FUJITSU

Case Study
KSPG AG

»The PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go implementation has enabled us to equip our Indian site with high-performance computing with no administrative outlay. Now, our colleagues in India can help us to simulate and develop all mechatronic KSPG products.«

Dr.-Ing. Peter Seggewiß, Senior Manager Simulation & Quality Tools, KSPG AG

The customer

Country: Germany/India/Worldwide
Industry: Automotive
Founded: 1909/10
Employees: Approx. 12,000
Website: www.kspg.com

KSPG
Automotive

The challenge

Reliable and preconfigured HPC numerical simulation solution for KSPG's Indian branch which can be implemented immediately.

The solution

PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go implementation: 1+6 ANSYS CFX system based on Fujitsu PRIMERGY x86 servers, optimized for the ANSYS CFX simulation application.

The customer

KSPG is the parent company of the Rheinmetall Group's automotive sector. A global automotive supplier, KSPG's expertise in air supplies, emission reductions and pumps, as well as the development, production and provision of replacement parts for pistons, engine blocks and friction bearings, means that it enjoys leading positions in the relevant markets. Products are developed in close collaboration with renowned automotive manufacturers. In accordance with its strategic alignment, the company is divided into the Hardparts, Mechatronics and Motor Service divisions and employs around 12,000 people at more than 36 production locations in Europe, North and South America, Japan, India and China. Its global headquarters are located in Neckarsulm near Heilbronn (Baden-Württemberg, Germany).

The challenge

Dr.-Ing. Peter Seggewiß leads a global team of engineers who conduct complex technical calculations at various KSPG locations. Automotive suppliers are constantly being called upon to adjust vehicle components to the ever increasing requirements of the automotive industry. Because specifications differ from country to country, KSPG AG requires all sites to have development capacities with high-performance computing systems. "Our site in Pune mainly serves the Indian product development team, but also provides us in Germany with additional simulation capacity," explains Peter Seggewiß. Up to now, however, his Indian colleagues have worked only at workstations, naturally reducing the scale of simulations. And this is why KSPG AG was looking for a server-based HPC cluster solution with no installation outlay.

The solution

KSPG AG ordered a PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go implementation and ICR certification (Intel Cluster Ready) via ict GmbH, Fujitsu's Aachen-based subsidiary and an HPC specialist. This HPC system comprises a preconfigured and fully operational cluster with installed Fujitsu PRIMERGY x86 servers with the Red Hat Enterprise Linux operating system. In the 1+6 version, six servers work as a high-performance cluster system, with another server acting as the Head Node.

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The benefit	Products and services
■ High user productivity and accelerated calculations ■ High-quality system and reliable platform that can be managed by the development department itself with enhancement options that can be individually upgraded at any time ■ Specially designed for the operational requirements and needs of the developers and users	■ HPC system: PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go implementation; 1+6 ANSYS CFX from Fujitsu subsidiary ict GmbH ■ 1 x FUJITSU server PRIMERGY RX300 S7 management Head Node with Intel Xeon E5-2620 processor ■ 6 x FUJITSU server PRIMERGY RX200 S7 Compute Node with Intel Xeon E5-2670 processor ■ Operating system: Red Hat Enterprise Linux ■ Services: 3 years of on-site Maintenance & Support

The benefit

KSPG's innovations primarily focus on low pollutant emissions, economical fuel consumption, improved performance, reliability, quality and security. One important factor in the success of these developments is simulations, which are bundled in the Neuss site near Düsseldorf. "Here, we run several simulation groups for structural mechanics, flow simulation, magnetic fields, electronics simulation and system simulation," explains Peter Seggewiß. "Thanks to the new HPC solution from Fujitsu, I can now assign calculation jobs to our Indian branch that will place great demands on the hardware too."

For the Senior Manager Simulation & Quality Tools, one important criterion when choosing a supplier was the ability to provide IT support in India. As a global IT provider, Fujitsu was able to fulfil that need. "This PRIMEFLEX for HPC solution has also enabled us to provide our Indian colleagues with a finished system that can be quickly put into operation and that works without having to be built from scratch," Seggewiß clarifies. "All we had to do was connect it to the power supply and IT network and boot it up."

The consultants at ict GmbH, Fujitsu's HPC Competence Center, supplied KSPG AG with a PRIMEFLEX for HPC 1+6 ANSYS CFX system. Six 2x8 core PRIMERGY RX200 S7 servers with Intel Xeon E5-2670 processors were joined together to form a cluster. A somewhat larger PRIMERGY RX300 S7 system serves as the Head Node. But instead of heading straight for India, this HPC solution made a detour to Neuss: "We here in Germany satisfied ourselves that the system runs smoothly with our simulation tools," says Seggewiß. "Only then was it sent to India. We wanted to rule out the possibility of on-site incompatibilities and complications from the outset."

This allowed the head of technical calculations to conduct performance tests himself and to determine the efficiency of the system before sending it to India. Seggewiß gives the example of a simulation project with an exhaust gas recirculation valve (EGR), which reduces nitrogen oxide emissions in car engines. "In a simulation of this type, a PRIMERGY server with the same number of cores is two and a half times faster than the workstations previously used," says the KSPG engineer in praise. "When 48 cores are used, the server solution performs 9.4 times better."

Four engineers at the site in Pune, India are currently working with the Fujitsu HPC system. And their European parent company can now give its full support. "As the department manager I am constantly distributing work from Germany to balance out global capacity utilization," Seggewiß explains "Each KSPG location must be able to perform all types of simulation. This is now possible in India too, making us considerably more flexible as a global overall department."

Conclusion

Numerical simulations can take an extremely long time, so a leap in performance such as that offered by the new HPC solution will have a very positive impact. Peter Seggewiß concludes on a positive note:

"Fujitsu has supplied us with a sstandardized PRIMEFLEX for HPC solution with Ready-to-Go implementation that has also been adjusted to our specific needs. Our Indian colleagues can now perform all simulations that are important for KSPG on site and, if required, can even support branches in other parts of the world. And if our requirements increase, we can easily expand this HPC system."