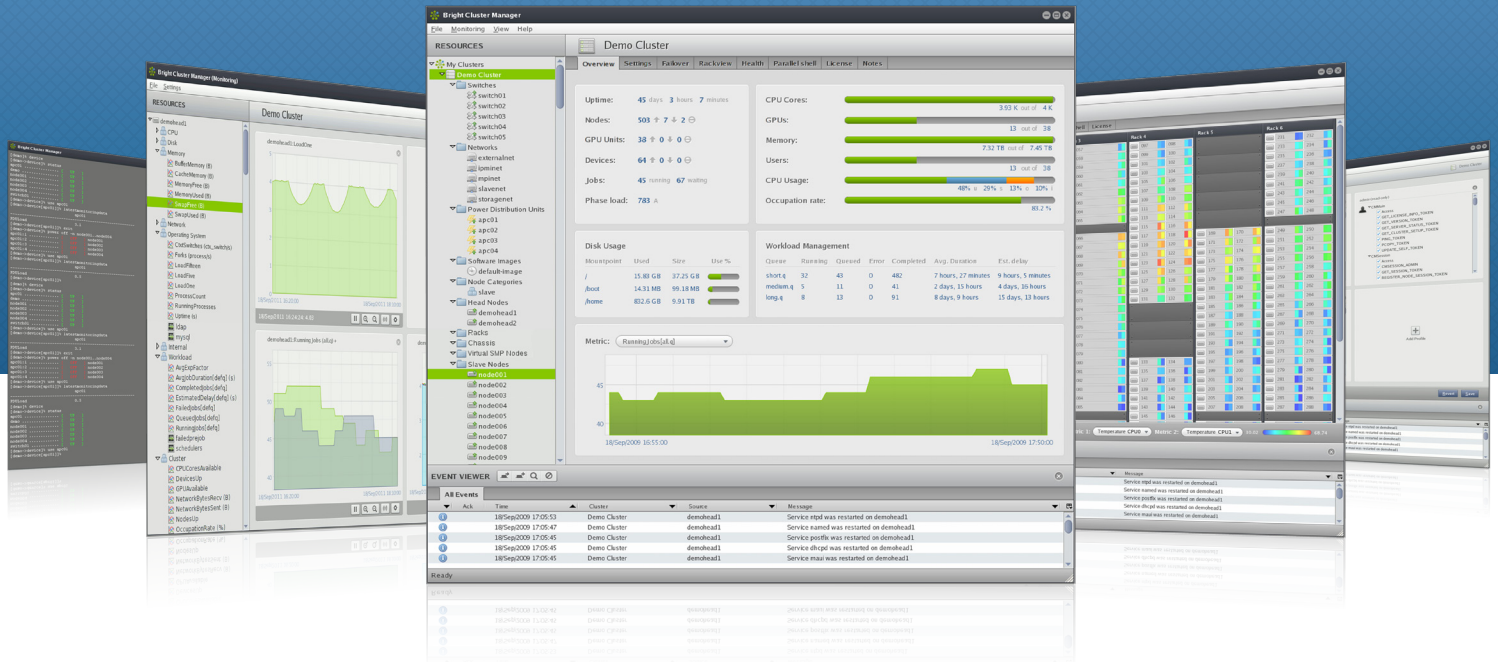


# Cloud Bursting with Bright Cluster Manager



## Bright Cluster Manager unleashes and manages the unlimited power of the cloud

Create a complete cluster in Amazon EC2, or easily extend your onsite cluster into the cloud, enabling you to dynamically add capacity and manage these nodes as part of your onsite cluster. Both can be achieved in just a few mouse clicks, without the need for expert knowledge of Linux or cloud computing.

Bright Cluster Manager's unique data aware scheduling capability means that your data is automatically in place in EC2 at the start of the job, and that the output data is returned as soon as the job is completed.

With Bright Cluster Manager®, every cluster is cloud-ready, at no extra cost. The same powerful cluster provisioning, monitoring, scheduling and management capabilities that Bright Cluster Manager provides to onsite clusters extend into the cloud.

## The Bright advantage for cloud bursting

- **Ease of use:** Intuitive GUI virtually eliminates user learning curve; no need to understand Linux or EC2 to manage system. Alternatively, cluster management shell provides powerful scripting capabilities to automate tasks.
- **Complete management solution:** Installation/initialization, provisioning, monitoring, scheduling and management in one integrated environment.
- **Integrated workload management:** Wide selection of workload managers included and automatically configured with local, cloud and mixed queues.

- **Single system view; complete visibility and control:** Cloud compute nodes managed as elements of the on-site cluster; visible from a single console with drill-downs and historic data.
- **Efficient data management via data aware scheduling:** Automatically ensures data is in position at start of computation; delivers results back when complete.
- **Secure, automatic gateway:** Mirrored LDAP and DNS services over automatically-created VPN connects local and cloud-based nodes for secure communication.
- **Cost savings:** More efficient use of cloud resources; support for spot instances, minimal user intervention.

## Two cloud bursting scenarios

Bright Cluster Manager supports two cloud bursting scenarios: "Cluster-on-Demand" and "Cluster Extension".

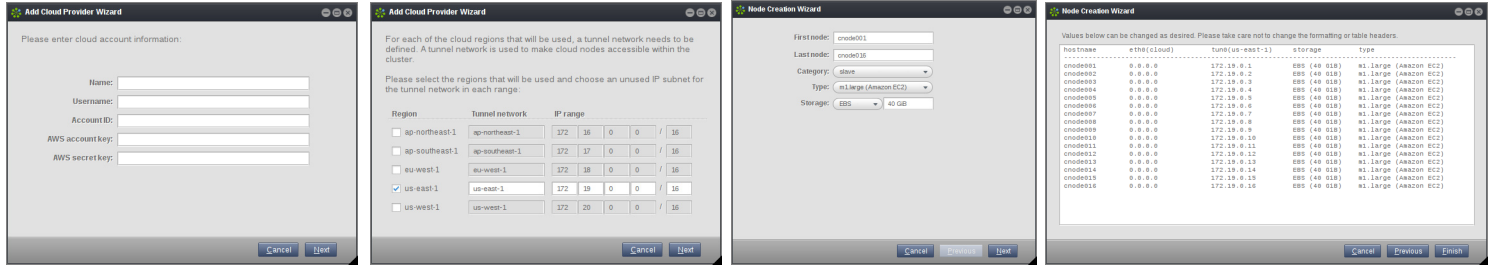
### Scenario 1: Cluster-on-Demand

The Cluster-on-Demand scenario is ideal if you do not have a cluster onsite, or need to set up a totally separate cluster. With just a few mouse clicks you can instantly create a complete cluster in the public cloud, for any duration of time.



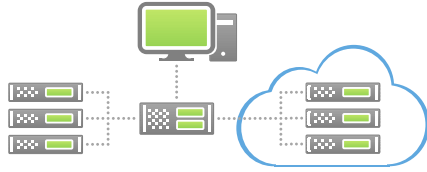
### Scenario 2: Cluster Extension

The Cluster Extension scenario is ideal if you have a cluster onsite but you need more com-



The Add Cloud Provider Wizard and the Node Creation Wizard make the cloud bursting process easy, also for users with no cloud experience.

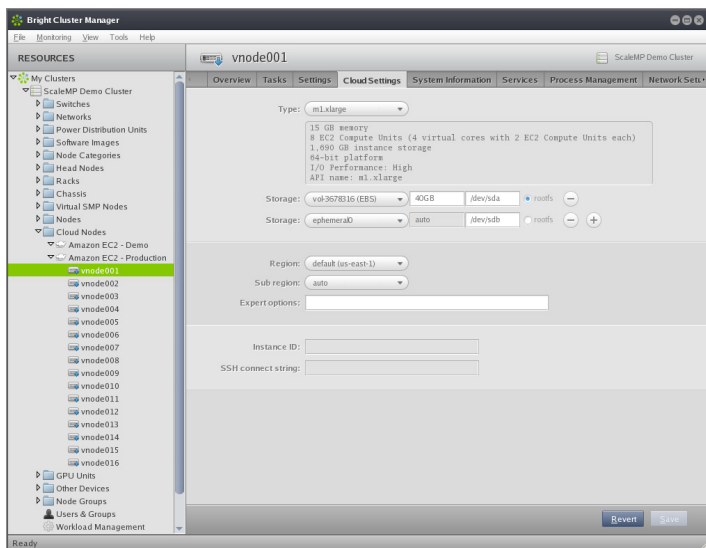
pute power, including GPUs. With Bright Cluster Manager, you can instantly add EC2-based resources to your onsite cluster, for any duration of time. Bursting into the cloud is as easy as adding nodes to an onsite cluster – there are only a few additional steps after providing the public cloud account information to Bright Cluster Manager.



The Bright approach to managing and monitoring a cluster in the cloud provides complete uniformity, as cloud nodes are managed and monitored the same way as local nodes:

- Load-balanced provisioning
- Software image management
- Integrated workload management
- Interfaces – GUI, shell, user portal
- Monitoring and health checking
- Compilers, debuggers, MPI libraries, mathematical libraries and environment modules

Bright Cluster Manager also provides additional features that are unique to the cloud.



One or more cloud nodes can be configured under the Cloud Settings tab.

### Amazon spot instance support

Bright Cluster Manager enables users to take advantage of the cost savings offered by Amazon's spot instances. Users can specify the use of spot instances, and Bright will automatically schedule as available, reducing the cost to compute without the need to monitor spot prices and manually schedule.

### Hardware Virtual Machine (HVM) virtualization

Bright Cluster Manager automatically initializes all Amazon instance types, including Cluster Compute and Cluster GPU instances that rely on HVM virtualization.

### Data aware scheduling

Data aware scheduling ensures that input data is transferred to the cloud and made accessible just prior to the job starting, and that the output data is transferred back. There is no need to wait (and monitor) for the data to load prior to submitting jobs (delaying entry into the job queue), nor any risk of starting the job before the data transfer is complete (crashing the job). Users submit their jobs, and Bright's data aware scheduling does the rest.

### Bright Cluster Manager provides the choice: "To Cloud, or Not to Cloud"

Not all workloads are suitable for the cloud. The ideal situation for most organizations is to have the ability to choose between onsite clusters for jobs that require low latency communication, complex I/O or sensitive data; and cloud clusters for many other types of jobs.

Bright Cluster Manager delivers the best of both worlds: a powerful management solution for local and cloud clusters, with the ability to easily extend local clusters into the cloud without compromising provisioning, monitoring or managing the cloud resources.

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