



**MSS**  
International



# Migration Case Study

## **Business Problem**

Toronto Police Service is one of the largest municipal police forces in North America, serving the City of Toronto. Toronto, the largest city in Canada, has a population of more than 2.5 million residents, and serves as Canada's economic capital.

The CASC system is a critical legacy system that ran on a Unisys mainframe. CASC is used by Toronto Courts, City of Toronto and TPS to schedule and manage police officers' court attendance. First implemented in 1986 using Unisys LINC and COBOL, CASC was a prime candidate for a technology refresh in 2007.

TPS faced the usual problems that arise when new technology becomes the mainstream in an organization, leaving the mainframe applications as an expensive and isolated legacy. The problems were a decrease in available technical expertise and high operating cost and a need for increased flexibility.

Citing these issues, TPS requested proposals to migrate CASC to a modern platform.

## Overview

In 2007 MSS responded to the RFP issued by Toronto Police Service to move the CASC system from Unisys Libra mainframe to AIX Unix.

MSS International won the bid with a proposal based on the migrate!LINC and migrate!COBOL tools. The fully automated migration approach was not only the lowest cost but also lowest risk approach.

MSS performed the core migration - LINC and COBOL to Java (J2EE), DMSII to DB2 - with Toronto Police staff testing the resulting code.

The DMSII databases were ported to DB2 and standard database development tools already in use at TPS were used. The migration project took 9 months and involved a team of Toronto Police staff of up to 4.

The migrate!LINC toolset was used to automatically migrate the Linc screen presentation to JSP supported by MSS's webmanager software with business logic implemented as Java EJBs. For the batch system, freestanding Java programs, each running in its own JVM, were generated.

## Overview cont.

Migrate!COBOL was used to convert the Cobol system to Java for compatibility with the migrated Linc. The resulting code was virtually line-for-line with none of the 'bloat' usually associated with such conversions. The new code is structured so as to be easily understood and maintained by the original programmers with minimal retraining in java, and has been well-received by the developers.

Both the Linc and Cobol systems were moderate scale – the Linc system consisted of 120 ispecs (screen layouts) and 60 reports (batch programs) and the Cobol system totalled 100,000 lines of code. Additionally 120 WFL job control programs were migrated, using migrate!WFL, to shell scripts and these were controlled by a schedules run by standard system software (cron).

## Challenges

The Cobol system was the first live implementation of the Java migration path for the migrate!COBOL software and required significant R&D during the project.

The database definition and data had to be migrated to a format consistent with TPS internal standards for database usage. To do this the MSS migrate!DATA was enhanced to incorporate the required customizations of the generated schemas that replace the original DMSII DASDL. migrate!DATA then also generated corresponding extract and load routines for the data.

The job control programs were complex and time-driven – effectively a scheduling system built in WFL. This was replaced by a fully functional equivalent comprising scripts, generated using the MSS migrateWFL tool, and cron tables to drive the schedule.

During the project, the stringent security requirements of the Police Service had to be respected, and the core migration was done remotely in a “hands-off” manner. The team evolved ways of working that complemented the TPS project staff and made the task as efficient as possible.

## Results

The migration project was completed in 9 months and went live in May 2008. The implementation was deemed to be very smooth, with minimal impact and with the online user-base (up to 6000 with 80 concurrent users on average) barely affected.

Using the well-proven migrate!LINC product and the newer migrate!COBOL (Java) technology, the actual migration was accomplished in 3 months with the remaining 6 months used in testing and integration activities.


This is an achievement considering the changes involved: Linc migrated to Java, Cobol migrated to Java, WFL to shell script, scheduling system to crontab, DMSII database to DB2, COMS replaced by WebSphere and the underlying MCP platform replaced with a standard AIX (IBM p Series) system.

It was noticed straight away that performance in certain areas, especially the batch work, was substantially improved while the costs had diminished. Toronto Police are now experiencing significant savings in support costs and direct on-going IT costs. They have a more productive system than before and are well-positioned for future development.

After a week of operation in the new environment the cut-over was pronounced a 'smooth transition' by Katie Escudero of the Toronto Police IT Services department.

### Migration Summary

ENVIRONMENT	SOURCE	TARGET
CPU:	Clearpath NX	IBM UNIX
Database:	DMSII	DB2
Language:	Linc/Cobol	Java(J2EE), XML
Data Comm:	COMS	Websphere



“Not only are the end-users benefitting from a web browser interface and the operations department having a standard environment to manage, but the developers also have a better environment to work in. A range of development technologies are now available that will significantly extend the life of the CASC system as well as bringing all the advantages and flexibility of programming in Java. The transition for developers was also eased by the layout of the new code being as close as possible to the original - even in the case of the automated COBOL to Java conversion where a virtual 1:1 ratio of new to old code lines was achieved!”

**Nick Wnekowski, CTO MSS International**