

## Financial firms will need major trading risk infrastructure upgrades for FRTB compliance

Among the necessary technology upgrades are additional computational and historical data storage capacity, scalable horsepower, continuous monitoring, and back-testing.

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AS FINANCIAL INSTITUTIONS GEAR UP to meet Fundamental Review of the Trading Book (FRTB) practices, many are facing a hard truth: Their trading-risk infrastructures are too underpowered to handle the data volume and processing demands of compliance.

**FRTB** requires banks to provide evidence of sufficient market liquidity related to positions in their trading books that are capitalized using approved models and that are based on “real” price observations, including actual trades and committed quotes. The adoption of FRTB rules presents major challenges for banks, however — the most pressing being the need to overhaul market risk infrastructure technology to dramatically boost scalability and performance. Additional computational and historical data storage capacity is required to process unprecedented volumes of disparate data and accommodate real-time data ingestion. At the same time, scalable horsepower is essential for handling an array of complex calculations, from qualitative impact studies that evaluate the best FRTB model to the application of machine learning and artificial intelligence (AI) in complex financial modeling and simulation.

Under FRTB rules, banks can use a standardized approach to calculating capital or create their own customized internal models. In either case, monitoring and back-testing needs must be supported to ensure the modeling calculations are accurate. The international regulation, developed by the Basel Committee on Banking Supervision (BCBS) as part of Basel III, has been pushed back several times and is now slated to go into effect in January 2023.

Currently, most banks are not prepared for the rigors of FRTB compliance. The norm is to maintain separate architectures for risk and financials, including different silos for market-data sources, risk factors, and pricing models. This can lead to contradictory and confusing results. Also, front and back offices rely far too much on manual processes, which can trigger inefficiencies and ineffective reporting.

According to Cloudera estimates based on market insights, FRTB demands roughly a 24x boost in historical data storage and a 30x increase in computational capacity. Other requirements include: a centralized and secure single view of risk data; a complete audit trail for data, models, and risk calculations; and a machine learning operations (Ops) framework that supports regular back testing and required profit and loss attribution testing.

## The optimal infrastructure to support FRTB

Investing in infrastructure isn't glamorous, but a thoughtful rebuild will pay dividends for years as FRTB introduces many new elements to Basel's market-risk framework. In the FRTB Readiness Report released by HIS Markit, only 44% of global respondents said they believe their institutions will be ready to deal with the FRTB by the compliance deadline. Specifically, the report found that a mix of pooling and proxying will deliver the best capital impact for banks, but 38% of responding companies haven't started devising their strategies.

"What's changed is the sheer volume of data and the extensiveness of the additional calculations that have to run," says Cindy Maike, vice president of industry solutions at Cloudera. "That is creating stress on infrastructure and the ability to support these computations."

The key to producing reliable, fast, high-quality measurements and a complete risk profile and profitability model is data — lots of it, coming from myriad sources, including third parties (Bloomberg, for example) along with historical, real-time market, trading, and risk class data. As a result, the ability to source, manage, and integrate data from multiple sources is critical to FRTB compliance. Data could be structured or unstructured and reside anywhere, across private, public, and edge clouds.

In addition to data management, governance, and data lineage capabilities, machine learning and AI ops frameworks are required to automate data cleansing, facilitate report production, and deliver actionable intelligence. High-performance and scalable computational horsepower, high-speed memory, and high-efficiency, secure, resilient storage infrastructure are necessary to handle calculations without bottlenecks.

## Solving the FRTB challenge

The Cloudera, Dell, and Intel partnership can help meet these challenges. For starters, the Cloudera Data Platform (CDP) ingests any type of data from anywhere in real time along with transactional historical information, providing full data lineage. Shared data experience (SDX) is a fundamental part of the Cloudera Data Platform architecture, unlike other vendors' bolt-on approaches to security and governance. Independently from computing and storage layers, SDX delivers an integrated set of security and governance technologies built on metadata and persistent context across all analytics and public and private clouds. Consistent data context simplifies the delivery of data and analytics with a multitenant data access model that is

defined once and seamlessly applied everywhere. These are all critical elements supporting FRTB's requirements and provide a clear, holistic or single-pane view of the front-to-back trading risk data flow supporting the risk models.

"When you're dealing with different geographies where data can fundamentally be stored, having a single pane of glass tells you what, where, and how you can interact with data," Maike explains. "Data lineage enables you to track and prove everything that went on with the data and calculations for meeting compliance standards."

Dell EMC's latest infrastructure delivers the computing, storage, and networking at scale to accommodate the data surge. In addition to maximum scalability and performance, Dell EMC platforms deliver virtual provisioning for improved capacity utilization, integrated data protection at the storage processor level, and reduced ownership costs.

Intel's third-generation Xeon Scalable processors establish a leap forward in data center agility and scalability, converging computing, storage, memory, networking, and security to optimize high-performance data management:

- **AVX-512** boosts performance and throughput for the most demanding computational applications.
- **Deep Learning Boost** with the industry's first x86 support of Brain Floating Point 16-bit (bfloat16) and Vector Neural Network Instructions (VNNI) brings enhanced AI inference and training performance for AI-infused, real-time calculations.
- **Optane persistent memory** adds affordable, scalable memory capacity and combines industry-leading low-latency, ultrahigh endurance, high QoS, and high throughput. This allows the creation of solutions to remove data bottlenecks and unleash CPU utilization.

Through their joint effort, Cloudera, Dell, and Intel are developing architectures that ensure optimal performance specific to datacentric workloads such as FRTB.

## The bottom line

Modernizing infrastructure for FRTB will be complex and costly. With an ecosystem of partners continuously pushing the performance envelope across software, computing capacity, and secure storage spectrums, however, financial institutions can proceed with confidence.

**For more information on the Cloudera, Dell, and Intel solution, visit [Delltechnologies.com/AI](https://Delltechnologies.com/AI).**