CASE STUDY
#1

About X-ISS Inc.
www.X-ISS.com

X-ISS has been providing cross-platform management and analytics solutions for the High Performance Computing (HPC) and Big Data industry for more than 10 years. With a reputation for the highest levels of quality and customer satisfaction, X-ISS has been helping customers make effective use of their HPC and Big Data investments through software and services that cater to their specific needs. The solutions include a full-service remote cluster management service called ManagedHPC® that removes the worry from customers about managing their cluster environment effectively.

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BRP Relies on X-ISS to Keep its Engine Simulations Running

BRP is well known for its power sports brands, Sea Doo, Ski Doo, and Can Am. The company is also a major competitor in the marine industry, as a manufacturer of Evinrude outboard engines. Recently, BRP made a significant investment in their Sturtevant, Wisconsin, plant when they formed the Marine Propulsion Systems Division, and consolidated their marine business to one facility.

At the Wisconsin location, BRP executes all of the design and manufacturing and much of the testing of new outboard engines. The company also maintains an HPC cluster to support those activities.

"The primary use of the cluster is to develop thermodynamic models for direct-injected two-stroke engines," said Paul Westhoff, Simulation Team Lead for BRP Marine Propulsion Systems. "We simulate in-cylinder fluid dynamics and combustion."

The Challenge: Cluster Re-Boot After Existing Node Installation

BRP first contacted X-ISS in 2012 to handle a cluster re-boot after the existing nodes had already been installed. X-ISS technicians upgraded the system to a new version of the Platform Cluster Manager software. In addition, the main applications also had to be reinstalled, including Ansys, Converge CFD and EnSight.

The project went smoothly over the course of a couple days, prompting BRP to contract through Dell for X-ISS ManagedHPC® services, known as Dell Remote Cluster Management (RCM). With this service, the X-ISS team of HPC professionals proactively monitors and manages the BRP cluster, resolving issues as needed and reporting problems that need to be brought to BRP's attention. X-ISS keeps in routine contact with BRP and then sends quarterly status reports letting them know how the system has been operating in the previous three months.

As part of the contract, X-ISS was also there to help with critical upgrades. When BRP decided to add more computing power by increasing the number of compute nodes, X-ISS took charge of that too. Addition of the new nodes was more complicated than expected because of a hardware change by the vendor since the originals had been installed a few years prior.

The Challenge continued

Afterwards, Westhoff noticed that some CFD jobs on the new nodes were crashing and asked X-ISS to take a closer look.

“When we can’t run, it’s a big deal,” Westhoff said, explaining that it is critical to have CFD applications up and operational during new engine development.

The Solution

After extensive troubleshooting revealed the problem was application specific, X-ISS contacted the application developer and pinpointed the problem in the Message Passing Interface (MPI). The MPI was causing the code to crash in the application. After X-ISS switched the application from using the existing OpenMPI to the newer PlatformMPI (HPMPI), Westhoff was back in business examining news ways to improve Evinrude engines.

The Results

“To me, the mark of a good service is that things aren’t crises, systems are managed and the operation goes smoothly,” said Westhoff. “When X-ISS is doing their jobs the best, I don’t have to talk to them.”

But when trouble does arrive, Westhoff is glad he has one assigned HPC Analyst at X-ISS whom he can call directly. “When I talk to my X-ISS HPC Analyst, he knows me, he knows what I can do, what I can’t do, and he knows our system,” said Westhoff. “That works for us.”

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QUICK FACTS

- PROBLEM:
  Handling a cluster re-boot after the existing nodes had already been installed.
- SOLUTION:
  To mitigate an application-specific issue, X-ISS switched the application from using the existing OpenMPI to the newer PlatformMPI (HPMPI).
- RESULTS:
  BRP was back in business examining news ways to improve Evinrude engines.

ManagedHPC