

# Customer Case Study

## Mabanaft: tcACCESS and tcVISION bidirectional synchronization between VSAM on z/VSE and Microsoft SQL Server on Windows



### SMOOTH OPERATIONS

Mabanaft's enduring presence in the markets, international contacts, and sustaining expertise have made the company a competitive trading partner, known for flexibility and individuality, as well as for reliability and long-term commitment to the marketplace.

Thanks to excellent access to infrastructure, Mabanaft can respond quickly and flexibly to customer needs. The strong backing of Mabanaft's parent company supports autonomy and contributes to the company's long-term growth. This solid precondition enables Mabanaft to act independently from individual suppliers and secure continuous market liquidity.

### BUSINESS BACKGROUND

Mabanaft is the trading arm of Marquard & Bahls AG, a privately-owned, leading independent petroleum company. The business encompasses international trading, import and wholesaling of petroleum products, as well as service stations, heating-oil retailing, lubricants, and bunker services. Through subsidiaries and representative offices, Mabanaft is well-positioned in all important regions worldwide.

### SYSTEM PROFILE

Mabanaft and Marquard & Bahls are headquartered in the heart of Hamburg. The central IT of Marquard & Bahls uses a zSeries mainframe with z/VM 3.1 and z/VSE 2.3 that is hosted by IBM. The user data for the daily production is stored in VSAM. Friedhelm Buch, Manager Application Development, described the situation, "All of our applications had been developed by us over the past decades and met the requirements our individual business processes. Nevertheless, we made the decision to migrate all of our applications to new systems and new technologies. Having a 'smooth migration' was of utmost importance. Our plan was to have our trading solution be a completely new development in a Microsoft .NET environment. Therefore, it was imperative to us that the legacy VSE system will be used as a 'blueprint' and replaced in stages."

### BUSINESS ISSUE

The main challenge for this project was to synchronize the data on both system platforms in real time. This was a requirement for the staged replacement of the legacy VSE system. As Mr. Buch

noted, "The coexistence of both systems offered many advantages to us:

- The end users could slowly start to get accustomed to the new interface;
- We avoid a 'Big Bang'-- in the true sense of it;
- We always have our proven legacy system as a fallback during the phase of 'smooth migration';
- Lessons learned could be used from one phase to the next phase."

### TECHNOLOGY SOLUTION

During fall of 2008, Mabanaft contacted B.O.S. As Mr. Buch recalled, "Since I already was familiar with B.O.S., we had good reason to have a closer look at the synchronization solutions B.O.S. offered for our migration project. As a first step, we visited a B.O.S. customer that used the solution in a production environment. This visit was very revealing to us and convinced us that we should start the project with B.O.S."

In the beginning of February 2009, tcVISION and tcACCESS were installed. A representative from B.O.S. was on-site and a prototype for bi-directional synchronization between VSAM files on the VSE system and a Microsoft SQL Server database on Windows platform was created.

Mr. Buch described the implementation, "Early in the process, we decided to use 'Mirror Tables' as a link between the two platforms. The idea was to replicate the changed data from the VSE System and from SQL Server 'one-to-one' in both directions. Necessary changes and enhancements to the data model was better handled in the SQL world and easier



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Treehouse Software is a B.O.S. partner, offering the most comprehensive and flexible portfolio of solutions available anywhere for integration, replication, and migration of data between mainframe sources and any target, application or platform; and virtually any mainframe application modernization project. Using ETL, CDC and SQL/XML technologies, we connect your enterprise—from anything to anything. We offer software and services that enable mainframe customers to leverage their investments in legacy systems—employing virtually any data source—with data integration, data warehousing, modernization and conversion, Service-Oriented Architectures, and other new technologies.

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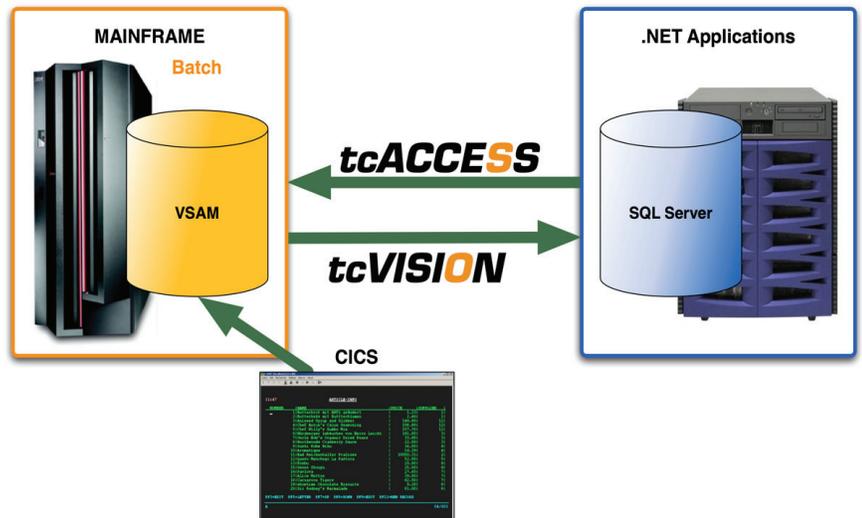
to implement, since no mainframe know-how is required. We were able to complete the prototype during the two days the B.O.S. representative was onsite.”

All changes applied to VSAM files from batch or online applications (CICS) are captured in real time by tcVISION and are replicated to the SQL Server ‘Mirror Tables’. Changes applied to the production SQL Server databases by the .NET applications are sent to tcACCESS on the mainframe via triggers and the use of the tcACCESS ODBC component. The mainframe based SQL engine of tcACCESS applies the changes to VSAM. During this processing, it is important that these changes are not replicated back by tcVISION.

The replication solution is based upon a bidirectional concept (Master/Master). Each platform has equal standing. Changes to the VSE VSAM files that have been applied in batch or online are captured in real time by tcVISION and are applied

to the SQL Server ‘Mirror Tables’. This apply process works on completed LUWs (Logical Units of Work). Triggers are used to replicate these changes to the production SQL Server databases. Changes applied from .NET applications to the SQL Server databases are automatically stored in the ‘Mirror Tables’. Triggers on these tables send the changes to the mainframe as SQL statements using the tcACCESS ODBC component, where tcACCESS on the VSE operating system and tcACCESS applies the changes to VSAM.

To ensure that changes are not replicated back by tcVISION, so-called “loopback” processing is part of the solution. tcVISION recognizes the changes that come from tcACCESS and filters them out from the changed data during the replication process.



The changed data captured by tcVISION on the mainframe only gets replicated when the processing on the mainframe has been successfully completed and has resulted in a committed Logical Unit of Work (LUW).

The implemented replication scenario is fail-safe. In case of errors (in the network for example) the changed data is buffered and the replication scenario automatically restarts when the error has been resolved.

Another important factor for the bi-directional replication is the requirement that changes must only be applied at the target system, if they have been successfully committed at the source system. The initial tests proved that the

tcVISION prototype model is functioning. “I wouldn’t have thought that the replication of our production data between these two worlds would function so well and smoothly!” said Mr. Buch.

The development of the first large module is underway and the first scenarios are in place and fully tested. According to Mr. Buch, “The cooperation with B.O.S. was very enjoyable. The products are easy to use. Our people used the prototype as a start and were able to easily build upon it and achieve the first results very quickly. The B.O.S. support team is quick to respond to any questions and very competent. We are confident that we can manage all migration tasks with the tcVISION and tcACCESS solutions.”