Pepperl+Fuchs

Synchronizes business data with IBM InfoSphere Change Data Capture

Overview

The need

Following the introduction of a central Enterprise Resource Planning (ERP) system, data in different worldwide locations had to be integrated and synchronized so that production processes and reporting on site can continue to be optimally supported.

The solution

Pepperl+Fuchs implemented IBM InfoSphere Change Date Capture (previously DataMirror) for real-time data synchronization between different database platforms. The solution provides minimal load on the central ERP system, high performance and reliable data integrity.

Pepperl+Fuchs was founded in 1945 by Walter Pepperl and Ludwig Fuchs as a radio repair shop in Mannheim, Germany. By 1948 they had begun manufacturing other electronic components, leading to the development of the first proximity switch in 1958 and the first transistor amplifier with an intrinsically safe control circuit. This marked the company's progression toward becoming a diverse industrial company. Today, Pepperl+Fuchs GmbH is one company with two divisions: factory automation and process automation. It is a leading manufacturer of sensor technology and a world market leader in the field of intrinsically safe explosion protection. Its products are developed and produced in Europe, America and Asia. It has 4,000 employees at over 80 locations worldwide. The company's North American headquarters is located in Twinsburg, Ohio, and its Asian headquarters in Singapore.

Central ERP system supplies production facilities with current data

In the last few years, the rapidly growing electronics company introduced the Enterprise Resource Planning (ERP) software Lawson M3 to optimize its supply chain. The software was first installed at its three main headquarters in Germany, Singapore and the United States. It was subsequently installed at all production facilities. The entire system environment was centralized at the Mannheim headquarters based on IBM® System i® 570 servers with IBM DB2® database software. The high availability solution MIMIX HA combined with the IBM i5/OS® virtualization function helps ensure reliable 7x24x365 operation.

"Once we had replaced the local ERP system with our central ERP system, we had to improve the local data availability at our Ohio and Singapore production locations," explains Helmut Eckstein,

The benefit

- Error tolerance and stability reduce administrator costs
- Efficient implementation by a small team within just a few days helped ensure low implementation costs and transparent training efforts
- High data transfer speed via existing landlines helps ensure low communication costs
- Operational data stores at the production locations in the United States and Singapore receive current information at all times
- The load of the central ERP system is significantly reduced; expensive batch runs are not necessary; and operational systems are not exposed to risk

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—Helmut Eckstein, IT/SIS Manager, Pepperl+Fuchs GmbH, Mannheim

IT/SIS manager at Pepperl+Fuchs GmbH in Mannheim. "Therefore, we needed a tool that we could use to filter and compress data for analyses and production process control and then replicate the data at both of these locations in order to take advantage of the fast local networks there."

Expansion of the central system in Mannheim and an increase in the transfer bandwidth of the landlines had to be avoided. "The goal was to manage as much data as possible from a central location and simultaneously supply the production locations with the necessary data without impairing the system performance," says Helmut Eckstein.

After evaluating different alternatives, Pepperl+Fuchs decided to implement the log-based technology IBM InfoSphere™ Change Data Capture (previously DataMirror) for data replication in the heterogeneous database environment. This means that data changes within heterogeneous data storage systems can be monitored in real time and only the changed data transferred. The changes are determined by permanently reading the database logs. Time-wasting database inquiries do not need to be performed, meaning only minimal system resources are used. InfoSphere Change Data Capture is a sophisticated tool that offers broad platform support and facilitates both unidirectional as well as bidirectional consolidation and transmission of data without risking the operating system. The unidirectional transmission is performed at Pepperl+Fuchs. DB2 forms the source system while Oracle databases under Linux® are used in the locations as target systems and operational data stores.

Solution components:

Software

- IBM® InfoSphere™ Change Data Capture

Services

- Consultation, implementation and training of administrators by IBM Software Sales, Information Management

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—Helmut Eckstein

"The production managers in Ohio and Singapore have to be able to access current production data at all times in order to generate reports and statistics for process optimizations," says Helmut Eckstein. "[InfoSphere] Change Data Capture guarantees that we can do this accurately. A specific feature in our production flow is the fact that different products are processed one after the other at two locations. In these cases, Change Data Capture can also be used to transfer the associated test data on process support to the other respective location."

A further area of application for InfoSphere Change Data Capture is the extraction of information from the database that refers to the availability of certain products. This information is made available to select customers by means of an internally developed customer portal.

Data transmission greater than 1:1

Implementation at the Pepperl+Fuchs Mannheim headquarters was accomplished within just a few days with a very small team. Administrators from Singapore and Ohio were also trained at this time. A Java®-based graphical user interface was used for configuration, administration and monitoring. All administration work can be performed via a uniform screen and without any programming work. "We worked closely and very well with IBM," reports Helmut Eckstein. "We did not have to make any changes or adjustments to the applications or the hardware."

The time delay in updating the operational data stores is hardly noticeable. As soon as a change in the source database occurs, the change is rapidly sent via T-One to the U.S. site and on a 2-Mbit line to the site in Singapore and the Oracle databases there are updated.

Stability, error tolerance and performance of the data replication tool are of decisive importance at Pepperl+Fuchs. "When a connection during data replication is interrupted, then the data transfer continues right from the spot where it stopped once the connection is restored," says Helmut Eckstein. "Manual intervention or restarting is not necessary."

Due to data being transferred on the line at reduced performance, the communication costs remain at a relatively low level. InfoSphere Change Data Capture allows data types to be converted in order to better support external systems and to dynamically omit, add, or combine fields from different tables. "Therefore, in the data structure for the target systems, we are not dependent on the data structure of the source system and can adapt the data replication specifically to the respective requirements on site," says Helmut Eckstein.

Pepperl+Fuchs is impressed by InfoSphere Change Data Capture and is currently planning to connect its development location in India (Bangalore) to the data replication system in its central ERP system.

For more information

To learn more about IBM InfoSphere Change Data Capture, please contact your IBM sales representative or IBM Business Partner, or visit the following website: **ibm.com**/software/data

For more information about Pepperl+Fuchs, visit:
www.pepperl-fuchs.com