The Challenge
When the Canadian Forces procured the CP-140 Aurora Maritime Patrol Aircraft in 1980, the requirement to maintain its many computer programs was widely recognized.

To fulfill this requirement, the Software Engineering Squadron (SES) was formed on August 7, 1980. The Squadron is tasked with providing software support for the CP-140 Aurora. This includes maintenance and design of computer programs, not only for the Aurora’s on-board computer, but also for the Data Interpretation and Analysis Centre (DIAC), and the computer assisted training devices used by the 404 Squadron.

In addition to the over 500,000 lines of code they maintain, the past few years have seen a growing emphasis on the development of new software as aging components of the Aircraft’s weapons systems hardware are replaced. In 2007, the SES decided it was time to replace their VAX 6510 & 6520 hardware, for which support had become hard to find, as well as more expensive. The machines had been running at full capacity day in and day out for years, but they knew they would not last forever.

The Aurora conducts regular sovereignty and surveillance missions and maintains search and rescue capabilities 365 days a year, so hardware failure was not an option. As part of the Canadian DND, it was also important to keep the security provided by their OpenVMS operating system. The SES knew that replacing the VAXes would be a challenge; with more than 500,000 lines of code, migrating to another platform was a daunting task, especially since they had an application for which they did not have all of the necessary source code. To complicate matters, the VAXes were also connected to a matchless Rockwell card that communicated with a Unisys system, whose programs would have to be rewritten for another device.

The Solution
In search of a less complicated solution, several SES staff attended the HP Technology Forum & Expo in Houston, Texas. There, they were introduced to Stromasys’ CHARON-VAX cross-platform virtualization software, which promised to keep their VAX applications and operating system running unmodified on a new, industry-standard server. Using the CHARON-VAX software, they could replace their VAX hardware with a new server, while they maintained and could still change their application, all without the original source code. It was the solution they had been looking for.
According to Wayne Graham, the SES has had no issues with their virtual VAXes running on the CHARON-VAX software. The systems boot automatically and run just like a VAX, with the exception of being smaller and more energy-efficient. Using the CHARON-VAX software, the SES can maintain and continue to develop programs for the Aurora aircraft, without having to worry about declining support for legacy hardware. In addition to solving their support problem, they were also able to increase storage capacity, reduce their energy consumption, increase the amount of available floor space in the data center, and save money on maintenance fees.

"We needed a way forward, and CHARON provided that, and more. Using the CHARON software allowed us to reduce energy consumption, increase our available floor space, and save on maintenance costs."

- Wayne Graham, Resource Manager, 14 Software Engineering Squadron, Department of National Defence, Canada

THE RESULT

According to Wayne Graham, the SES has had no issues with their virtual VAXes running on the CHARON-VAX software. The systems boot automatically and run just like a VAX, with the exception of being smaller and more energy-efficient. Using the CHARON-VAX software, the SES can maintain and continue to develop programs for the Aurora aircraft, without having to worry about declining support for legacy hardware. In addition to solving their support problem, they were also able to increase storage capacity, reduce their energy consumption, increase the amount of available floor space in the data center, and save money on maintenance fees.

ABOUT STROMASYS

Stromasys SA is a privately held company headquartered in Geneva, Switzerland, serving thousands of users in more than 50 countries. Stromasys develops and markets Cross-Platform Virtualization solutions that allow owners of PDP, VAX, and Alpha computers to continue to run their business-critical applications unchanged on modern, industry-standard computer systems.

Stromasys SA was established in 1998 as part of a management buyout of DEC's (Digital Equipment Corporation) European Migration and Porting centre following the HP/Compaq merger. The vast experience gained from years of large-scale migration and porting projects, System-level VMS engineering projects, and development of Binary translators eventually led to the development of the CHARON-VAX and CHARON-AXP products. For more information, please visit www.stromasys.com.