

Aster Data® nCluster®: Ultra-fast Risk Analytics and Data Processing

Risk management is becoming an increasingly critical function as financial firms and regulators deal with the current economic crisis. It is widely agreed that one of the main changes emerging from the current crisis will be the requirement of a consolidated view of internal and external risks that a financial firm is exposed to. Mortgage companies, consumer banks, investment banks, insurers, hedge funds, and more will have to update their risk management systems and practices.

Several regulatory measures such as Basel II, Solvency 2, USA Patriot Act, and Reg NMS are being implemented to provide a higher level of risk transparency across the whole financial system. Similarly, financial services companies are now creating internal processes and controls that provide increased risk visibility at various levels of the organization.

To enable better risk management practices, industry regulators and financial firm managers will require access to timely and consolidated risk information derived from the most granular transactions. While an investment bank may want to know the impact of every derivative trade on its overall risk exposure, a consumer bank needs to have a consolidated view of customer-level risk across the portfolio of credit cards, auto loans, mortgages, etc. Such granular information can result in huge data volumes. To make the situation even more difficult, the new environment imposes tighter time lines for risk analysis and reporting. The combination of high data volumes and faster performance needs is making the existing risk systems ineffective in meeting the new risk management objectives of financial firms.

Aster Data nCluster: a Massively Parallel Analytic Platform for Risk Analytics

Aster Data's nCluster is the first massively parallel (MPP) data warehouse architecture that allows applications to be fully embedded within the database engine to enable ultra-fast, deep analysis of massive data sets. Aster's unique "applications-within®" approach allows application logic to exist and execute with the data itself. Termed a "Massively Parallel Analytic Platform," Aster's solution effectively uses Aster's patent-pending SQL-MapReduce® together with parallelized data processing and applications to address the big data challenge. nCluster can help financial firms meet risk management objectives through the following unique capabilities:

- **Scalable Risk Data Management Infrastructure** – With market and customer data growing exponentially, financial firms require a scalable data infrastructure for risk management purposes. Aster Data nCluster architecture is designed to scale to hundreds of commodity servers and can therefore enable organizations to manage the challenges of this data growth effectively. Its incremental scalability features allow organizations to easily expand the capacity as new data gets added, without requiring big, up-front investments in hardware for long-term data needs.
- **High-Performance Risk Analysis and Reporting** – nCluster leverages its MPP architecture to provide high performance at large data volumes. Data-intensive risk analytics and reporting applications that require ultra-fast data analysis and processing, can benefit tremendously from the massive computing power a cluster of commodity servers provides. Due to the big data volumes, traditional MPP database systems cannot scale to meet the time restrictions imposed by the new regulatory requirements and internal processes. nCluster can help organizations meet such challenges by enabling ultra-fast analysis of big risk data.
- **In-Database VaR and Other Risk Calculations** – Oftentimes, the performance of risk models is limited by the speed at which data can be fed into risk calculation engines.

Quick Overview

Aster Data nCluster is a massively parallel data-analytics server which powers risk ultra-fast analytics and data processing for financial firms. Using nCluster, financial firms can embed and parallelize their risk management applications to rapidly analyze terabytes to petabytes of granular transactional data to gain market, credit, and operational risk visibility. In addition, nCluster enables financial firms to meet regulatory compliance requirements cost-effectively by running on a cluster of off-the-shelf commodity hardware, providing market-disruptive total cost of ownership for large volumes of risk data.

Highlights

- System can easily scale to analyze terabytes to petabytes of risk data
- Off-the-shelf commodity hardware provides the lowest total cost of ownership
- Massively parallel architecture provides ultra-fast risk analytics, data processing, and reporting
- VaR and other risk calculations run much faster inside the MPP database using Aster's patent-pending SQL-MapReduce framework
- Unique architecture with a dedicated loader tier enables high-speed loading of risk data
- Massively parallel exports can feed risk data to compute grids at high speeds
- "Always-On" availability supports business-critical risk functions

While *nCluster* provides much higher performance and scalability when compared with traditional databases, it also provides a MPP data-analytics server that can be leveraged to significantly speed-up risk calculations. Aster Data's SQL-MapReduce framework enables parallel execution of risk algorithms inside the MPP database, thereby eliminating the need to transfer data in and out of the database and providing further performance boost over traditional systems. For example, Value at Risk computations can easily be run in a massively parallel fashion inside *nCluster*, providing significant performance benefits.

- **High Throughput Data Loading** – With an exponential increase in the rate at which data is being fed into risk management systems, the underlying infrastructure must provide for fast ingestion of such data. *nCluster*'s unique architecture, which includes a dedicated loading tier, enables high throughput loading of internally generated data as well as market data. Additional loader nodes can easily be provisioned to increase the data loading throughput.
- **High Throughput Data Export to Compute Grids** – Financial services firms often rely on high-performance computing grids to run their risk models. Performance of such compute grids can often be limited by the ability of the underlying data management and data processing infrastructure to feed risk-related data at high speeds. Aster Data *nCluster* can remove such performance bottlenecks by sending massively parallel streams of data exports, thereby providing a much higher data throughput. As with data loading, data export rates can also be increased by provisioning additional exporter nodes.
- **"Always On" High Availability** – Since risk management in a global scenario is a 24X7 function which operates on tight deadlines, risk management systems have to be continuously available. Any system unavailability can result in missing the window of risk analysis and regulatory reporting. *nCluster* is built using award-winning Recovery-Oriented Computing technology that provides a very high level of system availability. This market-leading technology addresses all issues that can have an impact on availability, including planned tasks as well unplanned hardware failures.
- **Low Cost of Ownership** – While organizations are trying to improve their risk management processes and systems to meet external regulations as well as improving internal controls, the cost of creating this scalable infrastructure can be overwhelming. Since *nCluster* is designed to analyze terabytes to petabytes of data, its architecture includes optimizations that make it economically viable at these massive data sizes. Using such optimizations, *nCluster* minimizes both initial acquisition costs and ongoing operational costs, including cost of hardware, administration, scale-out, and downtime impact.

Contact Us

If you are interested in learning how Aster Data can help you build an ultra-fast risk management system in a cost-effective manner, contact us at info@asterdata.com, or call 1-888-Aster-Data.

About Aster Data

Aster Data is a market leader in data management and advanced analytics for diverse and big data, enabling the powerful combination of cost-effective storage and ultra-fast analysis of relational and non-relational data. Aster Data *nCluster* is an analytic platform that incorporates a massively parallel processing (MPP) hybrid row and column database with an integrated analytics engine, allowing application logic to execute with data to deliver breakthrough performance and scalability. Aster Data's solution utilizes Aster Data's patent-pending SQL-MapReduce to parallelize processing of data and applications and deliver rich analytic insights at scale. Companies including Barnes & Noble, Intuit, LinkedIn, Akamai, Full Tilt Poker, and MySpace use Aster Data to deliver applications such as deep clickstream analysis, recommendation and personalization analytics, real-time fraud detection, and churn analysis.