TEMENOS T24 Core Banking Optimized on Microsoft SQL Server Database Platform

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Summary

With competitive pressures mounting, financial service providers need to operate as efficiently as possible, and they look to technology to support that goal. With this in mind, Microsoft established a research program with Intel, Dell, banking software company TEMENOS, and North Shore Credit Union in British Columbia, Canada, to explore the potential of combining Microsoft® SQL Server® and the TEMENOS T24 banking system as a cost-effective, high-performance core banking solution. The research results were positive – the Microsoft-TEMENOS platform performed better than many financial institutions require. This, however, is just one part of the SQL-T24 story. Beyond processing speed, financial service providers must consider other key capabilities such as data security, application development, business intelligence and total cost of ownership (TCO). In these respects the Microsoft-TEMENOS solution also exceeds requirements.

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Introduction

Financial institutions face intense competitive pressures. The industry is more global in nature today than it was even just a few years ago, as banking institutions enter new markets. Financial service providers that once targeted particular geographic regions now find themselves operating in new spheres, serving new customers and dealing with new competitors. Former product- or demographic-specific organizations are moving into uncharted areas, adopting a more universal service approach and, in the process, opening the door to improved revenue opportunities and greater competitive threats. Customer loyalty is more important than ever – financial providers increasingly aim to provide a wide range of products to better their chances of attracting and retaining clients in a fiercely competitive industry. These businesses need to operate as efficiently as possible to thrive in the tumultuous market, and they need technologies that will help them accomplish this.

With this in mind, Microsoft participated in a research program with microprocessor design firm Intel, hardware manufacturer Dell, banking software company TEMENOS, and North Shore Credit Union (NSCU) in British Columbia, Canada. NSCU is a full-service financial institution offering expert advice and services to 40,000 members. With 12 branches and 300 employees, the credit union has $2 billion in assets under administration. Together, the companies aimed to validate the efficiencies of combining the TEMENOS T24 banking system with Microsoft SQL Server database software and inexpensive, flexible hardware featuring Intel microprocessors. The results of the study were positive. In fact, the Microsoft-TEMENOS core banking system performed beyond expectations and better than an average-sized financial institution requires.

The project also highlighted the many other benefits of bringing SQL Server and T24 together, including:

- Enhanced information security

- Reliability

- Superior development capabilities

- Ease of integration

- Powerful business intelligence features

- Low total cost of ownership (TCO)

By reviewing the research findings and exploring the benefits of the Microsoft-TEMENOS solution, this document is designed to help financial institutions as they select a core banking infrastructure that best suits their requirements.

Benchmarking Study

The benchmarking study began with a simple hypothesis: namely, that combining SQL Server, TEMENOS T24, Intel processors and Dell hardware would result in faster funds transfers, higher

security-trades volumes, and quicker close-of-business processes than a typical bank requires. For NSCU, the research would support the belief of CIO Fred Cook and other senior IT staff that employing a Microsoft-TEMENOS core banking system would yield lower operating costs, improved business intelligence and better integration between back-end systems and the customer service applications that help investors obtain guidance from NSCU's financial advisors. As one of the first North American financial institutions to consider implementing the SQL-T24 infrastructure, NSCU was interested in understanding the long-term benefits of this system.

TEMENOS T24 (T24) is one of the most technically advanced banking systems available today. The tests were run on a database and application system using SQL Server 2005 Enterprise Edition (64-bit), and Quad-Core Intel® Xeon® 5365 series processors. The solution also included a pair of Dell PowerEdge 1950 servers and a storage area network (SAN).

The team released the test results, as per *Figure 1* below. The numbers speak for themselves: a typical mid-sized financial institution conducts 500,000 funds transfers in an eight-hour day, and 240,000 security trades. The TEMENOS-SQL platform supported 697,920 funds transfers, and 323,534 security trades.

Figure 1 – Benchmark test results

Task	Average	SQL-T24
Funds transfers	500,000	697,920
Security trades	240,000	323,534

These results are a starting point for Microsoft. The organization is now building on the success of the SQL Server platform and studying the database's efficacy for large-scale institutions as well. Meanwhile, the existing benchmarking study results were so impressive that NSCU used the measurements to support its decision to implement the SQL-T24 platform.

"We needed a core banking solution that could integrate with our existing systems and allow us to continue toward our goal of providing expert financial advice to our members," said Cook. "We're also looking to increase profitability and efficiency with straight-through processing and reducing total cost of ownership. The solution we've chosen will give us an edge in a fiercely competitive market."

Microsoft SQL Server/ TEMENOS T24 Core Banking Solution Overview

Speed of processing is now a fundamental competitive pillar in the financial services sector. As organizations branch out into new lines of business (corporate banks exploring retail services, for instance), they need core banking platforms that support the increased load on their transactional systems – loads associated with new customers, new products, and higher end-user expectations. This becomes particularly important during times of change – for instance, as government regulators in numerous markets open the door to new tax-efficient savings vehicles, financial

services organizations that move quickly to offer novel products gain a competitive advantage over lagging competitors. The core banking system must support the pace of business, especially when the competition for customers is as strong as it is today.

Speed of processing, however, is just the beginning. Financial service providers must also consider data security, reliability, development capabilities, ease of integration and TCO into their research. Each must be explored in detail. And while the benchmarking research was conducted on SQL Server 2005, TEMENOS and Microsoft have continued to work together, and now provide customers with a simple SQL Server 2008 upgrade path, which enables IT to be even more productive and provides them with a secure, scalable and manageable platform.

Security

Data security is a top priority among financial service providers. The security capabilities of SQL Server are well known:

- SQL database administrators can control access to all areas of the system by group and user levels. Since most users need to develop reports for a single department, they receive read-only access to certain portions of the database, decreasing the danger of inadvertent data amendments or information breaches.

- Strict password policy enforcement including long passwords and password-expiration policies help further prevent unauthorized access.

- SQL Server encrypts data at all levels. The database itself can be encrypted, as can communication to and from the system. Even database-sourced information on a user's workstation can be encrypted.

- Incorporated with advanced password protections, SQL Server denies access to computers lacking the encryption capabilities required to securely retrieve information.

According to the U.S. National Institute of Standards and Technology, between 2003 and 2007 more than 100 security vulnerabilities were discovered in a major competing database product – there were none in SQL Server.

- Security features are further enhanced in SQL Server 2008, the most advanced iteration of the Microsoft database to date. SQL Server 2008 adds full event auditing throughout an organization and native support for transparent data encryption.

SQL Server helps ensure core banking operations are guarded according to the individual institution's thresholds and regulatory obligations.

Reliability

NSCU has seen a shift in the customer-experience paradigm. Whereas in the past, credit union members would access the institution's systems during regular business hours (9 a.m. to 5 p.m.), customers now make funds transfers and payments, and research potential investment and savings

plans later in the day, perhaps from their PCs at home, after work. The organization's IT systems need to be up and running 24-7 to address member requirements.

NSCU isn't the only business relying on SQL Server. At one Canadian company, business and technology leaders realized that a failure at the main data centre would result in a $10 million loss. Fortunately, database mirroring functionality in SQL Server helped the organization mitigate the risk by ensuring information also resided at a secondary site. Even if the primary location went offline the customer data would remain secure and accessible.

Reliability is a key component of SQL Server 2008. Database mirroring has been enhanced, while failover clustering and improved peer-to-peer replication have been added.

Database reliability also works alongside T24 features for enhanced stability. For instance, T24 provides transaction boundaries that help the application ensure workloads are completed. If the application is supposed to update four files, but manages only three, the software reverses to an earlier known state. The transaction is temporarily aborted until 100 per cent of the transaction (all four file updates) can be confirmed.

Technology Expertise & Development

Institutions require technologies that support their future activities and near-term objectives. The ecosystem of SQL Server specialists and the depth of TEMENOS' implementation expertise provide a network that helps organizations realize their goals. Worldwide there are 500,000 IT professionals trained to manage SQL Server, and TEMENOS has amassed a vast store of implementation best practices learned from a client base comprising more than 600 installations across multiple geographies, including Tier 1 institutions.

This paradigm not only enhances security, it also delivers a 50 per cent faster rollout time. T24 is an out-of-the-box application providing immediate access to advanced core banking functionality.

As organizations expand their business endeavours and need to develop additional capabilities, the T24-SQL platform helps developers work more efficiently. Using SQL Server can help them decrease the time required to create new applications by as much as 90 per cent, because the entire database project can be completed with a single set of tools rather than different products for each component (data storage, information changes, data queries, report generation). SQL Server also provides tools to help developers automate the task of converting existing applications to take advantage of the most recent database capabilities.

For organizations like NSCU that already have SQL Server experts on staff, the Microsoft investment makes even more sense, because the database professionals will be able to apply their knowledge to the core-banking infrastructure as well as the other data stores supporting the business.

Integration

Integration is a key requirement for NSCU. The organization knew Web browsers would support the majority of employee and customer interactions. Staff members and customers would need to know the myriad back-end programs – everything from customer-relationship management (CRM)

software to database tables – were operating as a unified system for a consistent end-user experience.

That SQL Server interoperated with the existing Pivotal CRM system was a substantial benefit for the credit union, especially since NSCU relies on the CRM software and database reporting to better understand its customers and provide superior investment advice.

A platform based on Service Oriented Architecture (SOA) is another important development for the company's IT infrastructure, affording an even more flexible and efficient system.

According to Fred Cook, integration paves the way for cost reductions and SOA enhancements in two distinct ways:

1. As NSCU reaches further into new markets and builds new products for members, the organization aims to avoid increased operating expenses by automating many of the technology interactions behind the scenes that would otherwise result in higher IT-management costs.

2. That T24 runs on the SQL Server platform means NSCU can access a wide range of Microsoft tools while benefiting from the advanced core banking features of the TEMENOS solution.

TEMENOS is no stranger to the Microsoft ecosystem. The TEMENOS Application Framework was first deployed on Windows 95 and the Microsoft server platform in 1995, hosted on NT 4.0 running 32 bit Intel-based hardware. Since then, the TEMENOS software has evolved with the Windows Server System™ through Windows Server® 2000 to Windows Server 2003 and Windows Server 2008. Today TEMENOS has more than 100 customers running their banking systems on the Windows platform.

TEMENOS designed T24 to store information in SQL Server in the XML format, providing enhanced data retrieval and analysis. Built within the TEMENOS Application Framework, T24's application runtime connects directly to SQL Server with an interface identical to those employed by Microsoft's internal developers.

T24 also supports bank processing requirements across multiple markets and organizations. For example, financial institutions running the TEMENOS core banking software can rest assured the system supports the unique regulatory and reporting requirements of each location. This is essential in today's market, as many financial service providers enter new markets by acquisition. It's important for these companies to integrate their businesses for efficient operations, while ensuring local regulatory obligations are met.

For TEMENOS, the fact that thousands of financial institutions already employ SQL Server makes the solution particularly compelling. It allows companies like NSCU to integrate their existing database investments into core banking operations, which spells greater IT efficiencies and lower technology-management costs.

Business Intelligence

Operational insight is one of the most powerful tools in a financial institution's competitive arsenal. NSCU relies on business intelligence (BI) to inform customer interactions, especially for providing advice that will help credit union members grow their financial portfolios. In fact, BI was a key consideration for the organization as it investigated its new core banking solution.

SQL Server provides a BI platform optimized for data integration, reporting and analysis. As an enterprise-scale data warehouse, the system unifies data storage for all business information, effectively unlocking the data from multiple data stores throughout an organization's IT infrastructure. As NSCU discovered when the organization integrated its Microsoft-based Pivotal CRM software to the SQL Server infrastructure supporting the core banking system, this simplifies data analysis – financial advisors can access a single database interface for a complete view of customers and transactions.

SQL Server 2008 includes Analysis Services for developing applications that help businesses delve deeper into the data and attain greater operational insight. It also supports enterprise-scale reporting services through on-demand processing and instance-based rendering. As well, the new Tablix data structure and rich formatting capabilities help organizations build flexible reports.

In the past, BI solutions were used by small groups of business analysts. Now, organizations like NSCU are realizing the benefits of extending the insights generated through BI to all employees and embedding them into day-to-day operations.

Total Cost of Ownership

In the benchmarking study, the researchers implemented SQL Server and T24 on standard Dell servers running proven Intel microprocessors. The results indicate that financial institutions are able to deploy an advanced database and core-banking system without spending substantially on specialized hardware. What's more, T24 is a single, integrated platform that covers numerous business areas, including private banking and retail banking – an increasingly important feature for universal operations looking to decrease their IT costs by using one system for all services. Add to this Microsoft's cost-effective software licensing program and it's clear that the SQL-T24 platform provides a low-cost, high-performance core-banking solution.

But IT investments require more than just the initial capital expenditure. They require long-term funding for maintenance and upgrades. Organizations must also account for the lost productivity associated with technology downtime. The financial services industry is well aware of these costs, and individual businesses diligently scrutinize technology solutions to understand TCO, calculating the price of unreliable, inflexible and high-maintenance IT systems over many years.

TCO was top-of-mind for Microsoft and TEMENOS, and a number of SQL Server and T24 advancements helped the companies address this important issue. Microsoft applies an Infrastructure Optimization to software deployments, advising organizations on techniques tools to drive down the costs of core systems and applications. Specific to SQL and T24, here are some of features that help make the Microsoft-TEMENOS solution cost-effective:

SQL Server administration features – SQL Server reduces the need for specialized knowledge when developing database applications. The simplified user interface enables a large portion of the IT staff to contribute to the development effort. Since many companies hire consultants or third-party development firms when creating database applications, SQL Server can help these firms deliver applications at a lower cost as well.

Microsoft is building on these aspects with SQL Server 2008. The latest system improves on database administration, making it easier and less expensive over the long term. The primary features include:

- centralized administration through a single, consistent management interface;

- automated operations to perform database maintenance tasks and respond proactively to system issues;

- management through the new Declarative Management Framework (DMF), which prioritizes policy-based administration for efficient database governance; as

- and consolidated monitoring across the enterprise through the new Performance Studio, providing simplified reporting mechanisms.

T24 architecture features – Employing open architecture standards such as HTTP and XML, TEMENOS T24 supports a low TCO. The software is developed on protocols backed by industry groups that consistently refresh the technology for enhanced functionality over a significant time period.

The T24 architecture offers multiple application-server support. This provides horizontal scalability, so the system can support a nearly limitless number of users – an important feature for growing businesses. It also allows financial institutions to easily add servers as volumes expand. They no longer face the disruptive costs of moving new hardware as demand grows, and they exceed the capabilities of their existing equipment.

Together, SQL Server and T24 provide a low TCO, which gives financial institutions the ability to fund business-driving initiatives instead of perpetually paying the cost of operating on difficult-to-manage and inflexible database-core banking platforms.

Conclusion

The Microsoft-TEMENOS system supports financial organizations as they pursue more cost-effective operations.

BI capabilities transform the SQL-T24 platform into a strategic investment that provides insight into operational activities. Developed for simplified integration with existing systems, the SQL-T24 solution helps organizations realize the full potential of their IT investments, and paves the way for new functionality as business requirements change. Application developers are empowered by the efficient development platform the system provides, saving time and money. The superior stability of the Microsoft-TEMENOS system helps ensure core banking operations keep pace with increasing

customer demands for access now and in the long term, while superior security capabilities meet even the most stringent protection requirements.

Together these features complement the efficient processing capabilities proven in the SQL-T24 benchmarking study. Financial institutions researching new core banking functionality should ensure Microsoft and TEMENOS on their lists of potential vendors.