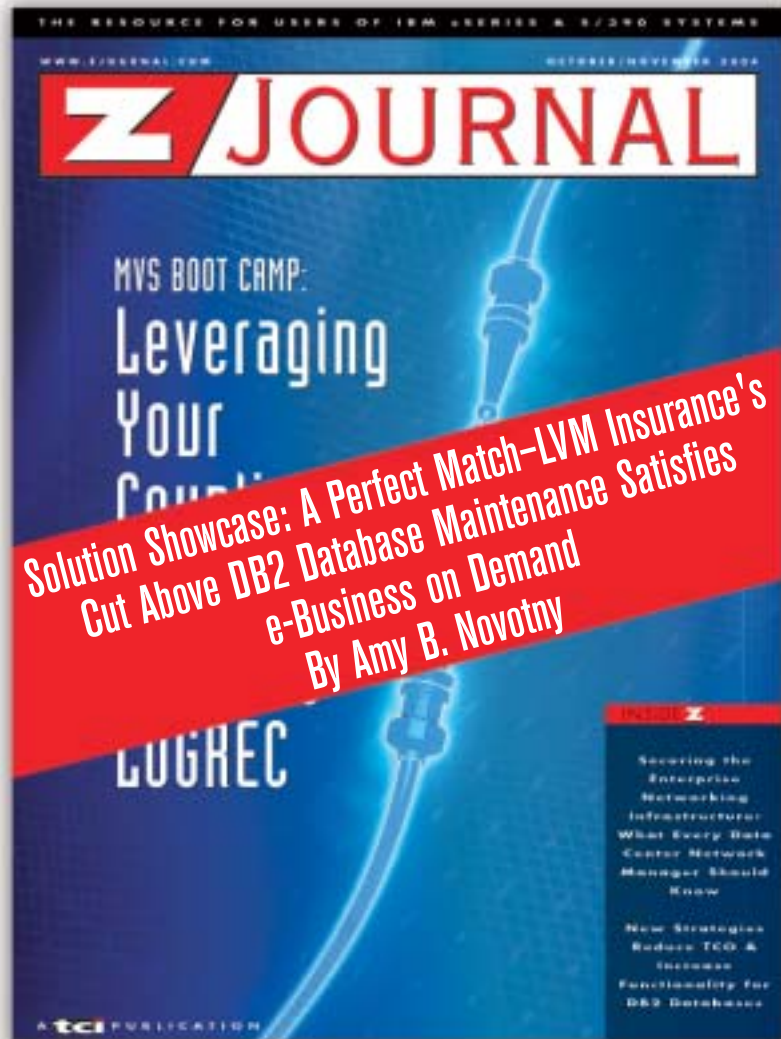


This article appeared in the
October/November 2004 issue of

Z/JOURNAL



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A Perfect Match

LVM Insurance's Cut Above DB2 Database Maintenance Satisfies e-Business on Demand

IBM has implemented many new features in the latest DB2 versions that make it possible to ensure 24x7, but the database maintenance process must also be enhanced to satisfy on-demand services in real-time. And, as every DBA knows, procedures, such as running utilities in pre-defined batch windows, simply don't fit the requirements of e-business and an on-demand infrastructure.

One company that has met this challenge is the LVM Insurance Co. in Germany. LVM strives to provide the best customer service in the industry. LVM, the fourth largest car insurance company in Germany, equipped its 8,000 employees and agents with a flexible, e-business infrastructure, enabling them to offer customers a wide range of services.

LVM Meets the Challenges

LVM was founded more than 100 years ago as an agricultural cooperative for farmers. Today, the company is one of the top insurance groups in Germany, delivering insurance and financial services to more than 3 million customers.

As the insurance industry changes, LVM adapts its services as well. "In the past, we had fixed time slots for online and batch processing," says Stephan Terhorst, who is responsible for DB2, WebSphere and Tivoli at LVM, "but today our independent agents want to focus even more on our customers." The agents use a Linux-based, thin-client to access customer information and modify contracts from any location. All agents connect to the LVM data center through a virtual private network by using a GPRS (General Packet Radio Service) cell phone and Bluetooth technology.

To facilitate this leading-edge technology, the company acquired a service network that focuses on the tight integration of processes across all applications. This initiative, with the goal to improve customer service and reduce costs, extends far beyond technology. It combines both business and technology projects intended to help LVM thrive in the on-demand world. To support 24x7 real-time services, LVM deployed LAS, the LVM Agency System. With the implementation of LAS, agents can respond to customer needs with more flexibility. For example, an agent can meet with a customer in the evening, instantly make online changes to his policy, print out a new contract, and have the customer sign it. The result is a new policy in force, using real-time services, and both the client and the agent save time.

With this new solution, availability is critical, and the IT staff must protect sensitive financial and personal data. Additionally, LVM database administrators must manage

DB2 objects across the numerous applications that support the system and keep them online 24x7.

Trendsetting Technology for Trendsetting Service

The agency system runs on an AIX machine using IBM WebSphere with all centralized data stored on IBM's DB2, which runs on two z990 mainframes.

Since IBM servers and DB2 are extremely reliable, a bigger challenge is implementing timely database maintenance. For recovery and performance reasons, there are a couple of utilities that must be executed frequently on the data sets that physically store the data within DB2. Terhorst explains the solution they use, "For years, we have used SOFTWARE ENGINEERING GMBH's (SEGUS's) maintenance solution, which dynamically generates IBM utility jobs as needed and hands them over to the job scheduler." Originally, these jobs were executed within a batch window during which there was no access to the database. As the batch window continued to shrink, LVM made use of the online function of IBM's utilities, which enable concurrent access to the data while a utility is running.

LVM encountered three major problems when planning for LAS. The first problem was the availability of data. Within DB2, there is a problem with mass inserts or loads. Terhorst explains: "For a DB2 object, the size has to be calculated adequately in advance. If objects are sized too large, a lot of DASD space is wasted. But if it's too small, a space will explode if too much data is loaded or inserted." Because the data is unavailable when too many extents on a data set are incurred, the recourse a DBA has is to oversize an object or to continually monitor the database and react very quickly if a problem arises.

The second problem was the performance of LAS. When an agent is at the customer site, a delay in response time is unacceptable. From the database maintenance view, this means the data must always be in very good shape. Executing performance-relevant utilities in a pre-defined timeslot is thereby problematic. "If we notice that an object requires maintenance in the morning, we can't wait for a batch window during the night," says Terhorst. "As we provide service on demand, we also require database maintenance on demand."

The third problem was the feasibility of detecting maintenance needs of an object on demand. All objects of a database must be analyzed before the thresholds can be checked. To check whether a threshold is exceeded, and thereby decide if a utility has to be executed, implies another utility is required to gather the object's characteristics, which is likely a waste of resources.

Everything's There: Just Do It

When LVM tried to enhance its maintenance procedure to fit its growing requirements, they compared tools from several different vendors. Terhorst recalls: "Since DB2 V5, IBM provides online features within its database utilities. In V6, IBM implemented inline functions, which allow us to run subsequent utilities integrated in another one, and V7 was enhanced with real-time statistics, which allow maintenance-relevant object characteristics to be retrieved without the need for any preceding utility or analysis." LVM

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we also require database
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—Stephen Terhorst, LVM

was convinced there must be a vendor that combines these features and exploits them to provide an on-demand maintenance solution, but they didn't find one.

Since LVM has had a reliable partner for database maintenance solutions for years, they contacted SOFTWARE ENGINEERING GMBH, which was working on a solution that promised real-time maintenance on demand. LVM was invited to participate in a design council where DB2 users and database and system specialists discussed the concrete implementation of such a solution with the architects of SOFTWARE ENGINEERING GMBH. The basic procedures of the solution were presented and DB2 user requirements were implemented to make the product ready to use for the market. LVM started with RealTimeMaintain during its early evaluation period and they were delighted.

RealTimeMaintain continually monitors the real-time statistics and compares them to predefined thresholds. As soon as RealTimeMaintain detects a requirement for database maintenance, it automatically generates a utility job based on IBM online utilities and dynamically hands the job over to the job scheduler for immediate execution.

Within this process, RealTimeMaintain considers the system workload as well as customer-specific exclusions concerning large objects, utility parameters, etc. RealTimeMaintain guarantees the completion of a utility's execution within a desired time window by mapping the common usage of a database and performing run-time prediction before turning it over to the job scheduler. Once scheduled, RealTimeMaintain monitors the utility from start to finish, and if an error occurs during its execution, another component automatically resolves the error.

RealTimeMaintain solves the problem of exploding spaces by monitoring an IFCID connection to DB2 that signals each extent incurred and verifying that the current allocation is adequate. If not, RealTimeMaintain performs automatic online reallocation, even parallel to a load utility that is running.

A Perfect Match

"It's a great solution," says Terhorst. "Now we have on-demand maintenance for our on-demand business—that's a perfect match." RealTimeMaintain initiates database maintenance based on the business requirements and not in a pre-defined time slot. Utility jobs are executed or deferred based on the workload and exceptions. This has the unprecedented advantage of dynamically using periods of low workload for required database utilities and thereby balancing the workload over the day. Performance and recovery-relevant utilities are executed when they are really needed, and the remaining non-performance/non-recovery-relevant utilities still run within the classic maintenance window. "We didn't want to replace our well-rehearsed database maintenance strategy; hence, it's a bonus that RealTimeMaintain is an add-on to any existing maintenance solution. It is a must that RealTimeMaintain be integrated into our complex environment and to assure that these solutions are working together," adds Terhorst.

A Big Step Forward

With RealTimeMaintain, LVM has made a big step forward into the on-demand world, and its database maintenance is a cut above the rest. The continuous alignment to the business needs helps reduce costs and arms LVM for upcoming requirements. **Z**

For more information on RealTimeMaintain in North America, contact SEGUS Inc. at 800-327-9650 or www.segus.com. Outside North America, contact SOFTWARE ENGINEERING GMBH at +49211 96149 0 or www.seg.de.