FUJITSU

Case Study
Hyundai Motor Europe Technical Center

»The project was a complete success. The time savings we estimated for complex simulations proved to be very accurate.«

Matthias Uhlig, CAS Design Manager, Hyundai Motor Europe Technical Center

The customer

Country: Germany
Sector: Automotive
Founded in: 1991 (Hyundai Motor Deutschland GmbH)
Employees (in Germany): 198
Website: www.hyundai.de

The challenge

Hyundai has five design centers worldwide. The German development center recently installed a PRIMEFLEX for HPC cluster solution from Fujitsu to improve its competitive position. This involved converting its workstation environment into a cluster environment, a move that would enable the company to fully utilize the features of its Autodesk VRED ray tracing software. The project involved close collaboration between developer teams from Fujitsu, its subsidiary ict GmbH, the software provider Autodesk and Hyundai's project partner CSW - Customer Service Wilhelm GmbH.

The solution

This PRIMEFLEX for HPC cluster solution comprises FUJITSU Server PRIMERGY CX400, CX250 and RX200 systems, which are connected to one another via a Mellanox InfiniBand network. The systems can be installed and managed easily using the FUJITSU Software HPC Cluster Suite (HCS), and everything is optimized for Autodesk's ray tracing software VRED.

The customer

The customer is Korean automotive expert Hyundai Motor Company's German design center. Hyundai was founded by Chung Ju-yung in 1967 and quickly established itself as one of the world's largest automotive manufacturers. Hyundai invests heavily in alternative and environmentally friendly concepts for vehicles.

The challenge

For large automotive companies, the ability to quickly adjust the designs of chassis and interiors for individual models is absolutely essential. Autodesk VRED is a software package that enables companies to process and assess changes using digital visualizations. The German design center was looking for support for its existing infrastructure that would both optimize these visual representations and accelerate the process of creating them. The company decided on an HPC cluster, a system it believed would reduce computing times for the visualizations.

The solution

Visualization, including ray tracing, is a popular method used by the automotive industry to assess new models and model versions and demonstrate them to customers. Light distribution and any possible reflections on the chassis, interior and individual components of new vehicle models are displayed precisely and realistically on the computer screen. A design department can use the software to quickly analyze different variants and use the results to optimize its designs. Hyundai's German design department had been using workstations to run these simulations, but the machines could not keep up with the growing demands on them. The computing capacity of the CPUs was no longer sufficient for tasks such as ray tracing and assessing reflections and mirroring. Hyundai's previous solution had 24 processors available on the workstations. "It was clear that it had reached its limits," says Marc Hoffmann of CSW, Hyundai's project partner. The time required to run the calculations was enormous: "It used to take 38 minutes of computing time to process an A2 sized image at a resolution of 300 dpi," says Matthias Uhlig, CAS Section Manager at Hyundai. There are now 640 processors in the computing cluster – almost 30 times as many as before. "Computing time has reduced linearly – that same task now takes just one minute," explains Uhlig. He adds that the company is now able to offer and assess many more different options.