

# Moab HPC Suite – Basic Edition 8.1.0 Release Notes

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## New Features

The following is a summary of key new features in Moab HPC Suite – Basic Edition 8.1.0.

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### Moab Workload Manager

*Elastic Computing Feature - Ability to Request Dynamic Nodes From an External Service*

A new Elastic Computing feature is available to allow the Moab scheduler to utilize systems that can temporarily provide additional nodes (for example, to create new virtual machines or borrow physical nodes from another system) to fulfill increased workload demand so that job backlog is completed in a reasonable time frame. When this feature is enabled and configured, Moab accesses the dynamic nodes, also known as bursting, to handle the increased workload. Accessed nodes are then released once the demand is filled.

**i** Elastic Computing is only available with a Moab HPC Suite - Enterprise Edition license that has Elastic Computing enabled. Please contact your account manager at Adaptive Computing for further details and requirements for this feature.

*Moab's Scheduling Cycle No Longer Needs to Wait on the Cluster Query*

A new "threadedqueries" resource manager flag is available. When this flag is set for an individual RM (i.e., "RMCFG[torque] TYPE=PBS FLAGS=threadedqueries"), the queries that Moab performs to get information from the RM are done in a separate thread from the main Moab process. This allows Moab to remain responsive during the query and ultimately reduces the time spent in a scheduling cycle. If multiple RMs are being used the effect can be more significant because all RMs will be queried in parallel.

## Moab Web Services

*Support for Multi-Line (textarea) Configuration Parameters in Plugins*

MWS now supports multi-line (textarea) configuration parameters in plugins. See Configuration Constraints in Plugins\Plugin Developer's Guide in *Moab Web Services Administrator Guide* for more information.

*Trigger Object includes New Type Field*

The Trigger object in MWS has a new field called type. The type of a trigger can be either generic or elastic.

## Moab Viewpoint

Viewpoint version 8.1 is has been rewritten from the ground up to focus on HPC use cases. This reconfiguration enables better integration with Moab for managing jobs, resources, and utilization via a customizable portal. Settings are also provided to limit the amount of data that is displayed.

Viewpoint can be installed on any head node. However it is recommended that you install Viewpoint on the same server as Moab Web Services (if possible).

**i** The reconfiguration for version 8.1 is not compatible with prior versions of Viewpoint.

**i** Moab Viewpoint is only available with a Moab HPC Suite - Enterprise Edition license.

## Moab Insight

The Moab HPC Suite - Enterprise Edition version 8.1 introduces the Insight database as a new component. Insight receives relevant job information from Moab and enables Moab Viewpoint to display this data for the purpose of empowering HPC administrators with information utilization, workload, and cluster performance. Currently Insight will support 50K weekly job submissions and 400 nodes. Job submission rates or cluster sizes beyond these numbers are not supported at this time.

Install Insight if you want to do either of the following:

- Use Moab Viewpoint 8.1
- Run reports and analyze events within the cluster using standard relational database tools such as Crystal Reports.

Insight is recommended to be installed on its own server for best performance.

**i** Insight is not backwards-compatible with other suite versions.

**i** Moab Insight is only available with a Moab HPC Suite - Enterprise Edition license.

## TORQUE Resource Manager

### *Ability to Provide Condensed qstat Output*

A 'qstat -C' option, which specifies that TORQUE will provide only a condensed output (job name, resources used, queue, state, and job owner) for jobs that have not changed recently (as per the job\_full\_report\_time parameter), has been added. Jobs that have recently changed will continue to send a full output.

### *Performance Enhancements to MOM Clean-up Time*

Some minor performance enhancements were made to improve MOM clean-up time.

# Differences

This section contains differences in previously existing features that require a change in configuration or routine.

- [Moab Workload Manager on page 4](#)
- [Moab Web Services on page 4](#)
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## Moab Workload Manager

### *Set Default Accounts on a Per Partition Basis*

Added the ability to define default accounts per partition. Also available in fairshare trees.

### *Node Collection in the Moab Database in MongoDB*

The node collection in the Moab database in MongoDB has an index on the attributes field. This field can grow too large to index.

- For existing installations, the following commands on the MongoDB server will fix the problem:

```
$ mongo moab -u moab_user -p secret2  
> db.node.dropIndex({"attributes":1})
```

The username and password for your database are most likely different from the above example. Check with your database administrator.

- For new installations using this and future releases, the index is no longer created and does not need to be dropped.

### *IDCFG[] Defaults to TRUE*

The default value for IDCFG[] CREATECRED has been changed to TRUE. Moab will now create all credentials that it finds in the identity manager.

## Moab Web Services

### *Reservation Statistics Value Changes*

MWS reservation statistics (CIPS, CAPS, TAPS, and TIPS) values have been changed from floating decimal points (double) to long integers. This supports reservations now passing the consumption rate as an attribute (instead of an element).

## TORQUE Resource Manager

### *CLIENTRETRY Configuration Option Support for qdel*

The qdel parameter now includes the -b option and CLIENTRETRY configuration option support. This feature functions similar to -b option for qsub. Specifically:

- -b <num> command line argument support
- CLIENTRETRY configuration option support
- PBS\_CLIENTRETRY environment variable support

### *Jobs Deleted When the Dependency Can No Longer Be Satisfied*

When a job is deleted because its dependency can no longer be satisfied, that job will follow the `keep_completed` parameter set (if any) for `pbs_server`. Previously, jobs were purged immediately.

### *pbs\_server -t No Longer Supports hot|warm|cold Options*

The `pbs_server -t` option no longer supports the `hot|warm|cold` Options. Other options are still supported.

## Installation and Upgrade Information



When installing or upgrading, it is *strongly* recommended that administrators configure Moab with mauth authentication with a complex key value. See Mauth Authentication (Appendix E: Security) in the *Moab Workload Manager Administrator Guide* for more information.

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- [Installing Moab HPC Suite - Basic Edition 8.1.0 on page 5](#)
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### Compatibility Requirements

This section provides information on compatibility between the different components of the suite.

#### *Moab Workload Manager and TORQUE Resource Manager*

Although the recommended configuration is Moab version 8.1 and TORQUE version 5.1, Moab version 8.1 supports TORQUE version 4.2.9, 5.0.x and 5.1. TORQUE 5.1 requires Moab 8.1 or 8.0.x.

### Installing Moab HPC Suite - Basic Edition 8.1.0

See the *Moab HPC Suite Installation and Configuration Guide* for requirements and instructions.

### Upgrading to Moab HPC Suite – Basic Edition 8.1.0

See the *Moab HPC Suite Installation and Configuration Guide* for requirements and instructions.

# Known Issues

The following are known issues in Moab HPC Suite - Basic Edition 8.1.0. Following each issue description is an associated issue number in parentheses.

- Jobs submitted with invalid credentials are put in a held state, instead of rejected, until the administrator can respond. The checkjob command gives administrators further information regarding why the job is held. Blindly assuming that all held jobs should in fact be running RIGHT NOW is not only unsafe, but circumvents intentional Moab policies and workflow. An administrator should exercise care when resolving held jobs. (CVE-2014-5375, MOAB-7478, MOAB-7526)
- When installing or upgrading, it is *strongly* recommended that administrators configure Moab with mauth authentication with a complex key value. See Mauth Authentication (Appendix E: Security) in the *Moab Workload Manager Administrator Guide* for more information. (CVE-2014-5376, MOAB-7525, MOAB-7480)
- If the Moab **JOBNODEMATCHPOLICY** is set to **EXACTNODE**, and if `requirements.tasksPerNode` is used in a job submission to MWS, then Moab will double the resources requested. To avoid this problem, use `requirements.resourcesPerTask.processors.dedicated` instead. (MOAB-7424)
- BACKFILLPOLICY BESTFIT does not support multi-req jobs. Only FIRSTFIT supports multi-req jobs. (MOAB-6824)
- DNS caches are not purged of removed nodes when Elastic Computing is enabled. SLES 11 SP1 has an issue with giving the old IP address to TORQUE even after updating /etc/hosts. Do not use SLES SP1 if you are using this method to manage the IP addresses for pbs\_server. The mom's OSs are irrelevant. (TRQ-2765)
- Some limitations exist in the way that pbsdsh can be used. Please note the following situations are not currently supported:
  - Running multiple instances of pbsdsh concurrently within a single job. (TRQ-2851)
  - Using the -o and -s options concurrently; although requesting these options together is permitted, only the output from the first node is displayed rather than output from every node in the chain. (TRQ-2690)

# Resolved Issues

The following is a list of some key bugs fixed in Moab HPC Suite – Basic Edition 8.1.0. Following each issue description is an associated issue number in parentheses.

- **mrmctl -f {messages|stats} failed to work for AM.** Fixed bug so that messages and statistics can be cleared for AM as described in the documentation.
- **Several mrmctl options ignored the option argument or did not honor them properly.** The issues have been remedied.
- **Role permission updates were incorrectly applied to user permissions.** This issue is fixed. (WS-2340)
- **multireq jobs take hours to start.** Fix bug where multi-req jobs were slow to start in certain cases. (MOAB-6824)
- **Unauthorized error does not tell you what permission you are lacking.** Improved error messages related to accessing resources without sufficient permissions. (WS-2301)
- **Submitting remote job scripts (that is, including the script as part of the JSON payload) is not currently supported.** Job scripts can now be included in the POST body when submitting jobs via MWS. The new field is called commandScript. (WS-2112)
- **MWS could send phony node name to Moab.** MWS is now more robust when parsing the nodesRequested field during a job PUT. (WS-2352)
- **Reservation Trigger Parser is Broken.** The rest/reservations resource now correctly returns trigger IDs (if any) on reservations. (WS-2342)
- **HOST\_NAME\_SUFFIX was no longer adding suffix to job names.** This bug is fixed. (TRQ-2956)
- **pbs\_mom filling up the logs in a HA environment.** Reduced verbosity in error logging in HA environments. (TRQ-2863)
- **Delays reported with Preemption.** The following changes were made to reduce delays: (TRQ-3026)
  - Speed up process data collection to help diminish time to rerun a job.
  - Correctly sum job memory and cpu time resources for processes created under setsid() calls within a job.
  - Avoid an infinite loop in pbs\_mom when running under a Linux Container (lxc).

## Resolved Issues