 10 – 12 weeks

- All deliverables of proof of value phase
- Pilot migration delivers a suitable HPC application into production
- Delivery of minimum viable product (MVP) infrastructure-as-code deployment automation

With a pilot application in place, your team will gain experience operating HPC in the cloud.

The team understands the scope and challenges of completing other application migrations with different challenges.

### LARGE (Lighthouse projects) circa. 6 months per project

- Full production migration of business-critical application
- Robust productionised implementation with site reliability engineer (SRE) features such as monitoring, alerting, failover and disaster recovery

GFT application developers can work with our DevOps infrastructure teams to deliver a full production HPC service in the cloud, supporting multiple workloads and a variety of clients.

Handover includes production-ready infrastructure code and operational support processes.

## Success story – HSBC migration to cloud



One of Google Cloud Platform's tier one banking clients wanted to migrate its Equities risk processing workload using TIBCO GridServer onto GCP. This was a particularly urgent need due to a combination of a pressing hardware and software refresh requirement as well as strong demand for increased compute capacity due to impending new financial regulations. Like many such on-premise environments, Equities was facing an increasingly high cost for their hardware estate and inefficient usage due to fragmentation across application silos.

Aside from Equities, HSBC also used GridServer for running HPC workloads for Fixed Income, FX Options, Market Risk and Credit Risk. GFT was engaged by Google to develop a deployable reference architecture for running GridServer on GCP to be used in the Equities migration, then reused for other applications migrating to GCP.

GFT deployed a full team consisting of an HPC cloud architect/project manager and two cloud DevOps engineers to the project for two months. We designed a hybrid cloud model for the deployable reference

architecture and created a backlog in order to deliver the project in an agile fashion, with weekly sprints and 'show and tells'.

The backlog included 'user stories' to create a basic GridServer GCP deployment; automated using Terraform, Ansible and Powershell. We incorporated networking and security best practices, implemented autoscaling functionality using both CPU metrics and a custom metric reading the performance data from GridServer. Other features of the deployment included full encryption using Customer Managed Encryption Keys (CMEK), integration of logging and monitoring activity with Stackdriver, and implementation of DevOps practices to deploy code payloads using a Jenkins CI/CD pipeline. We also included a demonstration of visual analytics of GridServer workloads through integration with TIBCO's Spotfire tool.

The reference architecture is now available and has been used to migrate Equities workloads to GCP. The Fixed Income business is also planning to use the reference architecture to migrate, with other areas in the bank expressing an interest in using the reference architecture.

Since completion, the client has continued a full-scale engagement with GFT application developers, helping bank teams to migrate their applications to use

GCP and DevOps engineers generalising the cloud architecture across multiple business lines.

The main benefits delivered by the reference architecture are the ability to 'stand up' and 'tear down' a full GridServer environment at the touch of a button, parameterisable engine types and initial engine pool sizes, enabling cost-optimisation, quicker time-to-market for new HPC projects, ability to economically run a full-scale UAT and to easily support exceptional workloads such as VaR re-runs. The reference architecture can be easily modified to support AWS, IBM Spectrum Symphony, etc.

From a business perspective, the client has made substantial in-year savings on internal infrastructure costs and has been able to scale their grid environment as needed to meet extraordinary demands for additional risk calculations due to market uncertainty around Covid-19 and Brexit. Their ongoing running costs are now around 60% of their equivalent for on-premise infrastructure with greater flexibility and direct ownership of their grids by the application owners.

## Our credentials



GFT has a deep pool of expertise across banking and financial services in general and HPC in particular. Our team contains architects with hands-on operational experience of some of the industry's largest grid platforms, developers with

experience of many risk platforms and a strong DevOps function. Our business-focused consultants have delivered key digital and cloud transformation projects to many major financial institutions around the globe.



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### About GFT



GFT Technologies SE is a global technology partner focused on digital transformation in the financial sector. Founded in 1987, we have over 6,000 specialists in 15 countries.

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