



## **Chevron Canada Limited Upgrades Availability, Performance, Administration With Move to Microsoft SQL Server 2000**

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*Chevron Canada Limited prides itself on running an efficient refinery, on its outstanding retail network, and on an extensive commercial and industrial operation serving a wholesale customer base that forms the mainstay of British Columbia's resource industry. To support these customers and maintain its competitive edge, the company relies on the SAP R/3 Enterprise Resource Planning system, and to keep this system running well the company recently upgraded its database environment to Microsoft SQL Server 2000. As a result, CCL is enjoying greater application availability, a vast improvement in performance, a cost-effective approach to scalability, and reduced administrative costs.*

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### **Situation**

Since the mid-1990s Chevron Canada Limited (CCL) has relied on a powerful SAP R/3 ERP solution to serve the needs of customers in the demanding round-the-clock environment of the company's petroleum refinery and some 230 retail and wholesale sites throughout Western Canada. Overall, the solution has been effective in meeting those needs, but not long ago the database environment began to reveal a number of shortcomings.

For one thing, routine re-indexing and database consistency checking required a total database shutdown of three days or more, posing considerable hardship for maintenance workers at the refinery. In addition, processing the invoices that CCL sends monthly to customers was taking more than 10 hours. Finally, administrative tasks were monopolizing valuable IT resources as the company attempted to maintain applications in two separate database environments: the one on which the SAP R/3 ERP solution was based, and Microsoft SQL Server, on which another set of mission-critical CCL applications were based.

In response to these challenges, IT executives decided to bring the SAP R/3 solution in line with the rest of the company's IT operations by migrating it to a Microsoft SQL Server environment. This is a move that the executives had been planning for some time, because even before deploying the SAP R/3 solution in the first place, CCL executives had liked the idea of using Microsoft SQL Server. But when CCL was ready to deploy SAP R/3, it was not available on Microsoft SQL Server, and so the company deployed it on another database product. Now that SAP R/3 is available on Microsoft SQL Server, and with the release of SQL Server 2000, CCL IT executives have done what they wanted to do from the beginning: deploy the SAP R/3 solution, and the applications that go with it, on Microsoft SQL Server.

### Solution Overview

#### **Customer**

Chevron Canada Limited (CCL) has been doing business in Western Canada since 1935 and today is the leading marketer of refined-petroleum products in the region. CCL employs more than 350 people directly and another 2,500 people in its retail and commercial networks, including its well-known service stations.

#### **Situation**

For a number of years CCL relied on a SAP R/3 ERP solution running in a database environment that proved to be lacking in a number of areas. Index re-orgs required a three-day downtime, monthly invoices required more than 10 hours to complete, and administration overhead was burdensome.

#### **Solution**

##### **Benefits**

By migrating the SAP R/3 solution to an environment based on SQL Server 2000 and the Windows 2000 operating system and incorporating other .NET Enterprise Servers, CCL has enjoyed greater availability and performance for its SAP R/3 applications and reduced administrative costs.

##### **Software**

Microsoft SQL Server 2000  
Microsoft Windows 2000  
Microsoft Visual InterDev  
Microsoft Visual Studio

Microsoft Active Server Pages  
Microsoft COM  
Microsoft COM+  
Microsoft Commerce Server 2000  
Microsoft Exchange Server  
Microsoft Internet Information Server  
Option Pack 4.0  
Microsoft Transaction Server

##### **Partners**

RealTech of Seattle  
Cognos PowerPlay  
IXOS Archiving

## Solution

Over the course of eight weeks, Chevron Canada migrated its SAP R/3 solution to SQL Server 2000, and the larger .NET Enterprise Servers platform, with the help of RealTech of Seattle, a consulting firm with expertise in SAP R/3 migration. RealTech engineers completed the migration in a two-step process: first, to SQL Server 7.0, and second, to SQL Server 2000. The first step required a couple of weekends, and the full migration involved roughly one person-month of development effort.

Chevron now operates as many as 16 SQL Server 2000 systems running SAP R/3 ERP applications that use some 500 gigabytes of data to support activities ranging from wholesale pricing to refinery process tracking to data warehousing. The wholesale pricing application features enhanced support for replication, faster queries and more comprehensive systems-management capabilities than it did in the prior database environment. A new financial application supports accounts receivable, sales and distribution, inventory control, and plant maintenance. With their foundation in SQL Server 2000, these applications embody the company's goal of centering its computing environment around data instead of applications.

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Edmond Yee  
Manager of Network Operations  
Chevron Canada Limited

## Benefits

### A Vast Improvement in Availability

Of all the advantages of migrating the SAP R/3 solution and its applications to a Microsoft SQL Server environment, the most important at CCL is availability. For example, using the SQL Server 2000 row-level locking feature, CCL is able to perform regular re-indexing and database consistency checks without having to shut down the system. “Under the prior database environment, the people who run the refinery would be out of commission for a long weekend once or twice a year while we did the re-indexing,” Manager of Network Operations Edmond Yee explains. “But now, the SAP R/3 plant-maintenance modules they depend on to do their jobs are available 24 hours a day, 365 days a year.”

Another aspect of availability involves the thorough testing that CCL performs on new applications. For this, Yee finds the enhanced replication capabilities of SQL Server 2000 to be essential. “Using snapshot and transactional replication, we can access live data for testing with minimal impact to the production systems, ensuring they retain the availability on which our employees and customers rely,” he says. Availability issues have become even more central now that CCL is ramping up development of several Web-based applications. “This means we'll be doing testing monthly instead of quarterly, as we did before, and we'll need to create more applications that can run without interruption 24 hours a day.”

### Major Savings in Processing Time

Performance on the SAP R/3 applications is up as well, Yee adds. For example, some of the nightly batch processes that used to take five hours now take less than an hour, while others that used to take 40 minutes are down to two minutes. “Much of this improvement is due to a server upgrade CCL implemented along with the move to SQL Server 2000,” he points out, “but a significant part of it is a direct result of the migration to SQL Server 2000.”

### Streamlined Administration

Yet another plus of the migration to Microsoft SQL Server is a reduction in administrative costs. In the past, CCL had to rely on two separate database administrative teams: one to maintain its applications running under Microsoft SQL Server and another to maintain its SAP R/3

Database Information	
Version	SQL Server 2000
Size of largest database	100 GB
Total data volume of all databases	500 GB
Maximum number of concurrent connections (peak)	120-150

applications running in the other database environment. Now, with all its major applications running on Microsoft SQL Server, CCL needs only a single maintenance team. "Moreover, the administration tools in Microsoft SQL Server are 'friendlier' than those in the other database environment, and our database professionals are more comfortable in the Microsoft SQL Server environment anyway," Yee reports.

### ***Up Next: Data Warehouse, Data Mining***

Next up at CCL is a data warehouse that will mine information from the SAP R/3 applications, as well as those on other Windows NT Server systems and the company's mainframe environment, for the purpose of in-depth sales analysis. Based on Microsoft Windows 2000 and SQL Server 2000, the data warehouse will rely heavily on the Analysis Services component of SQL Server 2000 for both analysis and data mining; the Microsoft Repository, to store information about the data for tracking, security, and troubleshooting; Data Transformation Services, for supporting complex business rules; and clustering, for scalability and reliability in an environment that promises to be especially taxing on the hardware, according to Yee. "It's nice to know that we can get an extra degree of scalability and availability by adding more low-cost hardware," he says. "This is something that SQL Server 2000 supports to a far greater degree than did our prior database environment."

The data warehouse will also take advantage of other .NET Enterprise Servers technologies in addition to SQL Server 2000. Like the present SAP R/3 solution, the data warehouse will run on the Microsoft Windows 2000 operating system and will rely on Active Server Pages, COM, COM+, and Microsoft Exchange Server. Developers will continue to take advantage of the rapid prototyping available through the Visual Studio toolset, especially Visual Basic and Visual InterDev. And, in keeping with the company's current focus on enhancing its e-business strategy, CCL will deploy Internet Information Server, and Site Server Commerce Edition and may also deploy MSMQ and Microsoft Transaction Server.

Yee says that there's considerable benefit in having a .NET Enterprise Server-based infrastructure at CCL, not only for Web-based development and SAP R/3 applications but especially for the data warehouse. "Data warehousing and data mining are very complicated processes, so they need to be based on a highly integrated and comprehensive environment," he says. "With SQL Server 2000, Windows 2000, and the whole .NET Enterprise Servers platform, that's just the sort of environment we have."

The .NET Enterprise Servers are Microsoft's comprehensive family of server applications for building, deploying, and managing next-generation integrated Web experiences that move beyond today's world of standalone Web sites. Designed with mission-critical performance in mind, .NET Enterprise Servers provide fast time-to-market as well as scalability, reliability, and manageability for the global, Web-enabled enterprise. They have been built from the ground up for interoperability using open Web standards such as XML. The .NET Enterprise Servers are a key part of Microsoft's broader .NET strategy, which will enable a distributed computing model for the Internet based on Internet protocols and standards in order to revolutionize the way computers talk to one another on our behalf.

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