



POWERING DRUG DISCOVERY

HPC AT JOHNSON & JOHNSON SUPPORTS CRITICAL PHARMACEUTICAL DEVELOPMENT

About the Customer

Johnson & Johnson, the world's largest healthcare business and a top-50 Fortune 500 company, produces pharmaceuticals, medical devices, and consumer goods that benefit a billion people worldwide. Johnson & Johnson owns Janssen Pharmaceuticals, a company fighting sickness with science. Janssen created the 1-dose COVID-19 vaccine that's preventing infection and saving lives in 100+ countries around the world. This research-driven organization relies on high-performance computing (HPC) to power the discovery and production of effective, broadly available pharmaceuticals.



The solution including Altair Grid Engine and NavOps enabled us to scale in the cloud and grow our HPC infrastructure to support critical science and research, including COVID-19 vaccine development.

Martin Dellwo, Manager,
Advanced Computing,
Janssen R&D



Their Challenge

The nature of Johnson & Johnson's research requires **on-demand compute capacity at scale** and the ability to easily reduce that capacity once it's no longer needed, which can only be accomplished with cloud infrastructure. Janssen runs over 10 production HPC clusters on Amazon Web Services (AWS) — used by scientists and developers around the world, including those working on the Janssen COVID-19 vaccine — and was looking for an off-the-shelf solution to replace open-source Grid Engine and a cloud management tool that no longer supported their vendor of choice. Challenges included accommodating existing infrastructure and systems that had evolved over a decade, a complex networking setup, and the necessity of integration into configuration and change management systems. Additionally, **every cluster was configured differently**.

Our Solution

We upgraded Janssen's workload management software to Altair® Grid Engine® and deployed Altair® NavOps® to manage the company's complex cloud deployments. With a modern, commercially supported version of Grid Engine and a single NavOps server managing multiple clusters, **the solution seamlessly integrated with AWS cloud services**. The package fulfilled Janssen's requirements to work with automated creation and scaling of clusters, integration and compliance with internal security policies and networking, both commercial and homegrown applications, and GXP compliance. It included cgroups for resource allocation, Docker integration for containerized workloads, and REST API. The result was a simplified, automated, and extensible Janssen HPC infrastructure.

With the Altair orchestration layer, Johnson & Johnson can **scale on demand in a complex multi-tenant environment** in which each group of customers has access to purpose-built clusters. The team can use current configuration components to quickly and easily create additional clusters as needed. Altair's infrastructure-as-code solution included complete UI/CLI/API configurability, flexible configuration and integration options, and the ability to template necessary components and easily edit configuration differences.

Results

NavOps creates and scales Altair Grid Engine clusters dynamically, allowing Johnson & Johnson to continue innovating. Scalability limits from Janssen's previous configuration were removed with the Altair solution and their clusters are now running at **3X the size of the previous implementation**. With increased scalability and improved agility, operations, deployment, and management of HPC infrastructure, the team can perform **science on demand**, with the flexibility to tackle events like COVID-19 at an enterprise level.

Johnson & Johnson, owner of Janssen Pharmaceuticals, needed the right HPC management software for its cloud-based infrastructure.