

# INDUSTRY-LEADING WORKLOAD MANAGER & JOB SCHEDULER – ALTAIR® PBS PROFESSIONAL®

PBS Professional is the trusted leader in high-performance computing workload management. It efficiently schedules HPC workloads across all forms of computing infrastructure, and scales easily to support systems of any size — from clusters to the largest supercomputers.



## Industry-leading Workload Manager

## Fast, High-throughput Scheduling

## Unparalleled Security

Learn more at [altair.com/pbs-professional](https://altair.com/pbs-professional)

### What is PBS Professional?

PBS Professional is a fast, powerful workload manager designed to improve productivity, optimize utilization and efficiency, and simplify administration for clusters, clouds, and supercomputers — from the biggest HPC workloads to millions of small, high-throughput jobs. PBS Professional automates job scheduling, management, monitoring, and reporting, and it's the trusted solution for complex Top500 systems as well as smaller clusters.

Cloud bursting to and between your favorite providers is easier than ever with an intuitive bursting GUI built right in. PBS Professional also delivers a workload simulator that makes it easy to understand job behavior and the effects of policy changes, plus allocation and budget management capabilities that let you manage budgets across your entire enterprise.

### Why PBS Professional?

#### Industry-leading Workload Manager

PBS Professional is the trusted solution for complex Top500 systems as well as smaller cluster owners.

#### Fast, High-throughput Scheduling

Tested to 50,000+ nodes, PBS Professional scales to support millions of cores with fast job dispatch and minimal latency, supporting 1,000,000+ jobs per day.

#### Unparalleled Security

PBS Professional is the only workload manager to have achieved EAL3+ certification and the only workload manager offering integration with RedHat's SELinux cross-domain security (or MLS — multi-level security) technology.



## PBS Professional Features

### Powerful, Policy-driven Scheduling

PBS Professional accelerates job execution and selects optimal job placement across diverse, broadly distributed resources. It's easy to create intelligent policies to manage distributed, mixed-vendor computing assets as a single, unified system. The PBS Professional scheduler is topology-aware and supports GPU scheduling.

### Allocation and Budget Management

Manage budgets across your enterprise and for multiple clusters by allocating your users credits for PBS Professional workloads. Credits can be provided in one or more customizable currencies. To give you visibility into HPC usage, PBS Professional includes full reporting of credit consumption by groups and by individual users.

### Forecasting and Simulation

The simulator included with PBS Professional gives you the ability to understand in detail why a job is currently queued rather than running, and to evaluate the effect of policy changes on job execution ordering. You can quickly evaluate situational issues and potential policy changes on workload execution.

### Cloud Bursting and Dynamic Extension

PBS Professional comes with a built-in GUI that lets you extend your HPC resources to public and private clouds including Oracle Cloud Infrastructure, Google Cloud Platform, Microsoft Azure, and Amazon Web Services (AWS). Dynamic bursting makes it easy to manage peak-time workloads.

### Hierarchical Scheduling

The hierarchical scheduler built into PBS Professional offloads the base scheduler to enable greater throughput and better license and resource utilization. Batches of short jobs are presented as one longer job while maintaining full visibility into each individual job, a common user need.

### Enterprise Resilience

Startup is fast and reliable, even for huge MPI jobs. PBS Professional is tested at tens of thousands of MPI ranks and minimizes delays caused by faulty nodes. A highly redundant automatic fail-over architecture with no single point of failure means jobs are never lost, and they'll continue to run despite server failures, network failures, and even killing PBS daemons themselves.

