HIGH PERFORMANCE DATA MANAGEMENT

THOMSON REUTERS ENTERPRISE PLATFORM FOR DATA MANAGEMENT
FOR INTEL® XEON® PROCESSOR 7500 SERIES AND MICROSOFT SQL SERVER®

THOMSON REUTERS™

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MARKET CHALLENGES

Securities and investment firms are continuing to face significant challenges in responding to increasingly powerful industry drivers. Customer needs and expectations are growing and international competitive pressures encourage firms to develop complex structures to attract investors with higher returns and capital protection. Following several years of rapid changes in the scale and complexity of electronic trading and other industry changes demanding swift deployments of new technology, firms are faced with a technology infrastructure laden with information silos and multi-format messaging platforms. This scale and fragmentation of IT operations coupled with the volatility of the recent crisis has highlighted the interdependence of global markets and the need for a greater transparency. Regulatory burden has pushed data management and integration yet further into the spotlight for the financial industry as firms strive to manage costs, gain a better understanding of their exposure to risk and improve operational efficiency.

Critical to these drivers is the availability of accurate, consistent and timely information. The need for a flexible, unified platform to acquire, manage and distribute data assets across all enterprise disciplines has never been more urgent. The provision of dynamic, reliable and consistent orchestrated data services offers huge scope for differentiation in a highly competitive and regulated market; to improve customer service, reduce risk, enhance compliance, promote data transparency and visibility, streamline operation efficiency and reduce costs.

NEXT GENERATION DATA MANAGEMENT – BEYOND GOLDEN COPY

A recent survey undertaken by independent financial consultants Lepus (March 2010) has found that global markets are beginning to embrace a fragile recovery, firms are revisiting technology initiatives that are critical to their sales and trading domains as well as their risk management, regulatory, operations and finance business units. Senior managers and those with domain expertise have acknowledged the operational and commercial benefits of sharing high quality data assets among business domains.

Many firms have already reported that they have made strides towards streamlined data management infrastructures. Many are forging ahead with data quality management projects, anticipating a competitive advantage as an economic rebound looms. They are establishing centralised repositories and streamlined infrastructures. Some are able to reconcile data from different sources as well as eliminate duplicity in data operations. As a result, they can improve risk calculations and reduce costs by eliminating legacy systems.

TECHNOLOGY CHALLENGES

As firms proceed on their journeys to higher levels of data quality management, they will encounter a range of business and technology challenges. Business domains are likely to spar over data ownership and governance especially as firms become more aware of the value of data across the enterprise. Firms will also have to grapple with the inconsistent needs of internal business groups as they face the prospects of scarce resources and shortages of staff with appropriate skill sets. However, technology budgets are thawing to 77% of surveyed firms intending to increase spend on data quality and consistency initiatives.

REACHING AN INDUSTRY STANDARD

Though firms face a number of challenges, the characteristics of a next generation data management solution are maturing and being recognised by independent bodies such as the EDM Council. The EDM Council's Maturity Model defines a roadmap for data management maturity from Level 1 (Initial), through to Level 5 (Optimised). Many firms will find themselves between level 2 (Reactive) and 4 (Managed). Level 5 (Optimised) involves continuous improvement in data quality through monitored feedback and quantitative understanding of the causes of data inconsistencies.

Optimised data management requires more effective 'closed-loop' integration between data operations and the business and is a fundamental characteristic of next generation data management solutions. Next generation data management solutions seamlessly integrate the following data management capabilities:

- Acquisition, Validation and Normalisation
- Data Quality Management
- Event and Exception Management
- Reporting and Metrics
- Distribution and Orchestration

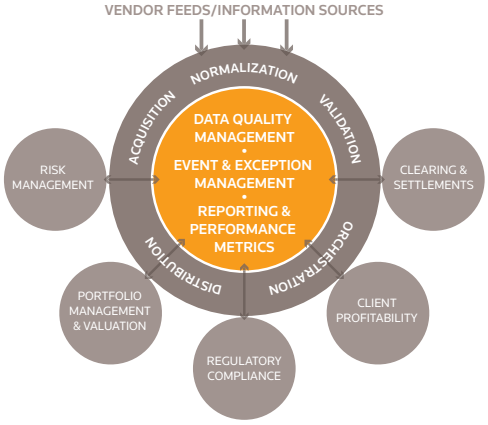
Next generation data management strategies need to keep pace with an industry that is evolving fast, in order to improve:

- Transparency to isolate risks and exposures
- Flexibility to respond to changing business needs
- Timeliness for effective business decision support

These points serve as a prime example of the many real-world deliverables that will become possible when firms abandon their data fiefdoms and begin their challenging, but potentially rewarding journeys towards the next generation of data management.

THOMSON REUTERS ENTERPRISE PLATFORM FOR DATA MANAGEMENT

The Thomson Reuters Enterprise Platform for Data Management is a data management solution that unifies the acquisition, management and distribution of all enterprise data assets, both real-time and non real-time. It establishes data semantics for consistent interpretation of data across organizational and functional boundaries and, as a result, enables the deployment of innovative solutions via flexible data services. The flexibility of a service-oriented architecture ensures that the platform is able to respond to current, emerging and future information needs of the industry.



Enterprise Data Services for Improved Business Automation

The Enterprise Platform comprises three main components; **Thomson Reuters Enterprise Platform for Real-Time, Thomson Reuters Data Management Modules** and **Thomson Reuters Integration Engine**. The integration engine ensures seamless integration of the other two platform components, and manages deployment of data services. The integration engine supports powerful methods for the definition and management of complex data orchestration and business processes.

BUSINESS SCENARIO

Financial organizations are under ever increasing pressure to improve the quality and timeliness of their risk analysis. The recent market turmoil, returning volatility and focus on risk analysis are all driving the requirement to process large volumes of data through complex business flows, at speed.

When considering market risk, banks increasingly need to look across their systems and departments to understand their exposures in aggregate. Institutional investors use Value at Risk (VaR) calculations to evaluate their portfolio risk. To facilitate this calculation, data needs to be routed between the calculation engines and multiple applications or data sources.

A major challenge when moving and transforming the data between formats/silos is ensuring data integrity. Typically the data requirements within risk are complicated and the data sets are large.

Part of this process involves the delivery of present value (PV) data from the pricing systems to the risk system. The volumes may easily involve billions of separate PVs and is particularly resource intensive to achieve.

Risk engines and trading systems are generally engineered for high performance in isolation. However the very large files being generated during the processing of distributed VaR calculations is placing an unsustainable load on bank's existing data and systems architectures.

KEY CHALLENGES

Pressure points can surface in a number of ways:

- Complex and costly exercises to join-up market risk across business silos and disparate systems for an enterprise view of risk
- An inability to calculate to the accuracy demanded (batch windows are not long enough for the available performance of their systems)
- The inability to 'snap-shot' positions intra-day for an accurate reading of exposure
- Existing systems architected for point-to-point connectivity do not scale for a distributed business model

INTEL® EFFICIENCY

The Intel® Xeon® processor 7500 series represents the latest advances in microprocessor design. Benefiting from Intel's revolving two-year innovation cycle, these CPUs are constantly improving their performance, energy efficiency and virtualization capabilities which is reflected in TCO, based on the equation of performance, capital cost and energy consumption.

Intel® has become established as the default hardware environment across the trade lifecycle from the front office to the back office. In the context of data management, Intel's industry standard computing model applies from low end functions such as feed handlers right through to high end data centre processing capability. Areas traditionally handled by mainframe and expensive proprietary computing environments can now be handled by platforms which optimise capex and opex budgets – meaning that the compute platform is not the hurdle as firms look to get their data house in order.

Thomson Reuters Enterprise Platform for Data Management has been stress tested in the Intel® fasterLAB, under the extreme workloads of trading and risk it scaled to levels capable of processing 5 billion Present Values (PVs) in under one hour (1.4 million per second). This achievement highlights the outstanding performance of Thomson Reuters Integration Engine for risk and demonstrates Thomson Reuters and Intel's commitment to highly optimized solutions for the financial sector. When functionality upgrades are necessary, such as enhanced data management, it is a natural direction which the Enterprise Platform for Data Management can now support.

Given that high volume and velocity are now mainstay requirements, Thomson Reuters was keen to validate the integration engine's performance at the high end. This meant testing and tuning on the Intel® architecture – which delivers outstanding results at lowest costs due to industry standard servers.

The deeply established collaboration between Intel® and Microsoft ensures that as a tripartite solution the Enterprise Platform for Data Management is provided with an optimised infrastructure. Xeon® 7500 Series and SQL Server 2008 have shown full multicore scalability delivering 18x performance improvement compared with single core implementation and low datacentre footprint.

TECHNOLOGY INFRASTRUCTURE

With Microsoft, Thomson Reuters can offer a flexible and extensible data management environment, establishing a services framework for consistent delivery of data across organizational and functional boundaries.

Thomson Reuters and Microsoft share a common vision for how applications need to evolve to meet mutual customers' needs – a vision centred around delivering the most interoperable and reliable solutions possible for mission-critical applications. These solutions leverage the latest technologies through the use of the Microsoft SQL Server® data management software, Microsoft Windows Server® and Microsoft .NET technologies®, offering a modern user interface and optimal user experience – a true platform for the future, delivering next generation EDM.

USING THE MICROSOFT PLATFORM

Microsoft SQL Server 2008 is at the heart of a comprehensive data platform that provides the ability to access and manipulate business-critical data from a variety of diverse devices, platforms, and data services across the enterprise. SQL Server 2008 enables richer business insights and supports the development of next-generation applications, such as Thomson Reuters Enterprise Platform for Data Management.

WHY SQL SERVER 2008?

- **Productive.** Improves time to market and reduces costs associated with developing, deploying, integrating and managing applications (e.g. data compression capabilities leading to a reduction in storage requirements)
- **Performance and Scale.** Provides a comprehensive data platform that will grow with an organization's business. SQL Server 2008 is packed with technologies to scale-up individual servers, scale-out very large databases, and optimize performance
- **Trusted.** SQL Server 2008 provides a more secure, scalable and manageable data platform with reduced application downtime for demanding applications
- **Next generation.** Broadening an organization's portfolio of next-generation applications and services with support for virtualisation, location awareness and dynamic development
- **Intelligent.** SQL Server 2008 enables an organization to take advantage of a fast-growing marketing opportunity to create new applications and solutions that can store and consume almost any type of data on any device

Partnering with Intel® and Microsoft has enabled Thomson Reuters to provide their clients with the most advanced and up-to-date technology available.

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Windows Server 2008, with built-in Web and virtualization technologies, enables organizations to increase the reliability and flexibility of server infrastructure. New virtualization tools, Web resources and security enhancements help save time, reduce costs and provide a platform for a dynamic and optimized data center.

Microsoft .NET

Built on Web service standards, Microsoft .NET connects a broad range of personal and business technologies, enabling IT staff, branch employees, agents, and customers to access and use important information, whenever and wherever it is needed. Microsoft .NET is the comprehensive Microsoft strategy to enable Web service connectivity across its entire line of products and services.

About Intel®

Intel® (NASDAQ: INTC), the world leader in silicon innovation, develops technologies, products and initiatives to continually advance how people work and live. Additional information about Intel® is available at **www.intel.com/pressroom** and **blogs.intel.com**.

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