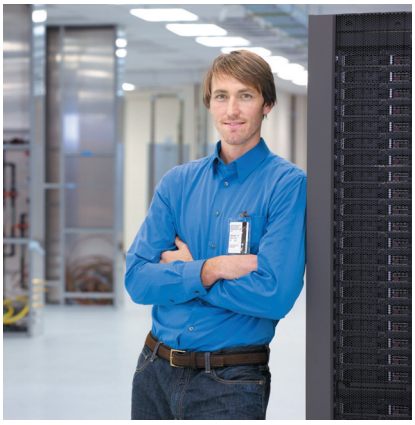
CASE STUDY
Intel® Xeon® processor 5600 series
High-performance computing

A step up in power doubles the benefits

French high-performance computing provider Oxalya boosts its offering with Intel® Xeon® processor 5600 series

Based in Paris, Oxalya is a French company that provides its clients with hosted high-performance computing (HPC) services delivered over a series of virtual cluster nodes. Its service is specifically for companies that use their own codes and for ISV applications. Clients are only charged for the compute power they use and the Virtual Node* service delivers one of the best returns-on-investment available for this type of service. To maintain its market-leading status, Oxalya needs to ensure its customers are receiving the best possible service available. With this in mind, and aware of the needs of one particular partner, Alneos, Oxalya decided to benchmark the Intel® Xeon® processor 5600 series.



Oxalya

Virtual Nodes

"Oxalya has provided us with a more powerful HPC platform which will allow us to grow and expand by providing our own customers with a more powerful and low cost service."

Aimery Assire, Founder, Alneos

CHALLENGES

- **Meeting customer needs:** Oxalya has important customers who rely on its on-demand HPC services to run their core businesses. Customers' HPC performance needs were growing and Oxalya needed to meet them
- **The search:** With its existing HPC server platform not providing enough processing power to meet growing demands and its own management costs also rising, Oxalya needed to find an alternative solution

TESTED SOLUTION

- **Comparing processor performance:** Oxalya tested the Intel® Xeon® processor 5600 series, benchmarking it against its existing platform powered by the Intel® Xeon® processor 5400 series, running Code Aster*, a CPU intensive GPL scientific software, which was installed and tuned by Alneos, a major partner

IMPACT

- **Twice as powerful:** The Intel Xeon processor 5600 series delivered twice the performance of Alneos's existing platform, powered by Intel® Xeon® processor 5500
- **All change:** Oxalya is planning to upgrade approximately 100 servers with the Intel Xeon processor 5400 series
- **First steps:** The upgrade will begin with 10 servers dedicated to Alneos, a customer who runs Code Aster open source software on behalf of its own customers

Open source opens doors

One of Oxalya's primary partners is Alneos, a company created by several employees of EDF, the French energy company. Alneos provides Code Aster* computations for its customers. This code has been developed and released by EDF as free software, since October 2001.

Code Aster open source software package is designed specifically for civil and structural engineering. It's mainly a solver for mechanics, based on the theory of finite elements. Its use can cover a large range of applications including 3D thermal analyses, mechanical analyses in linear and non-linear statics, and dynamics for machines, pressure vessels, and civil engineering structures.

Code Aster is also used to compile specific research in various fields including fatigue, damage, fracture, geomaterials, porous media, and multi-physics coupling. It is widely used at EDF for the expertise and the maintenance of power plants and electrical networks.

High-performance computing on tap

HPC for the masses

Aimery Assire, co-founder of Alneos and developing engineer at EDF, explains: "For more than 20 years, EDF has being developing Code Aster for structural engineering such as nuclear power plants, dams, electrical distribution grid network and so on. While EDF decided to distribute its programme under GPL licence, no support mechanism was dedicated to external users.

"One of the major reasons why I decided to create the Alneos company was to provide this service to any Code Aster user whether small and medium companies, large corporations or research organisations to help them in their understanding of the code, installation, development, and structural analyses".

Alneos gained considerable benefit from the hosted high-performance computing service. For example, Oxalya provides the HPC expertise – the compute performance is delivered via secure Web access – with a dedicated hotline, and full-stats and alerts. However, as the Alneos business has grown and its customer base has widened, its HPC compute capability needed to expand.

Oxalya was providing Alneos with HPC services from a server platform powered by the Intel® Xeon® processor 5400 series. Because Alneos has access to various computing resources, it decided to compare the Intel® Xeon® processor 5600 series with other processors, such as the Intel® Xeon® processor 7500 series.

Twice the muscle

It became clear to Assire that the Intel Xeon processor 5600 series would provide the computing power Alneos needed to meet its needs for faster processing time and lower costs. Alneos then benchmarked the Intel Xeon processor 5600 series against the Intel Xeon processor 5400 series, which was powering Oxalya's current HPC platform, by running Code Aster across both its platforms.

The tests revealed the Code Aster ran twice as fast on the Intel Xeon processor 5600 series platform and, at an absolute minimum, offered a 25 per cent performance improvement over the Intel Xeon processor 5400 series platform. This was enough to convince both Oxalya and Alneos to use the Intel Xeon processor 5600 series to provide HPC services.

Double the benefits

This processing muscle would permit Alneos to provide its Code Aster services to clients in half the time it was previously offering. This also meant it could offer the service without customer costs spiralling out of control. These dual customer benefits would bolster Alneos' business as well as providing a platform for future expansion.

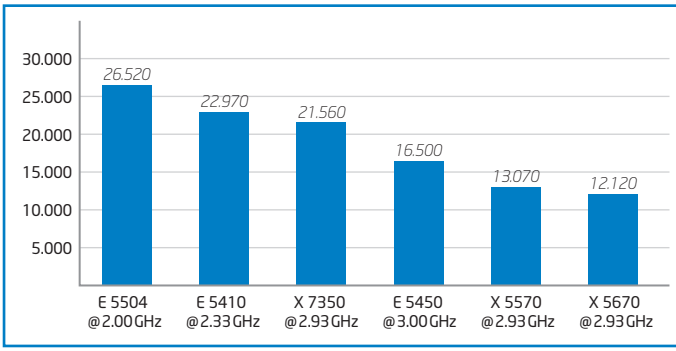
Oxalya would also gain similar benefits – for example, the ability to deliver twice the HPC power to its clients while keeping a tight rein on costs. This strengthens the Oxalya offering and enables it to cast its new business net ever wider. It also gains reduced management costs and data centre space and power savings.

In short, the proof of concept revealed that both Oxalya and Alneos would benefit from quality of service to customers thanks to an HPC platform powered by the Intel Xeon processor 5600 series. As a result, Oxalya now plans to replace approximately 100 servers powered by Intel Xeon processor 5400 series, with servers powered by Intel Xeon processor 5600 series. This is set to begin in the autumn of 2010 with 10 servers dedicated to Alneos.

Spotlight on Oxalya

Oxalya Group is a European company headquartered in Luxembourg with offices spread throughout Europe. It provides high-performance computing, software, and infrastructure services to a wide number of customers. These services include major collaborative research and development programmes. Oxalya's aim is to provide a simple industrial scale computing process to researchers and research engineers so they can focus on their core aims.

Find a solution that is right for your organisation. Contact your Intel representative or visit the Reference Room at **www.intel.com/references**



Code_Aster's performance test-cases
(CPU time in seconds)

Oxalya benchmarking tests

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