



REVOLUTIONIZING THE HPC LANDSCAPE

NSCC AND ALTAIR COLLABORATE TO CONNECT HPC COMMUNITIES AND OPTIMIZE RESOURCES

About the Customer

The National Supercomputing Centre (NSCC) Singapore is the steward of Singapore's high-performance computing (HPC) petascale facilities, serving diverse sectors including research institutes, educational establishments, government agencies, and corporations. NSCC provides world-class, state-of-the-art HPC resources and services that empower Singapore's research and industry communities and play a crucial role in advancing scientific discovery and innovation. NSCC supports national initiatives in areas such as Smart Nation, quantum computing, weather and climate research, healthcare, and artificial intelligence (AI), among many others.



We are looking forward to delivering a better service to users, with wider access to compute resources enabled by Liquid Scheduling.

Paul Hiew, Deputy Director,
Technical Operations, NSCC
Singapore



Their Challenge

The journey toward advancing HPC capabilities is fraught with challenges, including scarcity of proficient HPC engineers and software experts. Cultivating and retaining a highly skilled workforce capable of efficiently managing supercomputing systems assumes paramount importance; at the same time **HPC centers must navigate the ever-evolving landscape of computing and grapple with mounting demands for diverse applications, platforms, and hardware accelerators.** NSCC acknowledged the imperative for a transformative paradigm shift, transitioning from labor-intensive operations to a state of semi-automation with the goal of achieving full automation. The recent deployment of NSCC's latest HPC system, ASPIRE 2A, which includes AMD CPUs and NVIDIA GPUs, underscores the urgency of ensuring seamless access to resources while efficiently integrating external computing systems. **This multifaceted challenge necessitates a strategic, forward-thinking approach to propel NSCC into a new era of HPC excellence.**

Liquid Scheduling enables NSCC to easily control global resources without complex overhead.

The Solution

To partner with organizations across the globe and combine compute power, **NSCC needed a solution that would let users run workloads using a global pool of resources,** with the right workload running in the right place. As long-time Altair users, the NSCC team was familiar with the quality of Altair's solutions, elite support, and community resources, and chose to work with Altair to design a solution that met these ambitious requirements with Altair® Liquid Scheduling™. Liquid Scheduling extends the Altair HPC stack already deployed at NSCC, taking the Altair® PBS Professional® workload manager to another level of scalability and performance. Liquid Scheduling improves utilization by removing resource silos and giving users access to a wider compute pool without changing workloads. It connects multiple clusters and HPC sites without moving workloads or queueing them in specific places — and without the efficiency loss common with typical multi-cluster approaches. **With Liquid Scheduling, NSCC can easily control global resources without the complex overhead of shifting workloads between queues or requiring users to adjust their workflows.** The NSCC team can deploy global fairshare policies for optimal resource allocation, visibility, and utilization.

Results

Liquid Scheduling is poised to revolutionize HPC in Singapore and around the world. NSCC has multiple, distinct HPC complexes, each finely tuned for specific workloads. Liquid Scheduling streamlines user interactions with a single scheduler that intelligently allocates jobs to these complexes based on resource requirements, ensuring optimal job placement. Local institutions can harness the power of Liquid Scheduling to foster collaboration and resource sharing, with more efficient HPC-resource load balancing — improving performance and encouraging cooperation in the local community. **"We are looking forward to delivering a better service to users, with wider access to compute resources enabled by Liquid Scheduling,"** said Paul Hiew, deputy director, technical operations, NSCC. Thanks to its multifaceted capabilities, Liquid Scheduling is a robust, scalable solution for the future.