

Bright Computing's HPC Cluster Management Facilitates TGen Research

CASE STUDY

The Translational Genomics Research Institute (TGen) is a non-profit biomedical research organization focused on discovering the genomic origins of neurological disorders, metabolic disease, and many types of cancer.

TGen is headquartered in downtown Phoenix, Arizona, with designated clinical trials operations at HonorHealth in Scottsdale, and a Pathogen Genomics Division in Flagstaff, TGen North, developed in partnership with Northern Arizona University. Its investigators uncover the genetic components of common and complex diseases, and they require enormous computing power to accomplish their mission.

“Bright provides the most complete and comprehensive cluster manager I have ever used. We have never experienced any performance issues because of the cluster management. As a vendor, Bright scores a High 9.”

— IT Manager, TGen

HPC Management Challenge

The Institute's research platform combines cutting-edge information technology with leading edge science to sift through the human genome to identify the genes that play a role in disease development and progression. TGen needed a high performance computing (HPC) management solution that could be used across numerous clusters, which were custom designed to meet the demands of large-scale genomics research.

For TGen, a hardware-agnostic cluster management solution had to include easy-to-handle deployment, provisioning, and long-term management capabilities—one solution to deal with all its varied systems, which ranged from several thousand CPUs down to several hundred. And running in a very lean staffing environment, the solution needed to be effectively managed with minimal manpower. On a regular basis, the institute only had one or two people that performed cluster maintenance (user adds, node reboots, etc.). Overall, the Institute had a total of four people across the entire network of campuses that worked with the software—and that number was not going to increase—so ease of use was a primary requirement.

Considering Cluster Management Options

TGen staff spent a considerable amount of time researching cluster management solutions. In-house, the company had products from Puppet Labs handling the management of host config file content for just about everything. DHCP/Bootp/NFS/torque did the rest, but not optimally.

IT personnel had experience with IBM (CSM/xcat) and SGI (Platform manager/scali), as well as build-your-own versions and business-level cluster managers from companies such as Redhat, HP, SUN, and Veritas. When finally compared to

“I don’t see any reason why we wouldn’t use Bright in other aspects of our environment. We currently only use about 25% of the application functionality in our day-to-day usage. There are many other functions provided by Bright that would help out not only our cluster environments but normal IT infrastructure. It’s just a matter of time.”

— IT Manager, TGen

Bright, this hodgepodge of individual applications was a nightmare to manage and accomplished only about 15% of a Bright deployment.

Business Benefits of a Comprehensive Cluster Management Solution

For TGen, Bright offered an enterprise-level cluster management solution that could manage any type of cluster – HPC, database, storage, and private cloud. Bright Cluster Management value relies on comprehensive and integrated functionality, coupled with ease of use, offering the Institute an all-inclusive cluster management tool for deploying, provisioning, monitoring, health checking, security, and much more. And when it came to ease of use, another selling point was the fact that the initial process involved just booting off the DVD and it was ready to go.

Initial deployment and daily operation are simplified and standardized across clusters, which are managed easily via a single pane-of-glass presentation. The few system administrators needed to oversee the new cluster management solution now have more time to work with scientists and researchers to bring new datasets and applications onto the shared facility.

Bright Cluster Management’s comprehensive health checks alert system administrators to problem components before they fail. Compute jobs flow smoothly while the system administrators can focus on other priorities. When asked as to why not build a custom solution from the various disparate tools that would match specific requirements, TGen IT

staff responded that others are free to do just that but don’t call on them to manage that fiasco! For them, Bright works as advertised. Cost controls and controlled complexity were significant selling points.

Today, 100% of TGen’s clusters are managed by Bright. And according to TGen IT personnel, no longer is guesswork involved in keeping the clusters running. With minimal training, maintaining optimal performance from the clusters with Bright becomes a different, yet much easier process. And now, having used the product for more than a year, TGen is actively looking to Bright for its cluster management solutions as it continues to grow.

