Sector7

Telstra Corporation, Ltd.

Nature of Project

VAX OpenVMS/Rdb to Sun Solaris/Oracle
DEC Pascal to Sun "C"
Rdb to Oracle 7.3
SMG, X.25, TCP/IP, Pascal: 1.3 Million Lines

Telstra Corporation Limited, based in Melbourne, Victoria, is the licensed supplier of land-based telecommunication systems in Australia. Its Switched Data Network provides most of the leased line data services critical to Australia's commercial operations.

Sector7 Converted CUSTODIAN, the real-time configuration management system for Telstra's Switched Data Network (SDNM) division, from VAX/Rdb to Sun Solaris/Oracle. The project included conversion of VMS Pascal to Sun "C," Rdb to Oracle, and support for many embedded VMS system services, including Digital's UCX (TCP/IP) and WAN32 (X.25) native QIO interfaces in a high-performance, high-availability environment.

In 1998, Telstra managed the allocation and provisioning of services for its customer base with CUSTODIAN, an OpenVMS-based system, which maintains an inventory of all available data communications facilities within Telstra. This system allows a customer service representative to view all facilities allocated to a customer, as well as enter and manage the process of adding, changing, and removing services for each account. As new orders are entered, CUSTODIAN automatically allocates available equipment and trunks, generating and tracking work orders for installation personnel. Switching facilities are automatically reprogrammed to meet the needs of these orders. Ultimately, a regular transmittal file provides details of each customer's services for billing purposes.

IBM Global Services (Australia) serves as the facility manager for Telstra's Switched Data Network Manager (SDNM) information services operations.

Sector7 has a five-step blueprint process for moving applications from OpenVMS to Solaris. The first step was an assessment. During the assessment, Sector7 personnel performed an in-depth situational analysis of the existing system. The impact of the critical nature of this 24x7 real time application was considered. X.25, TCP/IP, and DECnet communication links were evaluated. The impact of missing and outdated sources was considered.

Subsequent to the situational analysis, Sector7 worked with Telstra to develop a migration approach to fit both tactical and strategic business needs. Sector7 can provide solutions ranging from low risk migration of existing systems and data to completely reengineered applications using Business Logic Extraction (BLE) methodologies. Migration requires making the minimum changes necessary to allow the code to function in the new environment. Issues addressed include text translation, non-portable code, and hardware differences. This approach is extremely low risk, and may include follow-on efforts to improve both original design and system performance. Reengineering using BLE requires extracting the business logic from the code to take full advantage of features found in the new system, reusing code where possible, and rewriting it where necessary. Better use of system features and more maintainable code usually result from this process. Often, BLE is selected when organizations have set specific product standards.

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BUSINESS OVERVIEW

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The solution selected by Telstra was a migration, with transformation of the application logic from PASCAL to "C". As an obsolete language, few programmers are now available to maintain Telstra's original application programs, resulting in significantly increased expense. Sector7 has tools, which automatically transform PASCAL source files to C, greatly reducing the chance for errors in recoding manually while reducing the time and cost investment in the migration. VX/Pascal provides system library calls which permit "C" programs to easily support various features unique to PASCAL, including DEC (now HP) extensions to the language standard.

In order to avoid costly reprogramming of many operating system specific library calls, Telstra chose Sector7's VX/RT library, which provides support for most OpenVMS functions, including SYS$(), LIB$(), and other common routines. Key to this decision was support for both OpenVMS-style logical names and the SYS$QIO() input/output interface, extensively used by Telstra. VX/SMG provided a UNIX-based package solution for the user interface, while VX/RMS provided support for the various file formats used by OpenVMS, including FORTRAN-style file formatting used by many PASCAL interfaces.

Much of the application logic of CUSTODIAN is involved with communicating directly to telecommunications facilities such as Northern Telecom (Nortel), Cisco, and OCTEL. OpenVMS's X.25 communications facility, PSI, is widely used by the application. Sector7's Vx/X25 package provided a seamless interface to Solaris' X25Connect product, which has a completely different programming interface.

All of Telstra's extensive investment in DCL (Digital Command Language) scripts was preserved though use of VX/DCL, Sector7's implementation of the OpenVMS command language and environment on UNIX. VX/DCL's interface to traditional UNIX command shells provide a means to develop new functionality in the native UNIX environment. VX/JSP, used in conjunction with VX/DCL, implemented the complex batch scheduling needs required for implementation of CUSTODIAN.

This successful project allowed Telstra to retain its valuable investment in software engineering while transitioning to an environment better able to meet its growing needs. Migration costs were offset by reduced maintenance and personnel expenses, resulting from modern equipment and programming environment.

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