Case Study

4 Legacy Platforms, 1 Data Centre, Zero Application Rewrites: Consolidating a European Defence Conglomerate's Legacy Estate

Summary

A major European defence conglomerate moved its entire legacy UNIX and OpenVMS estate from sites across Europe into a single data centre, running on one virtualised infrastructure. Every system now runs as an emulated virtual machine on Stromasys Charon, hosted on standard x86-64 hardware, and not one application had to be rewritten, recompiled or re-certified.

Challenge

The conglomerate's legacy estate was spread across sites in Europe and spanned four processor architectures: SPARC servers running Solaris, PA-RISC servers running HP-UX (mostly 64-bit, some 32-bit), and a handful of AlphaServer and VAX systems running OpenVMS. The aim was to bring all of it under one roof and move the applications exactly as they were, without rewriting, recompiling or re-certifying them.

That made the project a migration and a consolidation at the same time. Each server had to be copied to the new platform, tested and put into production. Only then could the original hardware be switched off in its own data centre.

The machines themselves added to the difficulty. They had been running for many years, and three problems surfaced as the team began copying data:

Predictive Defense

Some rotating SCSI disks had damaged filesystem nodes.

Very large filesystems.

One filesystems held so many files that tar and cpio were unusable.

Disk-bound licences

Some applications tied their license to the physical disk, so a file-level copy would invalidate it.

Solution

Stromasys Charon emulates SPARC, PA-RISC, Alpha and VAX hardware on standard x86-64 servers, so a single vendor could cover every platform in scope. That proved decisive: four technologies from four different suppliers would have made the project unworkable, both technically and commercially.

The project followed four steps, each worked out with the customer's own IT team.

Analysis

The team first collected the basics with the customer: user accounts, network addresses and operating system versions. Stromasys data-collection scripts were then run on every machine. Their output became a detailed map of each source system, covering storage, filesystems, applications and network interfaces, and it defined the target configuration.

Environment preparation

From that map, the team specified the Linux virtual machines that would host Charon and the emulated systems. The customer built the VMs on VMware to that specification and provided access, the software kits and the ISO images needed to boot a minimal legacy operating system.

Migration

Production downtime was scheduled together with the customer. For each system, a minimal OS was booted from ISO inside Charon, new virtual disks were attached, and the data was copied over with standard operating system tools. Network settings, the volume manager and SCSI paths were then adjusted, boot was set to the new filesystems, and the final emulated system was powered on.

Cutover

After the customer's acceptance tests, each physical machine was shut down remotely and its emulated replacement went into production. Local staff at each site then disconnected the old hardware from the power.

During migration, the team worked around each of the hardware problems:

1. Damaged disks: the affected directories were skipped so the copy could finish.
2. Very large filesystems: Robocopy replaced tar and cpio, because it resumes an interrupted transfer instead of starting over.
3. Disk-bound licences: a block-level image of the original raw device, taken with dd, preserved the licence.

Result

Every system in scope was migrated on the original plan, and the customer confirmed it was fully satisfied. Once in production, the emulated systems improved on the hardware they replaced across the board:

Better performance

The new x86-64 hardware is faster, and CPU, memory and disk were added where applications needed them. In effect, the move doubled as a hardware refresh.

No more site visits

The serial console of each legacy system is reachable through its Linux host, so a hung machine can be restarted remotely.

Simpler operations

Backups use standard VMware tools, quiescing the application where a consistent copy is needed. Snapshots and clones protect data before any risky maintenance.

One licence console

The Charon VE License Server manages every license from a single console. Instances can move between VMs on the same ESXi host or vCenter, which also gives a first, manual level of disaster recovery.

The emulation itself proved stable and trustworthy. The real work in a project like this is tuning for application performance, which depends partly on the hardware being replaced but also on software configuration, architectural design and older SAN storage. Here, each of the four platforms was tuned on its own and then monitored alongside the others, on infrastructure where resources are shared and sometimes contended.

The biggest benefit is also the hardest to put in a business case. Costs and risks are easy to measure up front. The day-to-day gain of running Solaris, HP-UX and OpenVMS exactly like any Linux or Windows VM only becomes clear after living with it for a while, and it changes the cost and risk picture for good.

About Stromasys

Stromasys is the original and leading provider of enterprise-class cross platform virtualization solutions, including PDP-11, VAX, Alpha, PA-RISC, and SPARC servers. The company extends the life cycle of business and mission-critical applications through virtualization, modernization, and system enhancement. Stromasys has implemented more than 7,000 cross-platform virtualization solutions for the world's leading companies in over 70 countries.

Consolidate Legacy Systems.
Reduce Complexity.

Use Charon to consolidate multiple legacy systems into a single, modern data center without expensive rewrites.

Talk to an Expert



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