

Accounting

More Effective HPC Usage Accounting

The needs of expanding numbers of users and departments are pushing accounting needs beyond the limits of what manual reporting, simple open source tools, and basic usage tracking can provide. Today's HPC sites need more powerful tools to ensure that each user and group employs the appropriate amount of resource usage for both performance and efficiency. This requires better automation of usage accounting and enforcement of usage agreements.

Easy-to-Use Accounting

Moab Accounting Manager (MAM) is a fast, easy-to-use accounting management system that allows showback and chargeback for usage tracking and charging for resource or service usage in virtually any computing environment. It delivers the full set of innovative next-generation usage accounting and budgeting capabilities. MAM includes more effective automation, reporting, and granular controls to help enforce service-level agreements, reduce management burden, and help align behavior related to resource usage with your organization's objectives.

MAM acts much like a bank in which credits are deposited into funds with constraints designating as to which entities may access the funds. It supports familiar operations such as deposits, withdrawals, transfers, and refunds. As resources or services are utilized, funds are charged and usage recorded. It also provides balance and usage feedback to users, groups, and accounts, as well as reports and controls to managers and system administrators.

Driving Resource Usage Efficiency

As users and organizations receive feedback about their usage, or even get charged for it, their behavior inevitably changes. They are able to better understand the relationship between their workload and how much and how efficiently resources are used as well as to begin working within budget constraints.

Usage Visibility + Budget Enforcement

Efficiency



Benefits

- **Enforce Budgets** - Ensure that resource usage does not go outside of agreed upon budgets.
- **Improve Efficiency** - Naturally change user behavior to drive overall improved efficiency.
- **Achieve Business Objectives** - Align resource usage to business objectives and enforce SLA's.

Better Meet SLA's and Reduce Management

MAM can automate the meeting of SLA's for more accurate resource sharing and better user self-management. This helps to eliminate usage accounting management headaches, time, and costs so HPC system admins can focus on the performance of their systems.

Flexibility

Since accounting and billing models vary widely from organization to organization, MAM has been designed to be extremely flexible. It features customizable usage and fund configurations, and supports a variety of tracking, charging and allocation models. Attention has been given to scalability, security, and fault tolerance.

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Features

- **Tracking and Reporting** - MAM tracks and reports system usage by each user, group, or account, for showback or pay-for-use chargeback.
- **Prices and Rates** - Set arbitrary credits or actual prices/rates per resource type (processor, CPU, NUMA license, etc), per action, per location, or per service level. Use the Standard Charging style for tasks with fixed sizes and durations, or the Incremental/Periodic Charging style for long-running and elastic workloads, which charges at intervals, thus providing a more accurate view of usage.
- **Budgeting** - Govern behavior by setting usage budgets on a yearly, quarterly, or monthly basis per user, account, or organization. Use a no-charge service level with limits on priority, location, preemptibility, etc. Use one-time budget deposits/allocation or optional auto-renewal of budget allocations per month, quarter, year, etc.
- **Quoting** - Allow users or services to see how much a usage request would cost. This will help them to make a correct selection or to identify if sufficient funds are available to fulfill the usage request.
- **Enforcement** - Control usage with either showback (tracking of usage), non-enforced charging (notional charging with no budgets), or with strict-allocation budgets (based on debits against budgets). Use lien-based enforcement to avoid charging race conditions or strict enforcement of budgets.
- **Policies** - Charge based on workload performance such as what is blocked/reserved, used or used successfully. Also, set policies for payment time, such as pay upfront, pay after, or allow overdrafts with credit limits.

Reducing Management Burden

Organizational hierarchy accounting flexibility enables admins to easily reflect their custom, granular organizational hierarchies such as organization, groups, cost centers, departments, business units, projects, etc. This makes the usage budgets, balances, reports, and charging structure more automated, useful, and actionable.

The screenshot displays the Moab Accounting Manager interface. On the left is a navigation menu with options: Accounts, Allocations, Charges, ChargeRates, Events, Funds, Liens, Notifications, Organizations, Quotes, UsageRecords, and Users. The 'Funds' menu is expanded, showing sub-options: Create New Fund, List Funds, Display Balance, Display Statement, Make Deposit, Make Withdrawal, Make Transfer, Modify Fund, Delete Fund, and Reset Funds. A 'Logout' button is at the bottom of the menu.

Summary statistics:

- Beginning Balance: 0.00
- Total Credits: 900000.00
- Total Debits: -2016.00
- Ending Balance: 897984.00

Credit Detail:

Object	Action	Instance	Time	Amount	Balance
Fund	Deposit		2015-01-13 12:20:26	400000.00	400000.00
Fund	Deposit		2015-01-13 12:20:43	300000.00	300000.00
Fund	Deposit		2015-01-13 12:20:49	100000.00	100000.00
Fund	Deposit		2015-01-13 12:20:52	100000.00	100000.00
Total:					1800000.00

Debit Detail:

Object	Action	Instance	Account	User	Machine	Time	Amount	Balance
UsageRecord	Charge	128	Engineering1	User1		2015-01-13 12:25:58	-8.40	399991.60
UsageRecord	Charge	129	Engineering2	User3		2015-01-13 12:36:47	-76.80	399233.20
UsageRecord	Charge	130	Engineering1	User2		2015-01-13 12:27:08	-76.80	398466.40
UsageRecord	Charge	131	SpecialProjects	User6		2015-01-13 12:28:00	-88.40	99961.60
UsageRecord	Charge	132	SpecialProjects	User6		2015-01-13 12:28:16	-88.40	99073.20
UsageRecord	Charge	133	Finance	User8		2015-01-13 12:29:13	-76.80	98304.40
UsageRecord	Charge	134	Engineering1	User2		2015-01-13 12:30:33	-19.20	396656.60
UsageRecord	Charge	135	Engineering2	User4		2015-01-13 12:31:19	-19.20	299504.00
UsageRecord	Charge	136	SpecialProjects	User6		2015-01-13 12:32:23	-57.60	99856.60
UsageRecord	Charge	137	Engineering1	User1		2015-01-13 12:34:25	-1536.00	396320.60
UsageRecord	Charge	138	Engineering2	User5		2015-01-13 12:35:20	-88.40	295480.60
Total:								3995302.00

Flexible reporting and charging includes the ability to charge for both jobs and reservations. This lets admins automate and report back on both types of usage for more insights and transparency on usage as well as more accurate pay-per-use. This overcomes the limitations of other usage tracking tools that are often only job-based.

Role-based usage accounting access lets admins and users see only the accounting information related to their designated role. This prevents awkward disclosures of other users' and groups' usage that can cause management headaches. It also improves the value of usage and budget reports for users and admins.

Easy to use web portal or CLI ensures users and admins can quickly view usage reports, statements and balances with little training. Admins can also easily modify fund budgets and manage accounts, charge rates, and accounting events.

Superior Cost Management

The Moab Accounting Manager utilizes advanced and flexible controls that enable administrators to create resource-efficient user behavior. Reclaim wasteful spending and put savings where they belong – re-invested for achieving improved results.

Contact a solutions advisor by phone or email, or visit our web site today.

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