

CHARON-VAX streamlines operations for the European Transonic Windtunnel



The Challenge

Guided by a philosophy of excellence, ETW has grown into one of the world's most important aerodynamics research and development facilities for the aviation industry. Since 1995, the organization has helped aircraft manufacturers from all over the world to optimize their aircraft designs. The wind tunnel provides realistic flight conditions to analyze the aerodynamic properties of scaled-down aircraft models. The models are equipped with pressure and temperature sensors, as well as additional flow sensors, and then mounted in a test section, where a 50-megawatt compressor generates nitrogen flow at supersonic speeds of up to 1.3 mach. To allow simulation of realistic flight and flow conditions on a small scale, the temperature in the wind tunnel is lowered to approximately negative 160 degrees Celsius and air pressure is increased to 4.5 bar. Such conditions can be created only by using extremely cold nitrogen combined with a sophisticated system of airlocks to keep moisture out.

The airlock system, the transport of the model, and the wind tunnel's settings were controlled by half a dozen VAX systems. Six more VAXes collected real-time measurement data. All the systems ran on OpenVMS. "OpenVMS is still one of the world's best operating systems," explained Wolfgang Strudthoff, group leader of the computer systems department at ETW. "It's very reliable. We've had only a few outages over the past 20 years." But workstations capable of running OpenVMS were growing rare. In the mid-1990s, Digital Equipment Corporation replaced 32-bit CISC VAX systems with 64-bit RISC-based Alpha AXP systems. Despite several attempts, Digital was never able to ensure that all applications could be transferred to the new RISC platform without modification. In the case of ETW, that meant that their custom-built applications could not be moved to AlphaServers, and therefore the old VAX systems had to be carefully maintained. "Our initial investment in software development was huge," explained Strudthoff. But after almost 30 years of continuous use, the hardware was reaching the end of its life.

The Solution

It wasn't easy to find a replacement for OpenVMS, a virtual memory based, multi-user and multi-processing operating system with time-sharing, batch-processing, and real-time data-processing capabilities.



PARTNER PROFILE

EQUIcon designs and develops software for users in industry and technology who require especially powerful and resilient software with a high level of reliability and safety. EQUIcon provides software solutions for controlling complex processes and fulfilling real-time requirements, as well as for projects that require a combination of hardware and software platforms. Its experienced developers tackle these challenges using state-of-the-art technology. For more information, please visit:

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CUSTOMER PROFILE

European Transonic Windtunnel GmbH (ETW) is an independent organization specializing in avionics research. Since 1995, ETW has operated a wind tunnel in Cologne, developed and built jointly by France, Germany, the United Kingdom, and the Netherlands. The facility provides a lab environment where European researchers and engineers can simulate realistic flight conditions. The scientific insights gained at ETW support innovation in the aviation industry. For more information, please visit:

www.etw.de





The latter ability in particular made OpenVMS invaluable for applications such as measuring and controlling. Stromasys's partner, EQUIcon Software, told the IT team at ETW about Charon, the VAX virtualization solution. After testing this option, ETW replaced a first VAX with CHARON-VAX in 2005. "EQUIcon implemented CHARON-VAX in our development environment, where OpenVMS now runs on a virtual system in parallel with our production system," said Strudthoff. "The migration to Windows went without a hitch. Since application functionality is provided via the network, you can hardly tell the difference—apart from the improved performance." Stefan Crump, computer systems coordinator at ETW, agreed: "OpenVMS starts up just as I've always known it – with the same look and feel." A second implementation followed in 2009. Now Strudthoff and Crump are even considering migrating the VAX systems responsible for collecting measurement data to CHARON-VAX, although to make this possible a new feature will have to be added. However, Stromasys has shown in the past that it can provide such improvements to customers quickly in a new release.

The Result

Since deploying more modern systems, ETW has significantly reduced its energy usage for IT. But that is not the only reason the company will continue to rely on virtualization solutions like CHARON-VAX. "We don't need a lot of CPU power, but a stable real-time environment is essential," said Stefan Crump. "The data we collect is immediately passed on to our customers. We don't need to visualize it or process it in any other way. CHARON-VAX provides the ideal foundation for this task." In addition, OpenVMS is a safe operating system, because there is almost no VMS malware. Since CHARON-VAX can be operated on a hardened Windows system, that level of safety is preserved. "Our experience with CHARON-VAX has been entirely positive. As soon as a new release with the additional features is available, we will be able to use our old applications indefinitely," Strudthoff added.

About Stromasys

Stromasys is the original and leading provider of enterprise-class cross-platform virtualization solutions, including PDP-11, Digital VAX and Alpha, HP 3000, and SPARC servers. The company extends the life cycle of business and mission-critical systems through virtualization, modernization, and system enhancement.

Founded in 1998 and headquartered in Geneva, Switzerland, and in Boston, Massachusetts, with sales offices as well as engineering, development, and research labs located around the world, Stromasys has implemented more than 5,000 cross-platform virtualization solutions for the world's leading companies in over 50 countries.

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Stefan Crump,
Computer systems coordinator,
ETW

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