



Best practices guide

# Deliver higher revenue and margins with innovative trading solutions

Best practices for the modern data centre



**Hewlett Packard**  
Enterprise



In the financial services industry (FSI), high-performance compute infrastructure is not optional; it's a prerequisite for survival. No other industry generates more data, and few face the combination of challenges that financial services does: a rapidly changing competitive landscape, a complex regulatory environment, tightening margin pressure, exponential data growth, and demanding performance service-level agreements (SLAs).

To grow revenue, increase margins, and maintain customer loyalty, you have to modernise your technology. CIOs must leverage limited IT budgets to bring technology advances to the table that can create and sustain competitive advantage. New IT solutions must increase speed, scalability, and agility by several orders of magnitude while also improving operational efficiency and reducing costs.

In particular, there are three key areas where modernising technology can drive consistent competitive advantage for financial services organisations:

- **Risk compliant archive:** The huge proliferation of data requires new solutions to manage, protect, and archive information efficiently to meet regulatory compliance needs.
- **High-frequency trading:** Faster processing delivers direct competitive advantage, creating a technology “arms race” for performance in connectivity, data access, computation, and analytics.
- **Trader workstations:** The performance requirements of traders far exceed those of other employees, requiring simultaneous operation of many compute and graphic-intensive applications.

Financial institutions need compute solutions optimised for these key workloads to drive competitive advantage and differentiation, and to mitigate regulatory compliance risks.

Let's take a closer look at each of these three key workload areas.

In the U.S. alone, there are over 8,000 statutes and regulations governing financial data retention.

HPE Risk Compliant Archiving infrastructure provides a cost-effective solution that scales to multiple petabytes and can accommodate the entire enterprise.

## Risk compliant archive

Government agencies such as the Securities Exchange Commission (SEC) and the Federal Trade Commission (FTC) mandate data retention requirements for financial institutions in the U.S. Laws including Sarbanes-Oxley, Dodd-Frank, and SEC rule 17a-4(f) rules weave a complex tapestry of compliance requirements, with over 8,000 statutes and regulations governing financial data retention. Worldwide, similar agencies establish and monitor compliance in other developed nations.

Data retention regulations cover a broad span of information including email, financial transactions, policies, and public offerings. The integrity of the original data must be preserved while allowing quick access for business operations and legal proceedings. Legal holds and other actions may define special retention policies for targeted subsets of archived data. Audit trails of record access and actions taken must be captured and maintained. Retention periods typically range from seven to 10 years, but can extend into decades. Non-compliance can result in heavy fines, penalties, and even imprisonment.

Financial institutions generate petabytes of data. Traditional storage or backup solutions do not scale to the petabyte level and would be prohibitively expensive to own and operate if they did.

The traditional approach, using dedicated storage appliances, has some distinct disadvantages. First, there tends to be a strong vendor lock-in, with proprietary solutions causing increased effort in operation and maintenance. Data migrations are time and cost intensive. Solutions tend to be siloed by business unit or even by application, making it difficult for legal and compliance teams to identify the data they need to respond to reporting and discovery requests. Siloed solutions are also usually overprovisioned, adding unnecessary capital and operational expense.

Hewlett Packard Enterprise takes a different approach with Risk Compliant Archiving by combining industry-standard, high-density x86 servers with software-defined storage and archive technology. HPE Risk Compliant Archiving includes three components:

- **HPE Apollo 4000 server family** is optimised for storage density, cost, and performance at petabyte scale, with hot-plug components for easy serviceability.
- **Scality RING** delivers software-defined distributed storage management that can easily scale to hundreds of petabytes and trillions of objects with full data protection, 100 per cent uptime, and multi-protocol support.
- **iTernity iCAS** provides a patented and certified<sup>1</sup> solution for data retention management that secures data against manipulation and unauthorised deletion, enforces policy-based data retention and disposal, and maintains comprehensive audit trails.

<sup>1</sup> Certified by Cohasset Association and KPMG for storage and audit requirements

Together, this combined infrastructure solution can accommodate the entire enterprise, eliminating data silos and simplifying enterprise-level storage infrastructures while adhering to regulatory compliance standards. The value proposition is simple:

- 100 per cent data availability with Scality RING<sup>2</sup>
- Secure and protected data through use of Advanced Encryption Standard-256 (AES-256) encryption and erasure coding
- Reduced hardware spending and greater flexibility through the use of industry-standard x86 high-density servers
- Simplified operations with a single repository for all data, reducing departmental silos
- Improved retention management supporting defensible disposal policies
- Lower total cost of ownership than legacy storage (up to 70 percent lower) through perpetual licensing, improved retention management, and erasure coding, which eliminates the need for multiple archived data copies

HPE Risk Compliant Archiving provides a cost-effective solution that scales to multiple petabytes and can accommodate the entire enterprise.

## High-frequency trading (HFT)

In a fraction of a second, today's high-frequency trader can execute over 10,000 trades. Before electronic trading became the norm, it could take even the most seasoned trader a minute or two to execute each individual trade. Today, machines perform these same tasks in less than half a millionth of a second, over one million times faster than the human brain can make a decision.<sup>3</sup>

In the early days of HFT, executing orders as quickly as possible was enough to compete, but the propagation of high-performance computing has made fast processing achievable for nearly every trader. Now, high quality, insight-based trading analytics, and tools have become equally important differentiators.

For every trade, real-time data from exchanges is received and quickly analysed to enable buy or sell decision-making. Then trade orders are fired back to the exchanges for execution and confirmation. There are two distinct use cases: one for the trader where it's critical to submit orders as fast as possible, and one for the exchange, where orders are recorded and bids and asks are matched to complete a trade. Speed is of the essence at both ends of the transaction.

There is probably no industry with a more direct correlation between revenue and the speed of technology. Every fraction of a second saved in trading translates into additional revenue for traders. Extreme computing power has not only become a key differentiator in high-frequency trading, but crucial to survival. There's no such thing as "fast enough" for high-frequency traders.

**HPE Trade and Match Server** solution is optimised for trading applications that perform better at maximised frequency to minimise latency for trading operations.

<sup>2</sup> Source: [scality.com/ring/object-storage-overview/](https://scality.com/ring/object-storage-overview/)

<sup>3</sup> How Fast is High-Frequency Trading? Faster Than You Think, Equedia Investment Research, 2015, [equedia.com/how-fast-is-high-frequency-trading](https://equedia.com/how-fast-is-high-frequency-trading)

**HPE's Trade and Match Server Solution** is designed to meet these performance requirements. The solution is based on **HPE Apollo 2000** Systems, purpose-built to be dense x86 server, and optimised for trading workloads. Special BIOS and configuration tools enable overclocking for trader applications. These applications perform better at maximised frequency to minimise latency for trading operations. Configurations are right-sized to meet the standard power limitations of exchange co-location facilities, allowing for easy co-location to further decrease latency.

The benefits of this solution include:

- Faster trade processing, allowing traders to make more money for their clients and themselves
- Taking advantage of an exchange's value-added services to easily deploy infrastructure in proximity to exchanges to minimise latency
- Overclocking allows for improved frequency, reducing hardware spend
- Energy and space-efficient x86 server platforms reduce operating costs with hot-plug components for easy serviceability and rapid scaling

Robust computing infrastructures capable of high-speed, high-intelligence trade transactions are a make or break for the HFT community. Firms that are able to keep pace with computing needs in this new era of finance will be able to inspire investor confidence and reap greater financial returns.

## Trader workstations for graphic-intensive applications

At the same time that automated high-frequency trades occur, traders also review data from financial applications and services like Bloomberg, Reuters, X\_trader, and their own Big Data analytics platforms to support manual trading. Staying on top of real-time information from dozens of sources requires workstation capabilities that go far beyond the needs of the average user. A typical trader workstation might include four or more HD monitors, each displaying data from multiple graphic-intensive applications, all running simultaneously.

Businesses have tried multiple approaches to meet this challenge, from providing traders with multiple physical workstations to creating remote desktops powered by blade servers with complex network configurations to combat latency. These solutions have provided varying degrees of utility, but none of them provide the combination of cost efficiency, performance, agility, centralised management, and compliance required to maximise the cost effectiveness and efficiency of trader-workstation environments.

The HPE Moonshot Trader Workstation utilises HPE ProLiant m710 servers that can support up to 45 servers, storage, and networking in 4.3U rack space. Each module includes a built-in GPU and all-flash storage for a faster response time.



**HPE Moonshot Trader Workstations** combine HPE ProLiant servers with Citrix® XenDesktop® connected to thin clients in the workspace, creating a package purpose-built for traders that meets their requirements for blazing speed, accessibility, efficiency, and ergonomics. Users of traditional virtual desktop infrastructure (VDI) environments share a physical server and virtual resources, and therefore have to accept loss in performance. HPE Moonshot Hosted Desktop Infrastructure (HDI) offers a dedicated graphics and processor service to every user without the need for additional virtualisation technology or the associated complexity (i.e., no hypervisor layer). One common platform provides for simple management, fast deployment, and rapid scalability.

Benefits of this solution include:

- Excellent compute and graphics performance that maximises trader productivity
- The cost, management, and business continuity advantages of a centralised and standardised IT infrastructure
- High security with an encrypted data connection that meets security and compliance requirements

HPE Moonshot Trader Workstation provides an uncompromising trading experience with superior computing and graphics performance, high availability to enhance trader productivity, and the simplicity of centralised infrastructure deployment and management, producing a lower TCO to meet the budget constraints of cost-conscious IT departments.

## HPE Services

It is critical to respond quickly to competitive challenges and new opportunities. This requires flexibility and adaptability from your IT organisation. Hewlett Packard Enterprise is uniquely positioned to provide consistent, global, end-to-end consulting and support to help you get the most out of your data and your HPE IT investment—and focus on driving business growth and innovation.

HPE workload and platform advisory services are key to helping you assess the suitability of workloads for scalable infrastructure, giving key stakeholders and decision makers the help necessary to determine the right migration strategy. Experienced and trusted HPE experts will be there to help provide stability and guidance to support your high-performance computing infrastructure.



## Conclusion

FSI businesses have an unprecedented opportunity to modernise IT with new solutions that can grow revenue, increase margins, enhance customer engagement, and competitive advantage. Three areas in particular, risk compliant archive, high-frequency trading infrastructure, and trader workstations for graphic-intensive applications, provide significant opportunities for IT to meet rapidly accelerating performance and compliance requirements. Hewlett Packard Enterprise has FSI solutions optimised to meet these challenges.

## HPE value proposition to FSI

- 1 Proven leader**
  - Leading presence in FSI as HPE infrastructure processes two out of every three credit card transactions globally
  - HPE ranks 2nd in the Annual Fintech 25 by American Banker and IDC Financial Insights
- 2 Certified solutions**
  - End-to-end computing solutions that optimize transactions for speed and volume
  - Solutions target the entire financial transaction ecosystem, from network to compute systems to customer end points
- 3 Secured infrastructure**
  - Robust compliance and risk management portfolio helps clients create a security infrastructure for proactive regulatory compliance, and manages risk
  - Lowers risk so profits can grow
- 4 Resilient hardware**
  - Built-in resiliency technologies in HPE servers
  - High availability to ensure continuous availability of time-critical financial services
- 5 Automated efficiencies**
  - Efficiencies based on automated server management
  - Enabled for cloud solutions

## Best practices guide

Today, businesses must take a different approach to their IT infrastructure. This starts with industry-leading servers that form the heart of the IT infrastructure and run the application workloads that deliver business performance.

Accelerate your business and take it to the next level with Hewlett Packard Enterprise **infrastructure for financial services**.

Learn more at  
**[hpe.com/servers/fsi-solutions](http://hpe.com/servers/fsi-solutions)**  
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