



“It was a clear choice to go with PBS Professional...It offers the most robust and flexible management of our diverse user policies and requirements, and it's simple to install and use.

In addition, Altair's expertise and dedication to implementation success is unbeatable.”

Dr. Mark Vilensky, Scientific Computing Manager, Chemical Physics Department, Weizmann Institute

Read about Altair's CMU PBS Professional Connector integration:

www.pbsworks.com/cmupbs-datasheet

www.hpe.com/us/software/altairpbsworks

PBS Professional® for HPE

World-class job scheduling and workload management for HPE high performance computing systems

PBS Professional gives HPE cluster users a more efficient, reliable solution for HPC workload management. As an HPE-integrated product, PBS Professional optimizes job scheduling on HPE Apollo, HPE ProLiant DL and HPE SGI servers to achieve the highest levels of system utilization. PBS Professional is also integrated with HPE Insight Cluster Management Utility (CMU), as well as HPE SGI Management Suite, ensuring easier cluster deployment and management for administrators.

HPE Administrators & Users Gain:

- Superior Job Scheduling:**
 PBS Professional efficiently distributes workload across HPE platforms, from clusters to the largest supercomputing systems.
- Industry-leading Scalability:**
 PBS Professional scales easily to millions of cores.
- Seamless Deployment & Integration:**
 HPE resells PBS Professional on all HPE HPC systems. The software integrates with each solution from the HPE Performance Suite, including also the HPE Performance Software - Message Passing Interface (MPI).
- Expert Support Team:**
 Altair supports HPE customer with experts in 23 countries, and our close business collaboration means users can expect high-value, seamless deployments.
- Comprehensive Cloud Readiness:**
 Proven as the backbone for multiple HPC cloud services, Altair's software stack for physical and virtual cloud appliance computing (featuring HyperWorks and PBS Works) combine with HPE Insight CMU or HPE SGI Management Suite to offer HPE customers a complete solution for HPC in the cloud.
- Power Management Capabilities:**
 Altair now offers unparalleled power awareness capabilities with the integration of HPE SGI Management Suite and PBS Professional. Available today for HPE SGI 8600 clusters, the solution includes capabilities for power capping, per-job power profiles, energy accounting and more.
- Unparalleled Security:**
 PBS Professional is the only workload manager with EAL3+ security certification and SELinux support.

Ideal for HPE customers who seek to 'support cloud':

- Maximize value** from all HPE HPC system investments.
- Reduce costs** by minimizing wasted hardware, software, and electrical power.
- Remove complexity** from cluster implementation and management.
- Increase workload security** and reliability (PBS Professional is the only workload manager with EAL3+ certification and SELinux support.)
- Improve end-user productivity** and decision making, ensuring you are meeting service level objectives.
- Implement business priorities** by ensuring high-priority work runs first and completes on-time.
- Support cloud** deployments (no other vendor offers proven capabilities in all major cloud areas – applications supplier, middleware supplier, SaaS offering, and HPC user.)



Key Features & Benefits

- GPU/co-processor scheduling prioritizes use and manages access to all types of accelerators as well as the Intel® Xeon Phi™ coprocessor, with full access control and accounting
- Estimated job start times enable you to plan your workflows and meet deadlines
- Backfill TopN scheduling eliminates wasted cycles without delaying any work
- Dynamic provisioning via HPE Insight CMU automatically and HPE SGI Management Suite changes OS and/or application operating environment to match changing workload demands
- Submission filtering "hooks" to change/augment capabilities on-site, on-the-fly
- Shrink-to-fit jobs boost utilization, especially before planned system outages; plus, jobs actually run sooner.
- Efficiently distributes workloads for maximum return on investment (ROI)
- Virtually unlimited scalability supports configurations from workgroup clusters to the largest single-system image supercomputers
- User, group, and project limits to implement fine grained policy adjustments
- Job arrays allow for maximum throughput to schedule, execute and manage unlimited jobs
- Tunable scheduling formula defines any policy, including on-the-fly "exceptions"
- User customizable "runjob hooks" ensures allocation management limits are strictly enforced
- Advance resource reservations guarantee resources for recurring needs
- Unified job & resource ("vnode") architecture allows you to write job requirements once and automatically optimizes placement
- Job status with history (via "qstat -x"), allowing you to never lose track of jobs
- Python, the portable modern scripting language, is available everywhere allowing one script to be used across all architectures
- Preemption and checkpointing allows you to immediately run high-priority work

And many more. Visit www.pbsworks.com for a detailed list of technical features.

Why PBS Professional on HPE?

- **Industry-leading job scheduling and workload management**
 - Proven for over a decade at thousands of customer sites including many Top 500 installatios
- **Scalability to millions of cores**
- **Seamless integration with all HPE HPC systems**
- **Unparalleled power management capabilities**
- **Unbeatable services and support**
 - Global PBS support with local experts in 23 countries
 - Close HPE-Altair collaboration for tight, seamless implementations and performance tuning

Job Scheduling and Workload Management on HPE Clusters

HPE Apollo, ProLiant DL and HPE SGI clusters integrate with job scheduler and workload manager such as PBS Professional to help drive the highest utilization levels of these systems. PBS Professional supports multiple users and applications with efficient queue management system that enables jobs, both batch and interactive, to be presented to the system based on site-defined policies and priorities. It also utilizes a scheduling system to make the most efficient use of available hardware and software resources. With PBS Professional, HPE cluster administrators can set user priorities and policies, track usage, and provide a queuing system for job submissions.

HPE and Altair: Leaders in HPC

HPE is the undisputed market leader in HPC, offering the broadest spectrum of high performance computing solutions, from workgroup and departmental servers to systems designed for the engineering enterprise and supercomputing centers. Altair has served the HPC market for decades with award-winning workload management, engineering, and cloud computing software. Together, HPE and Altair deliver innovative, industry standard solutions that are optimized for scalability and performance to reduce capital and operating expenses.

Read more about HPE & Altair offering at: www.hpe.com/us/software/altairpbsworks

