



“PBS Professional is a crucial system element for our customers. It was the natural choice for inclusion with our SGI UV and SGI ICE shipments. It allows our customers to manage their most complex workloads while employing their resources with the greatest efficiency, and scales to support tens-of-thousands of processors.”

Bill Mannel,
VP of Product Marketing, SGI

PBS Professional® for SGI®

SGI’s preferred job scheduling and workload management product

PBS Professional is SGI’s preferred workload manager, selected by SGI to provide as the **default scheduler for all SGI Technical Computing systems** (including scale-out SGI® ICE™ and scale-up SGI® UV™). Tightly integrated and factory-installed with SGI technologies, PBS Professional optimizes job scheduling to ensure users achieve the **highest possible utilization levels** on SGI systems.

SGI Users Gain:

- **Superior Job Scheduling:**
Proven for over 20 years, PBS Professional gives SGI users a more complete, reliable solution for HPC workload management.
- **Tightly Integrated Solution:**
PBS Professional is integrated with SGI Management Center and engineered to support SGI Performance Suite.
- **Industry-leading Scalability:**
PBS Professional scales easily to hundreds of thousands of cores – it operates SGI’s largest machine, Pleiades at NASA Ames (#11 on Top500).
- **Green Provisioning™:**
SGI collaborates with Altair to support energy efficient computing, with a goal to deliver intelligent scheduling based on power consumption. Validated by several leading sites, Altair has lowered energy use by up to 30 percent.
- **Expert Support Team:**
Altair supports SGI’s customers with experts in over 16 countries, and our close business collaboration means users can expect high-value, seamless deployments.
- **Comprehensive Cloud Readiness:**
Proven as the workload manager for multiple HPC cloud services, including **SGI Cyclone**, PBS Professional is a reliable backbone for deploying private clouds.
- **Unparalleled Security:**
PBS Professional is the only workload manager to be EAL3+ security certified.

Ideal for Users Who Seek To:

- **Maximize** value from SGI investments
- **Remove** complexity from cluster implementation and management
- **Improve** application throughput and performance thanks to our support for SGI’s shared memory architecture and NUMalink interconnect
- **Increase** workload security and reliability
- **Reduce** costs by minimizing wasted hardware, software, and electrical power
- **Ensure** support for Cloud (no other vendor offers proven capabilities in all major Cloud areas– applications supplier, middleware supplier, SaaS offering, and HPC users)



Why PBS on SGI?

- **Industry-leading workload management**
 - SGI's workload manager of choice
 - Proven at thousands of sites (including SGI's largest system, Pleiades – #11 on Top500)
 - Scalability to hundreds of thousands of cores
 - Support for GPUs and co-processors (Intel® Xeon® Phi™)
- **Tight SGI integration**
 - Factory integrated for seamless deployment
 - Integrated with SGI® Management Center and SGI® Performance Suite
 - SGI Cyclone uses PBS Professional
- **Unbeatable services and support**
 - Global support with local experts in 16+ countries
 - Close SGI-Altair collaboration for tight, seamless implementations and performance tuning

Key PBS Professional Features & Benefits

- Support for GPU and co-processor (Intel® Xeon® Phi™) scheduling prioritizes GPU and co-processor use and provides full access control and accounting
- Topology-aware scheduling both speeds individual application performance and boosts overall system utilization – PBS auto-discovers the topology of high-end systems
- Estimated job start times support planning workflows and meeting deadlines
- Backfill TopN scheduling eliminates wasted cycles without delaying work
- Dynamic provisioning automatically changes OS to match changing workload demands
- Submission filtering plug-ins enable changing/augmenting capabilities on-site, on-the-fly
- Job arrays allow for maximum throughput to schedule, execute and manage unlimited jobs
- Individual user and group limits let you implement fine-grained policy adjustments
- Tunable scheduling formula defines any policy, including on-the-fly "exceptions"
- Advance and/or standing resource reservations guarantee resource availability, for example by allowing admins to schedule node downtime
- Allocation management plug-ins allow for administrators to verify users have allocation prior to the dispatch of jobs to execution nodes
- Unified job & resource ("vnode") architecture allows you to write job requirements once and automatically optimizes placement
- Job status with history, allowing you to never lose track of jobs
- Python is available everywhere allowing one script to be used across all architectures
- Preemption and checkpointing allow you to immediately run high-priority work
- Integration with Altair's Compute Manager portal software and PBS Analytics graphical analytics software for comprehensive cloud readiness

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

Key PBS-SGI Integration Features

- Support for all SGI HPC systems including SGI® ICE X, SGI® ICE 8400 and SGI® UV 1000, SGI® UV 100, SGI® UV 10, SGI® UV 2000, SGI® UV 20, and SGI® Rackable clustered systems
- SGI Management Center integration
 - Dynamic operating system provisioning
 - Energy management and power scheduling (Green Provisioning™) – tight integration under development
- SGI Performance Suite integration
 - Automatic configuration of hardware/network topology
 - CPUSETS to optimize CPU and memory utilization
 - NUMA Tools to optimize data placement
 - SGI MPI: high performance MPI environment
 - SGI Message Passing Toolkit (MPT)
 - Accurate process accounting and management
 - Checkpoint-restart gives job management control to MPI applications by allowing user to stop a job (checkpoint) and then restart from the checkpoint



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For more information about PBS Professional, visit www.pbsworks.com to request a quote or view a demo.

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