Nor-Tech
HPC Clusters™

Nor-Tech HPC-Appliance Helps Design New Internal Combustion Engine

The Challenge

Today's global market has increased the need to shrink development time for products; especially for companies offering radical new designs to old market products. Successful companies have embraced computer aided engineering (CAE) in their product development to help reduce time to market. To help meet the tight engineering timelines of today, CAE software vendors are rapidly improving their software to meet product development challenges. When you combine the CAE software improvements and the increased utilization of CAE by companies, simulation demands are increasing rapidly. More and more companies are finding that a single workstation won't provide the engineering answers fast enough or even at all. As the simulation complexity grows, so does the computing requirement. Engineers are quickly growing out of a single workstation processing power.

Recently a startup company developing a revolutionary Internal Combustion Engine design experienced this very problem of outgrowing the computing power which a group of standalone workstations offered. They also needed the ability to scale up computing performance as needed, but share computing power when not personally needed. A High Performance Cluster HPC-Appliance offered them the power, scalability, and flexibil-

ity, something they didn't have with just single workstations.

The engineers were using Abaqus, ANSYS®, and Converge™ CFD software. All simulation software needed to be loaded and fully functioning to allow the company engineers to use immediately, so no valuable engineering time was wasted trying to deploy a cluster internally. The customer needed the quickest path from unboxing to productivity.

The Solution

The HPC-Appliance cluster was fully integrated with Abaqus, ANSYS®, and Converge™ CFD software using Altair PBS Professional® scheduling software, in addition one compute node had NVidia Tesla GPU acceleration. The cluster was provisioned with ROCKS® open source clustering suite with Red Hat® Linux operating system running on the nodes.

After considering Windows HPC Server for the cluster, the customer chose Linux as the cluster platform with Nor-Tech's continued support. Nor-Tech was able to structure a support package that fit within the tight operating budget, but still provided the customer confidence to move forward. Now the customer engineers can concentrate on their work using desktops or notebooks and send the simulation and solving work off to the cluster where queue management makes sure the job gets done while intelligently using all the available resources. Now multiple engineers can queue their simulation jobs up and let the HPC-Appliance do the work.

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