Migration Case Study

Business Problem

Erste Bank Croatia had built a sophisticated retail banking application which worked well but was based on a Unisys mainframe environment that was increasingly hard to support. It was seen as expensive and, although the support team based in Bjelovar, Croatia was strong, would be impossible to scale if the application were to be used elsewhere in the group.

Product Solution

- IBM pSeries AIX
- IBM WebSphere
- Oracle 11g
- Micro Focus COBOL
- Java

Overview

As one of the largest retail banks in the region, Erste Bank, serves 1m retail customers in Croatia and Serbia. Erste Bank has evolved a sophisticated and capable retail banking system written in Cobol74, Cobol85 and LINC running on Unisys mainframes under the MCP operating system.   The services offered include online banking as well as traditional branch banking and card processing.

Erste Bank's 180 branches, internal users and web banking system generate a high rate of online transactions. Together with the online-requested batch processes and overnight batch runs, 15m (updating) database transactions are supported every day.

With the workload ever increasing, Erste Bank's existing mainframe environment was under strain especially at peak periods such as month-end processing.

Erste Bank explored the option of converting applications to .NET running on Windows but, abandoned this when tests showed that it was impossible to achieve the required performance. They then turned to MSS and commissioned a Cobol to Cobol migration proof of concept exercise which proved successful and delivered much better performance.

MSS then partnered with IBM Croatia to deliver the full migration which was achieved in a compressed timescale of 12 months.

Drivers and Challenges

Three drivers prompted the decision to migrate the applications to a more modern environment.

First, the core application system consists of large monolithic programs written in Unisys Cobol. The team maintaining these programs is very skilled but small. The concern is that the skills required are in short supply worldwide and non-existent in Croatia outside of Erste Bank. If a large redevelopment were required it would take too long using the existing team and would be impossible to find sufficient external contractors.

Second, due to the proprietary nature of the Unisys environment, adding new features such as the web banking interface was difficult and involved building complex interfaces from scratch. In a mainstream environment such things are available off the shelf.

Third, the systems needed to be re-licensed in September 2010 at considerable cost. Not only that but to handle the increasing workload they would need to be significantly upgraded at yet more cost.

Drivers and Challenges cont.

Performing the migration, however, involved many challenges.

The Cobol programs themselves were very large – the largest (including library code) exceeding 300,000 lines. To accommodate these not only did the MSS migrate!COBOL toolset have to be enhanced, but the largest programs broken into smaller pieces to compile in the target environment.

Some of the programs also used a non-standard terminal interface (remote file) and protocol characteristics (intermediate messages). The presentation layer was unified and standardised using browser technology with the MSS MCS!Lite and WebManager products handling the differences in protocols.

As well as terminal interface issues the many different specialised code modules that had been created to accommodate web banking, card processing, passbook printing and PC application communication had to be replaced.

Solution

Erste Bank engaged MSS via IBM to perform the actual migration and integration. The synergy of the joint suppliers was apparent during the project with IBM bringing specialist WebSphere expertise and project management to bear. MSS, constantly consulting Erste Bank technical staff, created the detailed solution design encompassing online processing and message flow, special interfaces, batch processing and performance enhancements. MSS, of course, performed the actual code migration using migrate!COBOL, migrate!LINC and migrate!WFL.

To perform the most labour-intensive task, the testing and debugging of the Cobol programs, MSS engaged local contractors and supplied a testing co-ordinator to control and guide them. Erste Bank contributed to this team to create a joint effort that was very effective in finding some rather difficult problems leveraging the application knowledge of the Erste Bank staff and the target environment knowledge of the MSS and contractor staff.

Erste Bank selected IBM AIX platforms based on the p6 processor for the production environment. The selected hardware was benchmarked and tuned to perform well and easily took on the workload from the original Unisys system.

Micro Focus Cobol was chosen as the most mature and capable product in the field. During the project Micro Focus proved themselves by giving excellent support to the migration project and helping to solve some tricky communication problems.

Solution cont.

The latest migration path, JEE Java, was chosen by Erste as the target for the LINC systems. This produces EJBs corresponding to ispecs and Java batch programs from LINC reports. Eclipse is used as the IDE providing much enhanced development and debugging facilities.

Oracle was already the preferred choice of database vendor and Oracle 11g was used as the database software. Again, Oracle proved to be the right choice by performing extremely well and giving prompt support when required.

In conjunction with MSS MCS!Lite and MSS WebManager, IBM's WebSphere was selected as the underlying middleware. WebSphere was configured to provide not only the web and application server functions but also to provide the single sign-on that Erste had been wanting for some time.

Because Attachmate's DataBridge product was already in use, the database migration was relatively simple. It also made the cut-over weekend straightforward since the DMSII and Oracle database versions could be synchronised in a short time.

During the 12 month project Erste Bank continued to develop the application in parallel with the conversion using the ability of migrate!COBOL and migrate!LINC to convert a complete system in a few hours and integrate new or changed programs into the target code base. To do this safely, the test team kept tight control over what would need to be tested or re-tested after code refreshes.

Results

The application migration and infrastructure modernization project was completed within 12 months and went live in August/September 2010. The cut-over was uneventful and the systems ran successfully thereafter. Because the programming staff had been involved with the new environment they were able to easily fix the few minor performance glitches that emerged in the first week.

Overall, performance has been significantly improved in all areas. Largely because of streamlining of the transaction path using MSS message routing software, the response times for the web banking services has improved fivefold and the rejection (timeout) rate has improved by two orders of magnitude. The batch performance change is most dramatically illustrated by the end of month procedure that used to take 5 days but now completes in less than 2 days.

The cost of running the Erste Bank systems has been very much reduced and, including the new hardware, software and cost of migration, will give a huge return on investment over the next 5 years.

Migration Summary

ENVIRONMENT	SOURCE	TARGET
CPU:	Unisys Libra 585	IBM pSeries AIX
Database:	DMSII	ORACLE 11g
Language:	Cobol74/Cobol85 Linc	Micro Focus Cobol Java
Data Comm:	COMS	IBM Websphere

"This was a very difficult project but, by working together, we succeeded and created an excellent result".

Sladjana Jager, CIO, Erste Bank Croatia