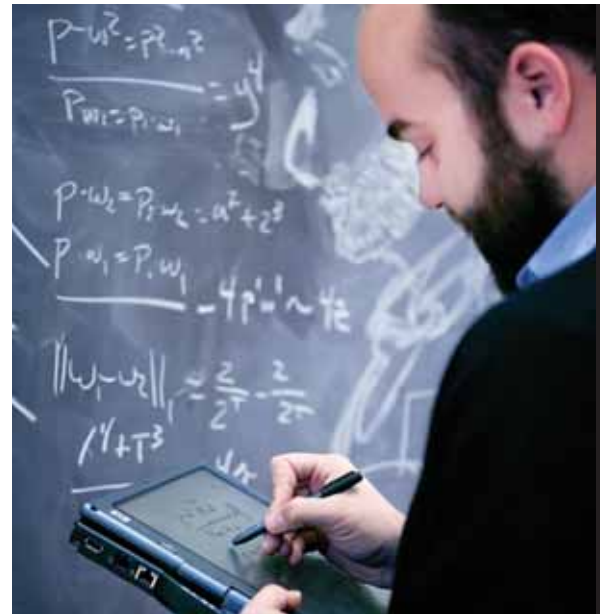# Investment protection with next-generation computing

Paris engineering school provides around-the-clock availability with
OpenVMS mixed-architecture cluster

hp

"Our mixed cluster of OpenVMS on
HP Integrity servers and AlphaServer systems
provides us with the high availability and
security required by our faculty, students
and staff."

– Jean-Pierre Petit, Chairman, Computer
Engineering Department, ESME-Sudria

hp invent

Security and availability above all

The computer-engineering department at ESME-Sudria School of Engineering has designed and implemented the network and platform architecture, operating systems, programming languages, and telecommunications networks needed to support their mission-critical applications as well as their academic curriculum.

"Students and faculty have continuous access to their e-mails, to the intranet, and in-house applications, either at school, at home, or anywhere else," sums up Jean-Pierre Petit, chairman of ESME-Sudria's computer engineering department. Based on the WASD web server, the custom-built Internet portal manages 350,000 HTTP requests a day for an average daily data volume of around 2.5 gigabytes.

"We absolutely require security and availability," adds Petit. Hence, since the early 1980s, the school has continuously built upon the OpenVMS operating system, first running on VAX servers and then, beginning in 1994, on clustered HP AlphaServer systems.

"OpenVMS is an excellent platform for learning how to master operating systems," emphasizes the chairman. With a dozen HP ProLiant servers running Linux or Microsoft® Windows Server 2000/2003 (for teaching purposes) and 200 HP PCs and HP OpenVMS workstations, the two engineers and technician in charge of systems management do not need to devote much time to managing the cluster of four production servers. "Our OpenVMS cluster based on HP Integrity servers and AlphaServer systems runs virtually uninterrupted and nobody worries about it!" Petit exclaims.

A mixed-architecture cluster

In 1995, three HP OpenVMS AlphaServer systems were installed in place of the former VAX servers. This provided the opportunity to migrate all applications from the 32- to 64-bit platform. In 2001, new-generation AlphaServer systems were integrated into the cluster. During the summer break of 2004, ESME-Sudria moved into a brand-new building in the suburbs of Paris. The computer engineering department took advantage of this move to deploy a VoIP internal telephony network relying on the HP ProCurve switch family. HP ProCurve Manager (PCM) software eases network management by automatically detecting new switches and backing up all configuration parameter changes.

"These devices have a lifetime warranty and are replaced within the next two business days in case of hardware failure. Moreover, they have the ability to supply power over the LAN to the phone sets, which allows the telephony network to continue to operate in case of power shortage at the cost of only one UPS per switch. Finally, making the choice of an "all HP" solution gives us a simple and complete ownership of our equipment," states Petit.

Porting without problems

The school's mission is to train its fledgling engineers on the newest technology. During the summer of 2005, an HP Integrity rx2600 server was integrated into the AlphaServer cluster with OpenVMS version 8.2. "In less than a week, we ported all our applications without problems by simply recompiling the source code for the Integrity server," emphasizes the chairman. Like the other components of the cluster, this multipurpose server powers the e-mail system, the intranet, and other custom-built applications.

A system that never stops

Since its introduction to production users, the HP Integrity server and AlphaServer systems have been continuously available with no major incidents noted. If a system should fail, an automatic failover would take place between the cluster's hosts – in 3 seconds all connections through the web portal to the intranet would be redirected to other servers. The WASD proxy server incorporates a web content cache that helps reduce the access time to Internet pages and saves bandwidth. Roughly 200,000 of the most requested files are stored in the cache. HTTP/1.1 compression is used to maximize throughput.

The HP Integrity server helps reduce maintenance and management costs. By mixing HP Integrity and AlphaServer platforms, the overall configuration can easily increase in capacity on demand. Relieved from time-consuming management tasks on the HP OpenVMS cluster, the ESME-Sudria team devotes itself to more rewarding missions with peace of mind. "By integrating proven technology with the latest advancements in performance and price/performance, we take advantage of a 25-year investment in this operating system, while preparing a smooth transition to the next generation of computing platforms," concludes Jean-Pierre Petit.

Customer at a glance

- **Entity:** ESME-Sudria School of Engineering

- **Location:** Ivry-sur-Seine (Paris district)

- **Founded:** 1905

- **Telephone:** +33 156 206 200

- **URL:** www.esme.fr

- **Mission:** To provide approximately 1,400 students with a strong technological education based on both theoretical and practical knowledge using the best and newest technology.

- **Primary focus:** To apply the skills and expertise of the 320 members of its faculty and research staff to the training of engineers in the fields of electrical engineering, electronics, telecommunications, and computer engineering.

Challenge

- Supply 24x365 secured access to the information system for students and faculty.

- Minimize the time devoted to system management tasks.

- Add HP Integrity server to AlphaServer systems in the same OpenVMS cluster.

Solution

- Four clustered servers: three HP AlphaServer DS10 systems and one HP Integrity rx2600 Server running OpenVMS version 8.2 supervised by HP Availability Manager.

- HTTP servers (Internet, intranet web content cache) built on WASD running on OpenVMS.

- Ten HP ProLiant DL320 servers running Red Hat Linux or Microsoft Windows Server 2000/2003.

- Twelve HP ProCurve Ethernet gigabit network switches.

Results

- Very stable information system based on OpenVMS for the last 25 years.

- Seamless integration between HP Integrity server and AlphaServer systems in the same cluster running OpenVMS.

- Automatic failover between servers in a three-second time frame providing redundancy and high availability to all web applications.

- Reduced communications costs thanks to IP telephony over the LAN between two buildings.

To learn more, visit **www.hp.com**.