WHARTON SCHOOL SCALES UP HPC

HIGH-PERFORMANCE COMPUTING UPGRADE EXTENDS RESEARCH TO THE CLOUD

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Navops Launch was a solid choice. Being able to get a commercially supported cloud management system that is tightly integrated with Altair Grid Engine is a big plus.

Gavin Burris, Senior Project Leader, Wharton School

About the Customer

Founded in 1881 as the world's first collegiate business school, the Wharton School at the University of Pennsylvania is known for leadership and innovation in business education. Staying on top as a leader among world-class business schools necessitates an HPC infrastructure that can support a vast number of users. Faculty, research assistants, doctoral candidates, and internal and external collaborators require seamless access to a multitude of scientific, mathematics, and analytics software including MATLAB, Mathematica, Python, SAS, TensorFlow, and more. Enabling it all is Wharton's 32-node, 512-core, 8TB Linux HPC cluster (HPCC).

The Wharton School needed to scale up its HPC environment to accommodate growing demand

Their Challenge

Wharton needed to extend its HPC environment in a cost-effective way — without impacting its large roster of users, who need ready access to the latest tools, infrastructure, and technical expertise. From regressions and optimizations to natural language processing and machine learning, Wharton's HPC and big data analytics workloads cover a broad spectrum of uses. The increasing demands of its user base meant Wharton's HPCC had to be extended: as researchers' needs grew beyond desktops or departmental servers, Wharton's HPC cluster needed to continuously enable scaling up. Having tried an open-source cluster computing toolkit with limited success due to lack of support, the team at Wharton was faced with either developing their own software or finding a proven, supported solution.

Our Solution

Since Wharton was already using Altair® Grid Engine® as its go-to solution for HPC job management, the team looked to Altair NavOps™, software designed for organizations experiencing increasing volumes of high-priority workloads, where response speed and accuracy is critical. NavOps helps enterprises migrate compute-intensive HPC workloads to the cloud and provides real-time insights into workloads and spending with complete visibility into HPC cloud resources. With NavOps, Wharton was able to avoid substantial infrastructure costs and steep user training — while transparently tripling its core count. The product's inherent flexibility means that infrastructure cost savings are realized even as the enterprise grows and evolves — all through strategic use of cloud-based resources, important capabilities that Wharton needs. Because NavOps plugs Altair Grid Engine into leading cloud services, Wharton was able to meet increasing workload demands with the added bonus of heightened operational efficiencies.

Results

As a proven solution, NavOps saved Wharton's team countless hours in development time and troubleshooting. Through the combination of Altair Grid Engine and NavOps, the dreaded user learning curve was avoided due to seamless integration of on-premises hardware with the cloud, and down time was zero. Senior project leader Gavin Burris describes the savings as "significant." Equally important, he says, is having access to experts. While its HPCC hardware is located on the Penn campus, NavOps allows Wharton to triple its core count with Amazon Web Services EC2 (AWS), with users accessing "anything and everything" including GPU instances. This flexibility allows researchers to scale beyond on-campus resources, work in isolated environments, and control their own services and costs — turning Wharton's HPCC into a springboard for users to simultaneously launch many computationally intensive jobs.