



"independent – sound - individual"

Mabanaft is the trading arm of Marquard & Bahls AG, a privately owned, leading independent petroleum company.

The business encompasses international trading, the 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.



Mabanaft and Marquard & Bahls are headquartered in the heart of Hamburg. The central IT of Marquard & Bahls uses a z-Series mainframe with z/VM 3.1 and z/VSE 2.3, that is hosted by IBM. The data user for the daily production is stored in VSAM. Friedhelm Buch, Manager Application Development: "All of our applications have been developed by us during the last decades and meet the requirements our individual business processes. Nevertheless we made the decision to migrate all of our applications to new systems and new technologies. However, it is important to us that we can do a 'smooth migration'. To Mabanaft this means that our trading solution will be a completely new development in a Microsoft .NET environment. It is imperative to us that the legacy VSE-system will be used as a 'Blueprint' and will be replaced in stages."

The main challenge for this project is to synchronize the data on both system platforms in real-time. This is a requirement for the staged replacement of the legacy VSE-system. Friedhelm Buch: "The coexistence of both systems offers many advantages to us:

- The end users can slowly start using get accustomed to the new interface.
- We can 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' can be used from one phase to another phase."

During fall 2008 Mabanaft contacted B.O.S. Friedhelm Buch: "I already knew B.O.S. and with our migration project we had enough reasons to have a closer look at the synchronization solutions B.O.S. offered. 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 it 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 a bi-directional synchronization between VSAM files on the VSE system and a MS SQL-Server database on Windows platform was created.

Friedhelm Buch says: "Already at an early stage 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 MS SQL-Server 'one to one' in both directions. Necessary changes and enhancements to the data model is better handled in the SQL world and it is easier to implement due to no mainframe know-how is required. We have been able to complete the prototype during the two days the B.O.S. rep was onsite. All changes applied to VSAM files from batch- or online-applications (CICS) have been captured in real-time by tcVISION and have been 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 B.O.S. solutions can easily handle this."

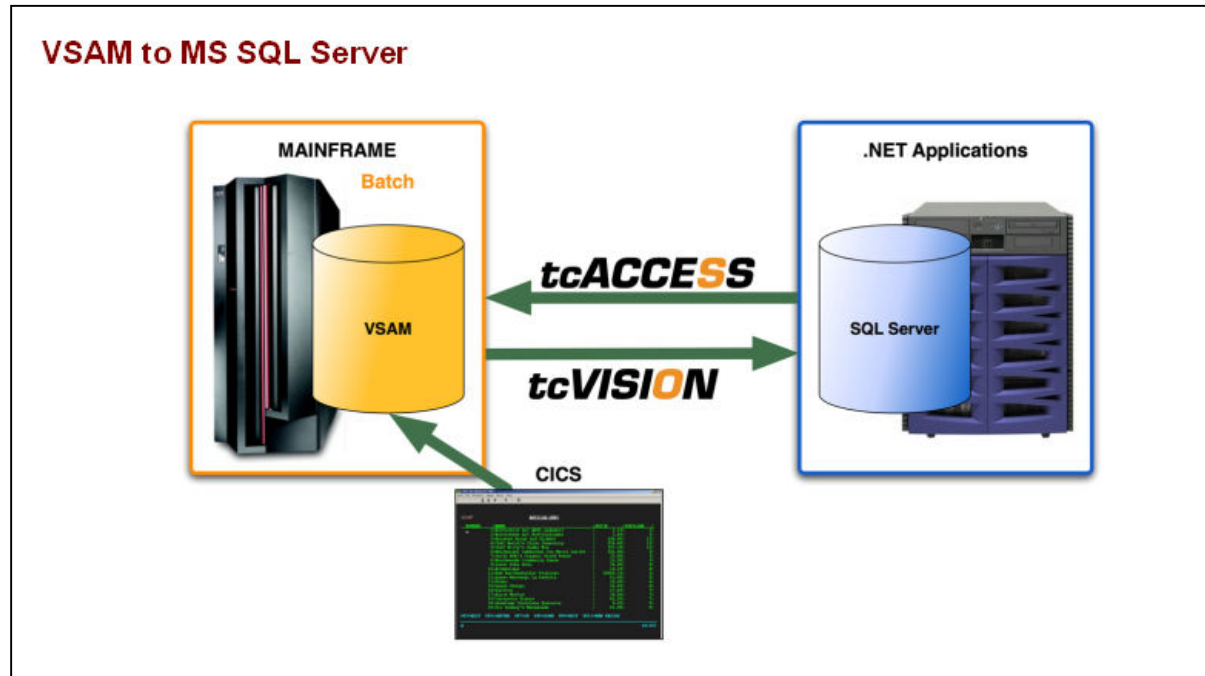
Another important factor for the bi-directional replication is the requirement, that changes must only be applied at the target system if they have been successfully committed at the source system.

The initial tests proof 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!" says Friedhelm Buch.

The development of the first large module has already been started and the first scenarios are in place and are fully tested.

Friedhelm Buch: "The cooperation with B.O.S. is very enjoyable. The products are easy to use. Our people used the prototype as a start and have easily built upon it and achieved the first results very fast. The B.O.S. Support is quick and very competent. We are certain that we can manage all migration tasks with the tcVISION and tcACCESS solutions."

Implementation example Mabanaft:



The replication solution is based upon a bi-directional concept (Master/Master). Both platforms are *pari passu*. 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 using the tcACCESS ODBC component. This component sends the SQL statements to tcACCESS on the VSE operating system and tcACCESS applies the changes to VSAM.

To ensure that these changes are not replicated back by tcVISION, a 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 failsafe. 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.

Contact

Friedhelm Buch – Marquard & Bahls AG
 Manager Application Development
 E-Mail: friedhelm.buch@mbholding.de

Peter M. Horbach
 B.O.S. Software Service und Vertrieb GmbH
 E-Mail: peter.horbach@bossoftware.de