OpenNebula: Open Source Virtual Machine Manager for Cluster Computing

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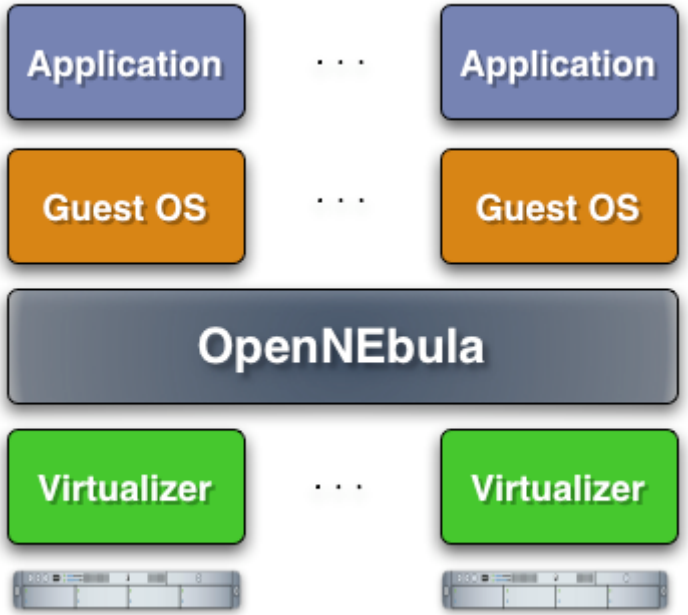
Contents

1. What is OpenNebula?
2. System Overview
3. Dynamic Provisioning of Computational Clusters
4. Demo

What is OpenNebula?

OpenNebula: Open Source Virtual Machine Manager for Cluster Computing

- Transform a distributed infrastructure into a flexible virtual infrastructure
- Adapt it to the changing demands of the the service workload
- OpenNebula is a *distributed virtualization layer*:
  - Extend the benefits of VMMs
  - Decouple the service from the physical infrastructure



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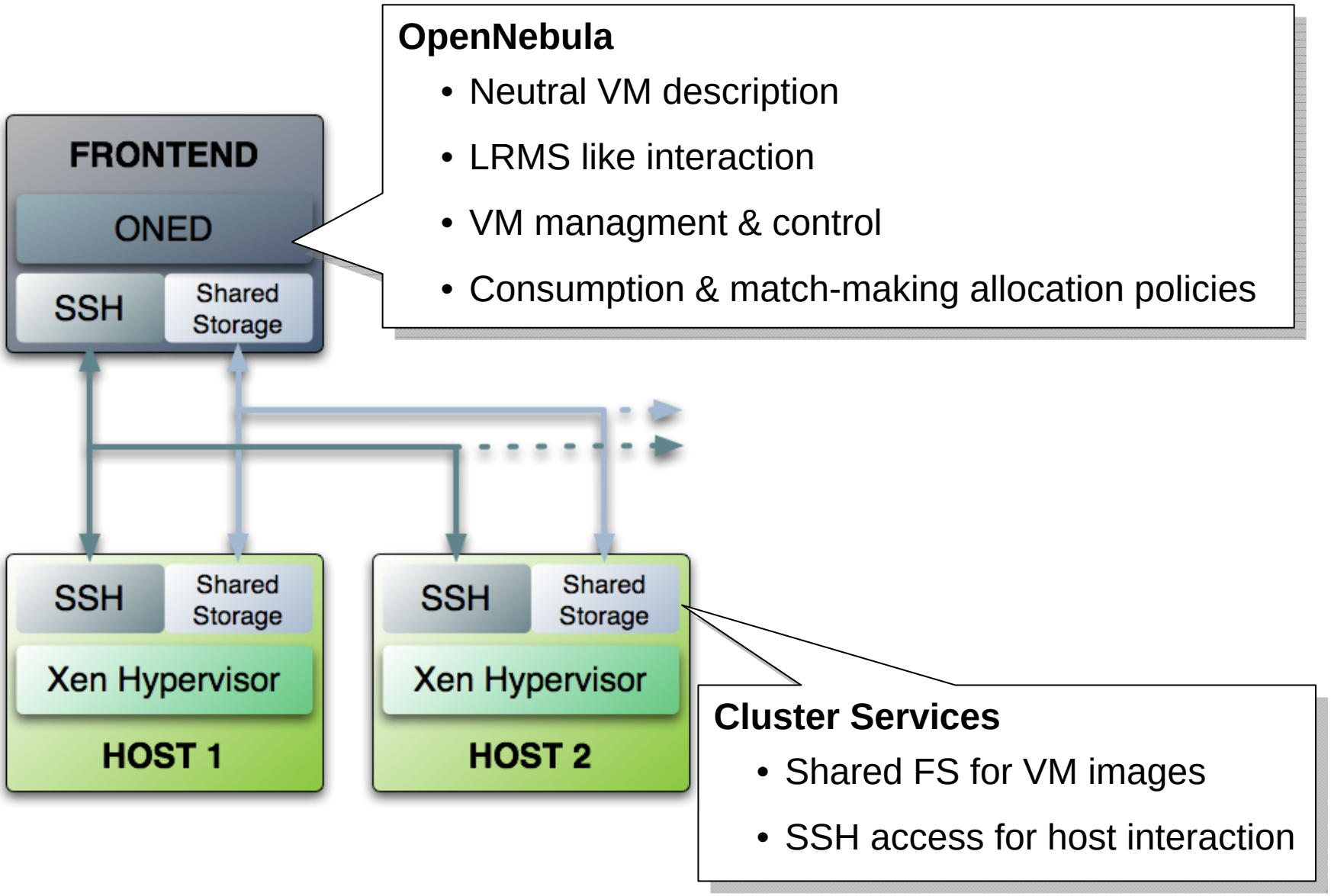
System Overview

OpenNebula: Open Source Virtual Machine Manager for Cluster Computing



OpenNebula

- Neutral VM description
- LRMS like interaction
- VM managment & control
- Consumption & match-making allocation policies

Cluster Services

- Shared FS for VM images
- SSH access for host interaction

System Overview

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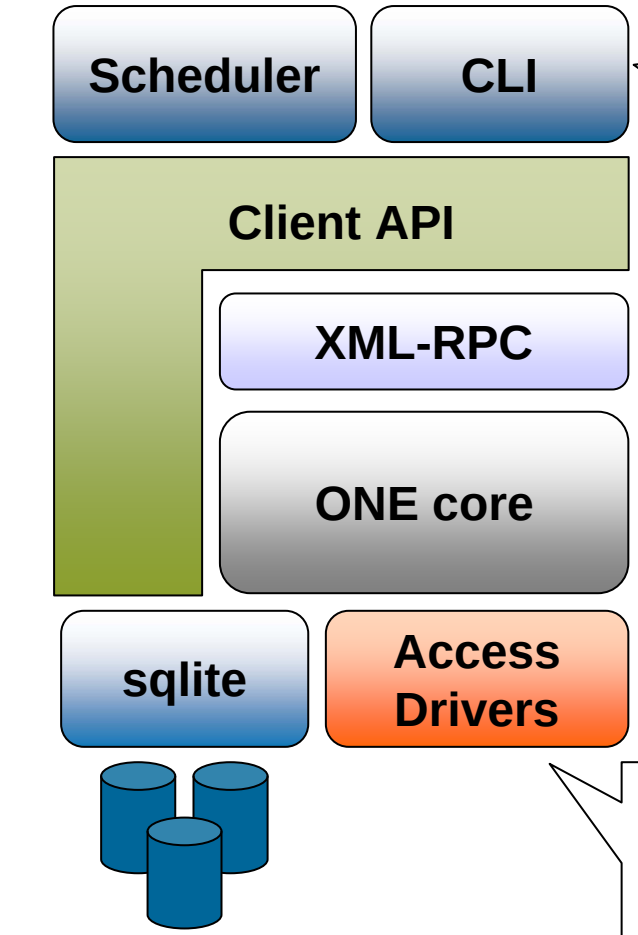

One Client API

- Based on common interfaces
- Unix-like CLI
- Scheduling modules

One Core

- VM Life-cycle management & control
- Persistent back-end

Access Drivers

- Interface *different hypervisors*
- Monitoring physical resources

Dynamic Provisioning of Computational Clusters

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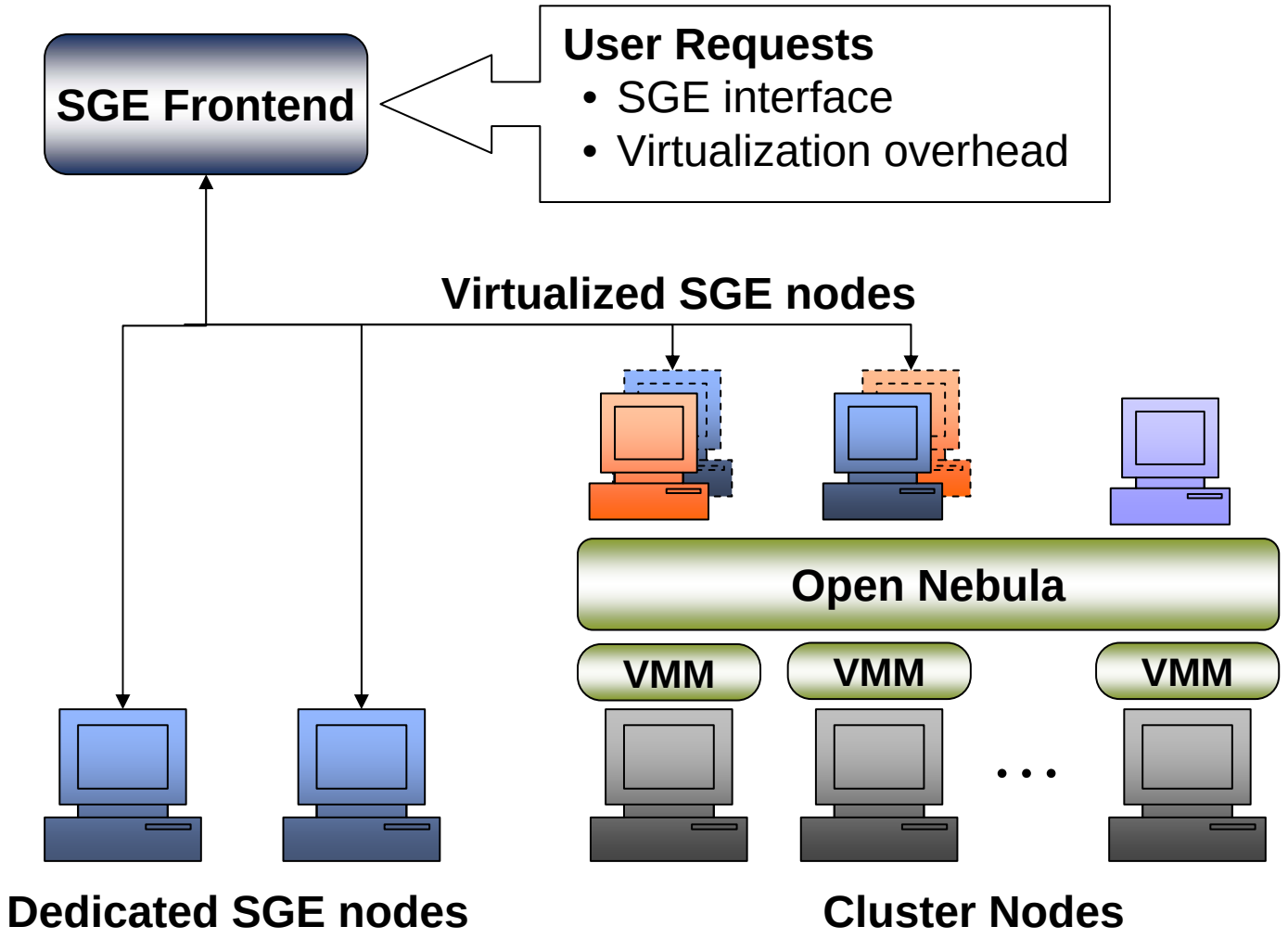

Dynamic Provisioning of Computational Clusters

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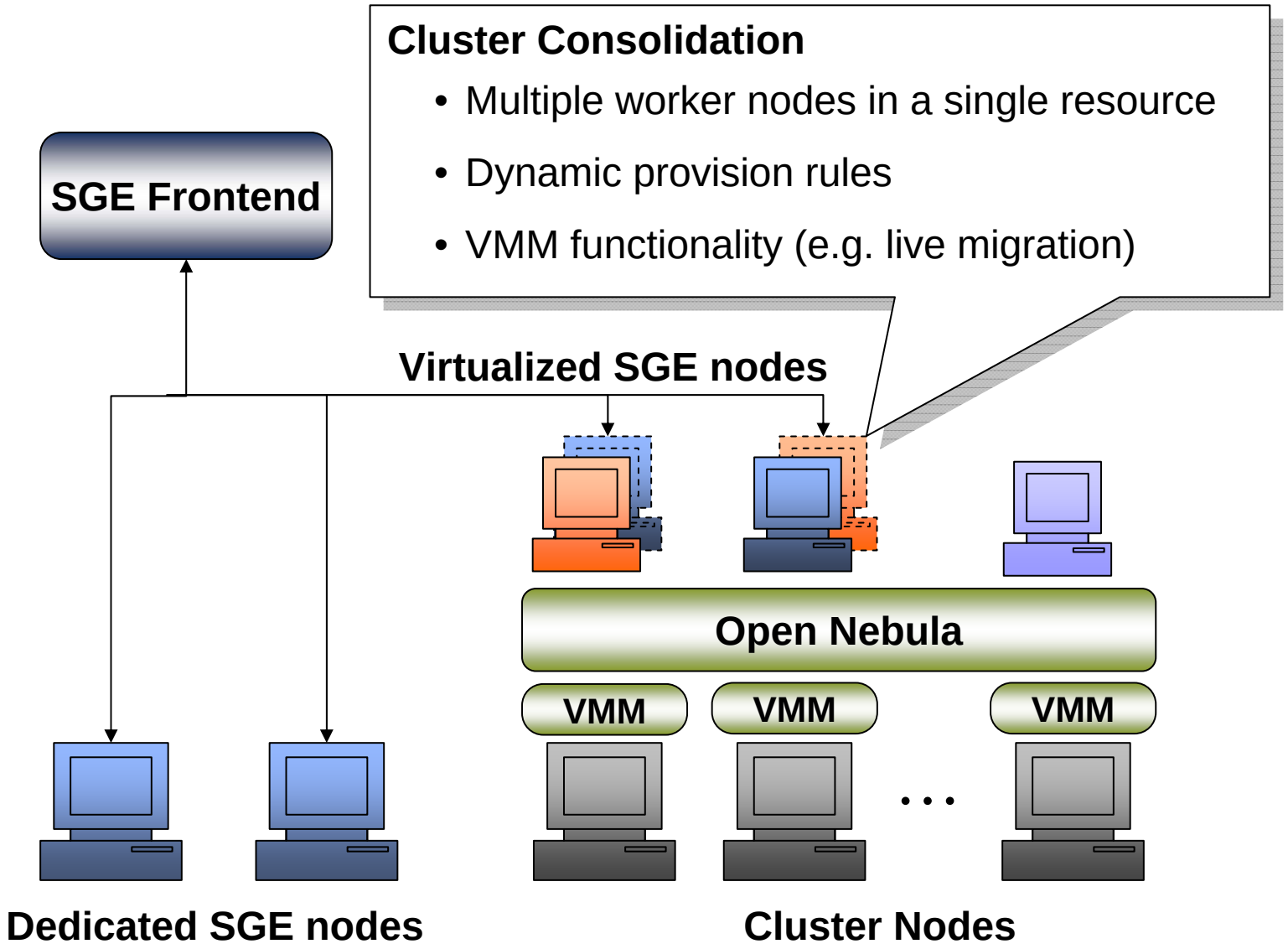

Dynamic Provisioning of Computational Clusters

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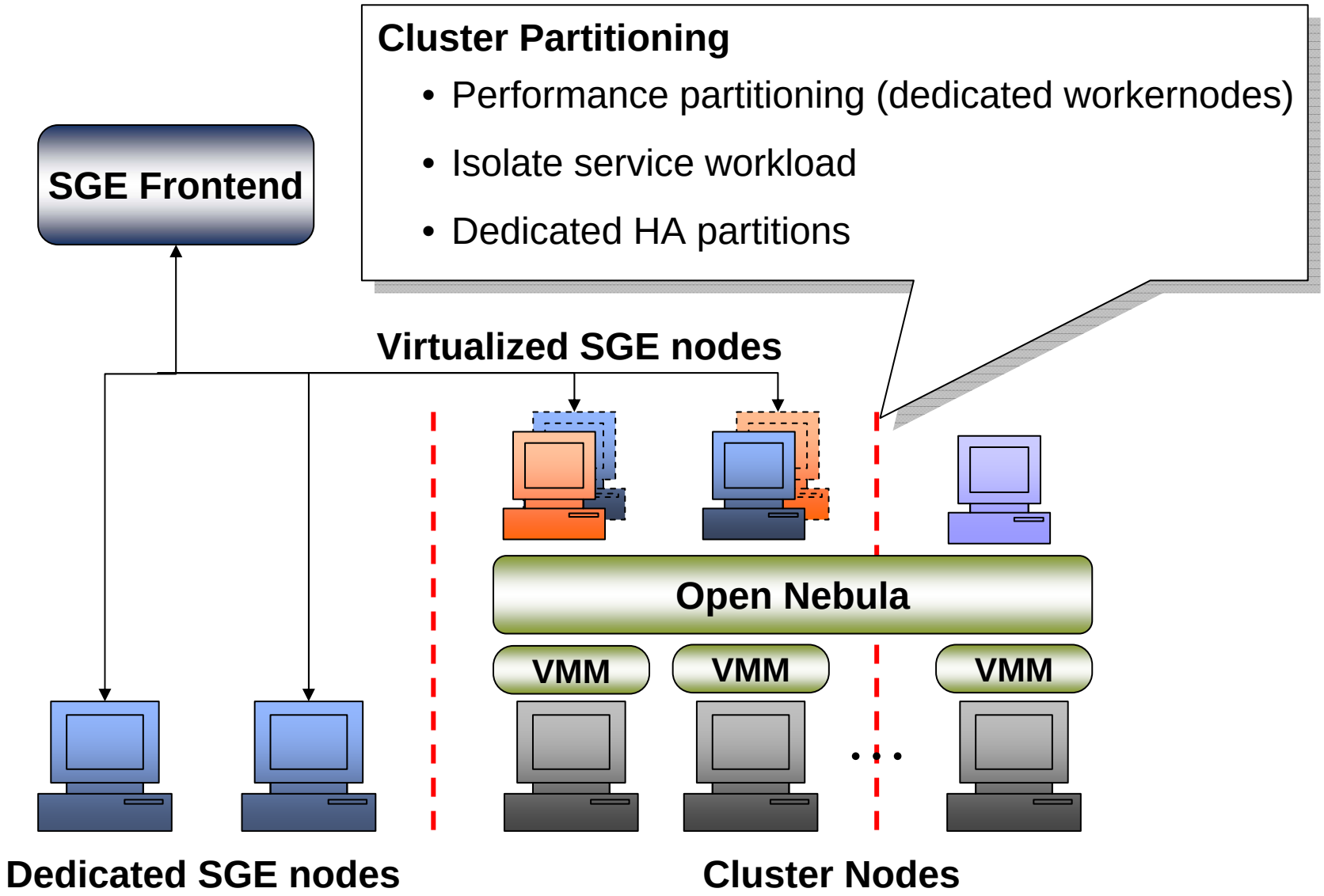

Dynamic Provisioning of Computational Clusters

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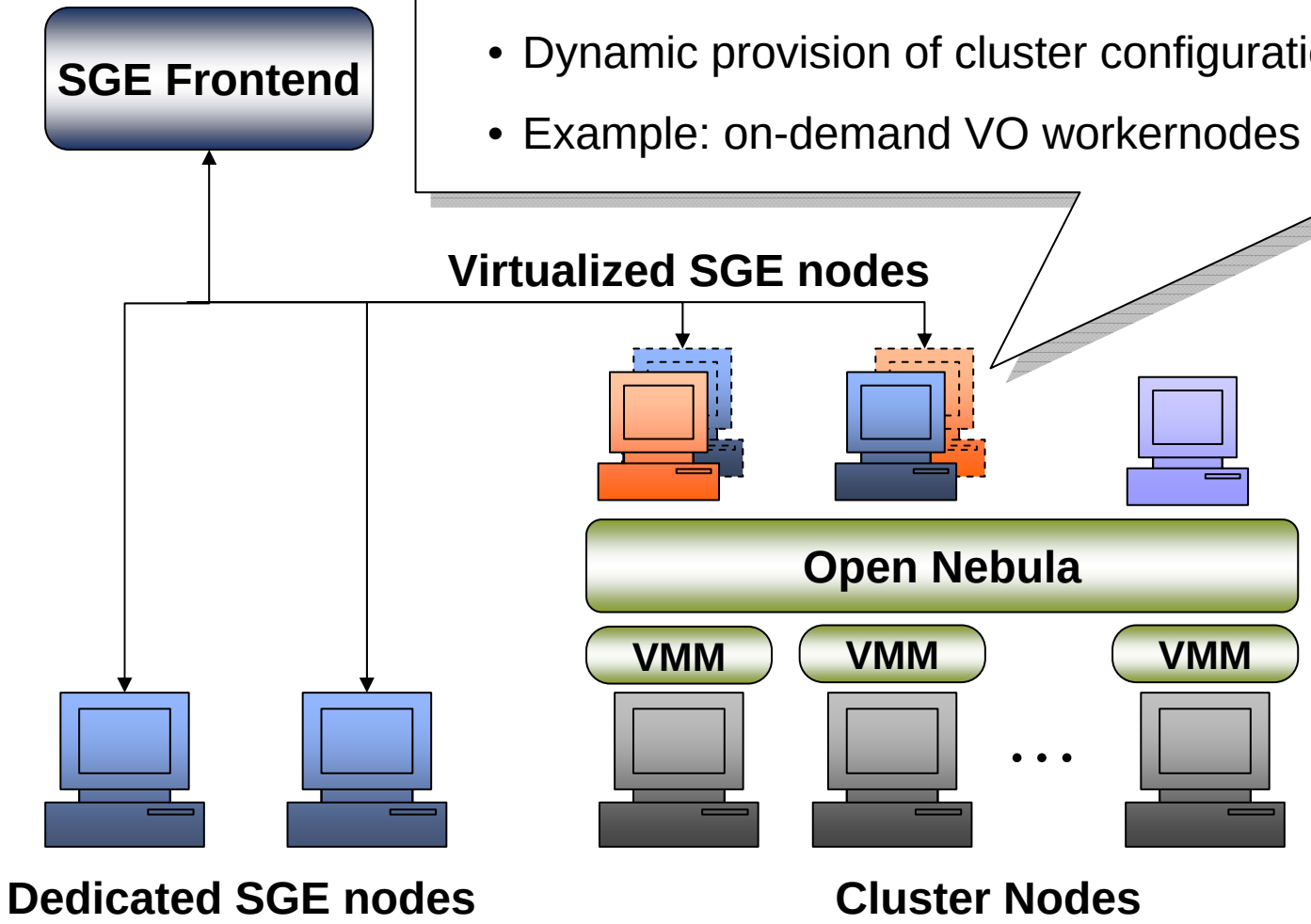
Heterogenous Workloads

- Custom worker-node configurations (queues)
- Dynamic provision of cluster configurations
- Example: on-demand VO workernodes in Grids



Dynamic Provisioning of Computational Clusters

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Cluster Configuration

- Pre-defined queues for each workernode type
- Basic standard cluster services (NIS,NSF...)

Workernode Configuration

- Workernodes pre-registered to sgemaster
- IP & hostname assigned through DHCP (MAC)
- Copy images to create new nodes
- Basic cluster services installed

THANK YOU FOR YOUR ATTENTION!!!
More info, downloads, mailing lists at www.opennebula.org

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