



Migration Case Study



Business Problem

Scottish Life is the biggest brand within Royal London, a group encompassing several organisations in the UK Life Assurance and Pensions industry. The company is based in Edinburgh and has an extremely effective application suite for managing its business and handles a high volume of business – 200,000 online transactions and an 11 hour overnight batch run every day.

In 2004 Scottish Life were faced with an upcoming mainframe upgrade that would cost many millions of pounds. Having had a bad experience with a previous upgrade combined with a desire for a more modern platform they were looking for a solution that could save cost and provide a mainstream way forward for future development.

Business Solution

Scottish Life approached MSS to investigate the possibilities of moving to Unix hardware and Oracle software. Once they saw the range of possibilities that working with Oracle could give them, they were convinced that this was the right solution. By moving out of a (single-supplier) mainframe situation and into the competitive Unix marketplace, enormous capital savings were offered. After an exhaustive evaluation including detailed benchmarks, Scottish Life chose Hewlett Packard to supply a mixture of Itanium and RISC based servers – at a fraction of the cost of the Unisys mainframe that would have been required.

The migration project was accomplished and went live in October 2005. It was noticed straight away that performance in certain areas, especially the batch work, was substantially improved while the costs had diminished. Royal London estimate a 70% saving in on-going costs for their main IT platform, have a more productive system than before and are well-positioned for future development.

Overview

Set up in 1861, Royal London is the second largest mutual insurer in the UK with funds under management of around £24.7 billion (as at 31st December 2004). Scottish Life, the biggest brand in the Royal London stable, has been a user of Unisys Clearpath (NX6800) mainframes for many years and Unisys V Series mainframes prior to that. Scottish Life has developed its core application software over a long period and provided it to Unisys as the basis for the Unisure package currently marketed by Unisys to a range of financial organizations.

In 2004 Scottish Life decided to lower their cost base by moving to Unix equipment with MSS International's migrate!LINC and migrate!COBOL tools. MSS performed the core migration with Scottish Life testing and modifying the resulting code to their satisfaction.

The DMSII databases were ported to Oracle 9i and Oracle and MicroFocus development tools were used. The migration took 17 months and involved a team of Scottish Life staff of up to 40.

Overview Cont.

The migrate!LINC toolset was used to automatically migrate the Linc screen presentation to Oracle Forms and business logic to PL/SQL. For the batch Scottish Life chose SqC as the target for most of the code for performance reasons – SqC generates native C code which executes very fast on the HP-UX platform. For other programs MSS migrated Linc batch code to PL/SQL.

Migrate!COBOL was used to convert the Cobol systems to MicroFocus Cobol85. The screen presentation was handled by the MSS migrate!SDF system which generates screen layout files and Cobol libraries to provide a functional equivalent to the mainframe SDF system. The MSS mcs!LITE product was used as a TP monitor and Cobol send/receive verbs automatically translated to calls on the api.

Both the Linc and Cobol systems were large scale – the Linc systems consisted of 2600 ispecs (screen layouts), 4400 global logic routines and 3900 reports (batch programs) and the Cobol systems totaled 2.5m lines of code. Additionally many Algol modules existed and had to be replaced in some way.

Challenges

The primary Linc system was very large and complex. The scale itself was not such a problem for the migration tool since it processes the mdl (Linc application definition export) files at a fast rate. However the complexity of the code, especially database access within nested loops proved to be an issue.

The Cobol systems were even more of a challenge and the initial estimate for the work involved proved to be completely inadequate and had to be re-visited. When looked at in detail, most of the Cobol systems were written in the 1980s for Unisys V series and had been already converted once in order to be run on Clearpath NX. The original data definitions were still in place and, in many cases, V Series style data was handled by Algol library routines that were called at runtime to manipulate data from files. The files themselves were defined in different ways in different programs.

The database definition and data would also have to be migrated with integrity checks on the data as it 'landed' in the target Oracle database.

Underlying all of this effort were the usual difficulties of moving from one operating environment to a very different one. At a low level this entailed moving from a 48 bit EBCDIC environment to a 64 bit ASCII machine. At a higher level, all the tools and utilities are different and staff retraining was required.

Solution

Scottish Life took ownership of the project from the start, building a strong internal team and defining a detailed plan for the project, sponsored at the highest level.

MSS and Scottish Life created a set of batch programs – identified as the main performance worry – and ran them on the same set of data at benchmark sites. As a result of this exercise and subsequent negotiations Hewlett Packard was chosen as the hardware partner. The benchmark was a key part not only of the hardware selection but the subsequent configuration exercise that HP and Scottish Life jointly undertook.

Scottish Life decided that they wanted as much programming compatibility between the batch and online systems as possible. MSS therefore undertook to extend the migrate!LINC product optionally to emit batch PL/SQL code. Although this approach has maintainability advantages SqC generates more efficient code and was used for most of the batch suite. As Scottish Life became more familiar with SqC, the maintainability argument diminished as they appreciated that much of the extended C syntax is modelled on PL/SQL and is designed to be easy for a Linc programmer to use.

Several refinements of the process were adopted to cope with the database access complexity and Scottish Life also opted to tune many of the database access statements to make them more efficient in the Oracle environment.

Solution Cont.

The Cobol programs proved very difficult to migrate due to the V Series style in which they were written. MSS and Scottish Life agreed that the data should be transformed into native Unix style – simple display numbers and alphas – for future maintainability rather than perpetuating the run-time fix up approach that had been adopted previously. This involved complicated transformations of the programs as well as the data in the files. The migrate!FILE software was extended considerably to be able to generate programs that could accommodate these transformations and creating the file definition data to drive it – a spread sheet detailing all the data conditions producing different record types within a file - was an unexpectedly large task.

The Oracle database schema itself as well as the DMSII to Oracle data migration programs are generated by the migrate!DATA component of the MSS migration suite. The only special issue arising was the physical size of the data files moved from the mainframe to the Unix system. A file partitioning option was implemented in the data migration program generator to solve this.

The final part of the data migration exercise was to prove to the internal audit team that the data on the new platform was exactly equivalent to the data on the mainframe. Fortunately another component of the MSS data migration suite addresses data integrity checks. Given a list of fields in database tables and in flat data files, code is automatically generated to sum them over the entire table/file on both platforms. The checks on the mainframe side were actually performed during the data extract run both for DMSII and flat files to save time during the cut-over weekend.



Results

The migration was completed in 17 months and went live in October 2005. The system ran successfully from day one with no major failures and much improved performance – the 11 hour daily batch was cut to 7 hours - and Scottish Life are well pleased with the result.

“The migration has saved 70% of our 5 year IT cost” says Neil Hughes, IT Director at Scottish Life. “We can now move forward with a much lower cost base and take advantage of the interoperability and features that Oracle and Unix can offer us”

Migration Summary

ENVIRONMENT	SOURCE	TARGET
CPU:	NX6800	HP Itanium/RISC
Database:	DMSII	Oracle
Language:	Cobol/Linc	Micro Focus Cobol/PL SQL/C
Data Comm:	COMS	MCS!Lite

“We are experiencing a rapid ROI as we have effectively halved the operating costs of our Scottish Life systems. In addition we have dramatically improved performance, increased the quality of service to our customers and implemented a contemporary IT infrastructure that helps us respond faster to the business...”

Ian Chapple, IT Director, Royal London Group