Bright Computing

Bright Cluster Manager Simplifies Management of Advanced HPC Cluster for Aircraft Design Institute

CASE STUDY

Upgrading a cluster and installing new software can be a challenge, especially when you don't have many resources at your disposal. The Institute of Aircraft Design in Stuttgart installed Bright Cluster Manager to greatly enhance the usability of its high performance computing (HPC) cluster.

Bright Cluster Manager takes the pain out of upgrading a cluster while greatly reducing maintenance time

The Customer

The Institute of Aircraft Design is part of the University of Stuttgart, a technical university in Germany that is world famous for its research in the fields of information technology and product development. The institute's IT resources are mainly provided by the university, with the exception of a cluster dedicated to its own scientific research into UAVs (unmanned aerial vehicles), light eco-efficient aircraft development and improvement of the statistical preliminary draft tools. The resources of this cluster are pushed to the limit with intensive computations and simulations. Some of the larger jobs can take weeks to run.

The Challenge

When it came time to upgrade the cluster, Alexander Schön, who is responsible for the cluster and is a member of the Institute's technical staff, realized he had a difficult task ahead of him for a number of reasons. First, he had few resources to work with. Second, licensing agreements with the university constrained how much of the software could be used. License access most of the time was granted for specific research tasks and couldn't be shared. What's more, hardware or software upgrades typically were linked to a specific project and research budgets, and budgets were tight.

"We managed the old cluster with the OSCAR system", explains Schön. "It is open source software and doesn't have any associated license costs. Originally, I was happy with that system, but I couldn't get it to work with the new hardware and operating system that we were installing. I tested the software successfully in a virtual environment, but when I set it up on the new hardware, nothing was working. So I decided to look at commercial cluster management software to see if it could solve my problem. The institute's ICT partner, Transtec, advised me to choose Bright Cluster Manager and so I decided to take a look."

The Solution

Upgrading was far easier with new Bright Cluster Manager. "Our system was running on Scientific Linux 5 and we wanted to upgrade to CentOS 7. A lot of the software we use in this newer version requires an up-to-date operating system. For example, we needed to upgrade the CFD system OpenFoam. With the old system, we had to do a lot of compiling and digging around with additional software and libraries in order to make it work. Bright really speedup the process. And it was very easy to do. Upgrades that used to take us weeks to complete could now be done in a few days. Bright Cluster Manager really saves us a tremendous amount of time."

Schön was especially happy with the user friendliness of the solution. The graphical user interface (GUI) allows users to handle management and configuration tasks more efficiently and it is very easy to train people to use the new software from Bright Computing. "For example, you get an image from the head node with just one click of a button. With OSCAR, you are using a command line interface. Bright is much more graphical but gives you the option of using commands if you prefer. The documentation system also is very accessible, which is important since I sometimes have to look directly at the script to see how it is working," says Schön.

The Results

Schön had big plans for the Institute. Now that cluster management is taken care of, he wants to start up his own research project. As Bright Cluster Manager made the cluster so much more straightforward to administer, Schön was able to delegate much of the day-to-day operational tasks, such as installing software and setting up nodes, to a colleague. "My colleague had found the OSCAR system too complicated. Bright, on the other hand, was no problem for him."

He adds, "I'm very happy with my decision to work with Bright. It is very user friendly and greatly reduces the time necessary for managing a cluster. The support is very fast and reliable. It's finally possible to upgrade the cluster and update or install software easily."

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— Alexander Schön, Institute of Aircraft Design Technical Staff

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