

Moab HPC Suite

Ease-of-Use Driven Productivity

Moab® HPC Suite is a workload and resource orchestration platform that automates the scheduling, managing, monitoring, and reporting of HPC workloads on massive scale. The patented Moab intelligence engine uses multi-dimensional policies and advanced future modeling to optimize workload start and run times on diverse resources.

These policies balance high utilization and throughput goals with competing workload priorities and SLA requirements, thereby accomplishing more work in less time and in the right priority order. Moab HPC Suite optimizes the value and usability of HPC systems while reducing management cost and complexity.

Drive Higher ROI and SLA's

The patented intelligence engine uses multi-dimensional policies and advanced future modeling to optimize resource efficiency on heterogeneous clusters and align usage to SLA's that match business objectives.

Resource Efficiency on Heterogeneous Clusters

As clusters are scaled up to meet the needs of multiple groups, inevitably the application requirements of those groups require different resource configurations to optimize their application performance. Moab's advanced resource management effectively controls and optimizes resources in complex or heterogeneous HPC environments.

Moab includes capabilities that allow it to aggregate local resources, incorporate information from remote tools or custom fields into scheduling decisions, apply unique policies to groupings of nodes, and add fine-tuned controls over workload placement on resources.

These capabilities will enhance scheduling decisions in complex environments, boost application performance through better resource matching, and improve overall system utilization. To accomplish this, Moab utilizes node sets, NUMA, multi-resource manager support, and node allocation policies. Other features include Container Support, Malleable Jobs, Remap Classes, Generic Metrics, and Generic Events.

Usage Alignment to SLA's and Business Objectives

As multiple groups begin to utilize a cluster, their competing needs and usage behaviors will inevitably cause conflict. Therefore, service guarantees are important to help ensure the system is utilized in a way that completes the "most important" work for achieving the organization's top objectives.

With Moab's group-sharing policies, organizations get the controls they need to efficiently share a cluster between multiple groups and the ability to align resource usage to business objectives, while still maintaining high utilization. Example capabilities include Account and QoS credential rights, Hierarchical Fairshare, Advanced Prioritization, Preemption, and Administrative Reservations. Other features include Job Deadlines and Personal Reservations.

Adaptive's HPC Cloud On-Demand Data Center

Adaptive Computing's HPC Cloud On-Demand Data Center (ODDC) solution gives companies the ability to spin up temporary or persistent HPC cloud infrastructure resources quickly, inexpensively, and on-demand.

The HPC Cloud ODDC has been fully integrated with Moab to allow HPC systems to burst scheduled workloads to external public clouds based on backlog or on demand. Access to virtually unlimited HPC compute resources is available via the Cloud from all major Cloud Service Providers such as OCI, AWS, GCP, and Azure.

Moab ODDC Connect enables Moab to use the HPC Cloud ODDC as a Remote Resource Manager (Native Resource Manager). The Moab Native Resource Manager communicates with the ODDC directly. Moab controls job submission as before, using on-premises nodes first and then passes on jobs submitted to available ODDC nodes when a backlog occurs.

When using the HPC Cloud ODDC bursting functionality, the solution automatically spins up, takes offline, or shuts down nodes depending on the total requirements for the job queue. If there are not enough online nodes to run all jobs, bursting brings on as many nodes as needed. If there are more nodes than needed, the excess nodes are taken offline. If the job queue is empty, all nodes are shut down after a specified period.

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Support and Value-Added Modules

Adaptive Computing offers commercial support as well as other value added features that can be purchased to extend this basic foundation. These capabilities facilitate such things as portal-based job submission, accounting, workflow management, grid management, elastic computing, power management, high throughput submission, and remote visualization. Add these powerful modules according to specific needs.

- **Viewpoint** - Simplify the workload submission process for end-users with an easy-to-use job submission portal, which includes features like application templates, script builders, job details, and web-based file management.
- **Moab Accounting Manager** - Flexibly track and charge for resource or service usage. Perform deposits, withdrawals, transfers, and refunds while providing balance and usage feedback to users, managers, and system administrators.
- **Reporting & Analytics** - The Reporting and Analytics tool enables organizations to gain insights by streaming resource usage and workload data into custom reports and personalized dashboards.
- **Workflow Management** - Perform health checks, handle failures, develop workflows, and provision/re-purpose nodes through a trigger-based workflow engine, enabling end-to-end automated processes.
- **Grid Management** - Enable unified scheduling, intelligent policy management, integrated resource management, data staging, and consolidated monitoring and management across multiple clusters.
- **Elastic Computing** - Manage resource expansion and contraction of bursty workloads utilizing additional resources from private clouds or other data centers.

- **Nitro** - Accelerate launch times for large volumes of small jobs. This HTC scheduler packages these many tasks into group requests and launches them up to hundreds of times faster than traditional schedulers.
- **Power Management** - Automate individual, per-application CPU clock frequencies and lower the power state of idle nodes using the Green Pool Buffer Policy, minimizing energy costs while preserving performance.
- **Remote Visualization** - Avoid purchasing high-end desktops for all workers, instead sharing expensive licenses or GPU's, by rendering applications remotely and visualizing locally through an integrated portal.
- **TORQUE Resource Manager** - TORQUE can integrate with Moab, a workload manager that intelligently places workloads and adapts resources to optimize application performance, increase system utilization, and achieve organizational objectives.

Intelligent Workload Management

With a proven history of managing the most advanced, diverse, and data-intensive systems in the Top500, Moab HPC Suite continues to be the preferred workload management solution for next-generation HPC facilities. Visit our website or contact an Adaptive Computing representative for more information or a free demo/evaluation.

About Adaptive Computing

Adaptive Computing is a trusted leader in High-Performance Computing and Enterprise Software, providing advanced applications and tools to some of the world's largest computing installations. Our experience is earned from more than a decade of solving IT management challenges in the most scale-intensive and complex environments in the world and as pioneers in the high-performance computing (HPC) and cloud computing revolutions. Our mission is to help organizations to enhance performance, improve efficiency and reduce costs.

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