VRE for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean

Cloud System

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Outline

- Cloud computing
- OpenStack
- OpenStack web interface
- Cloud resource (UPT-Cloud)

What is Cloud Computing ?

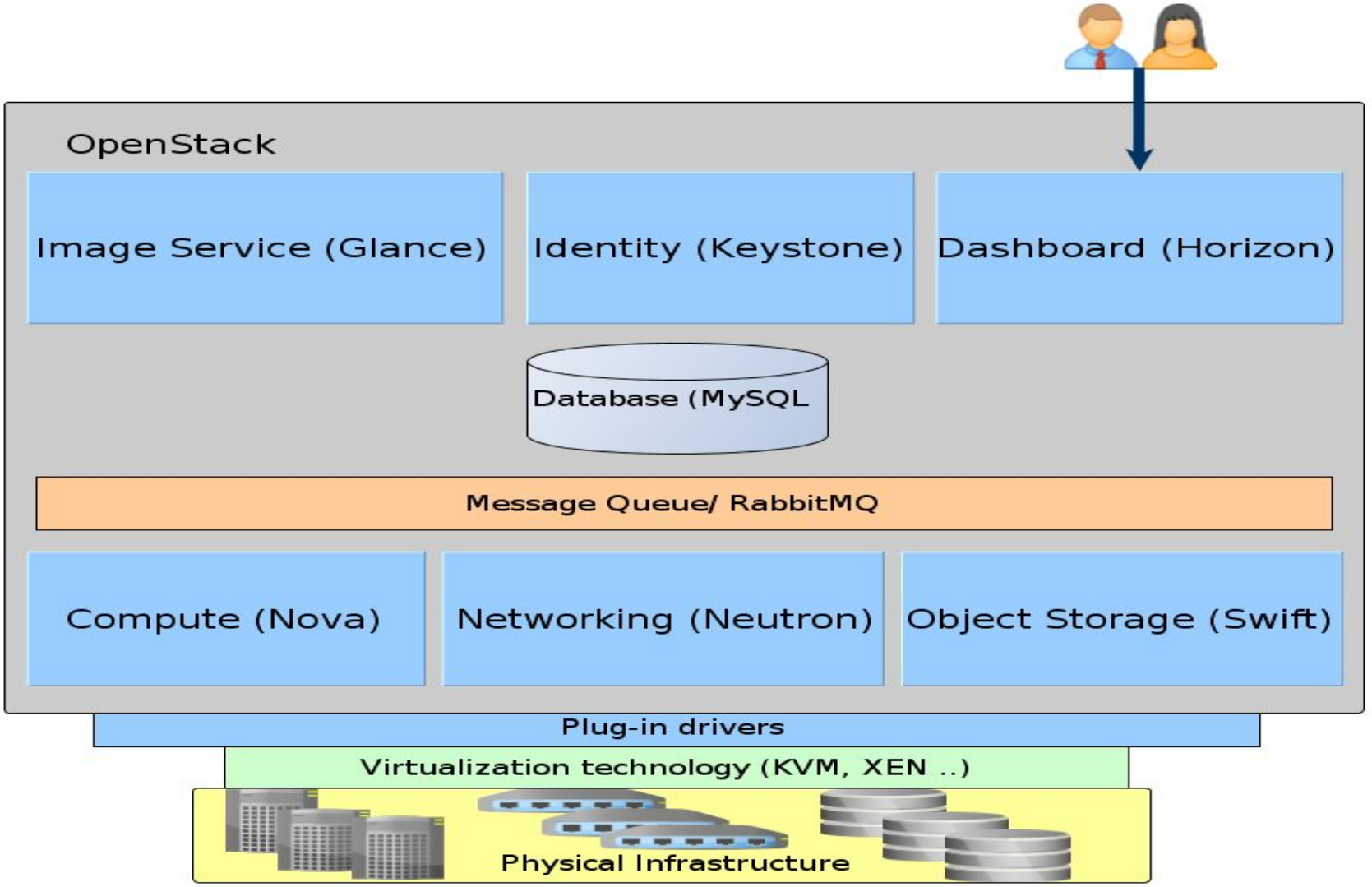
- A computing model where virtualized IT resources (infrastructure, software) are offered **as a service** to the user over the Internet

- Cloud computing characteristics:
  - On-demand, self-service access
  - Elasticity
  - Pay-per-use

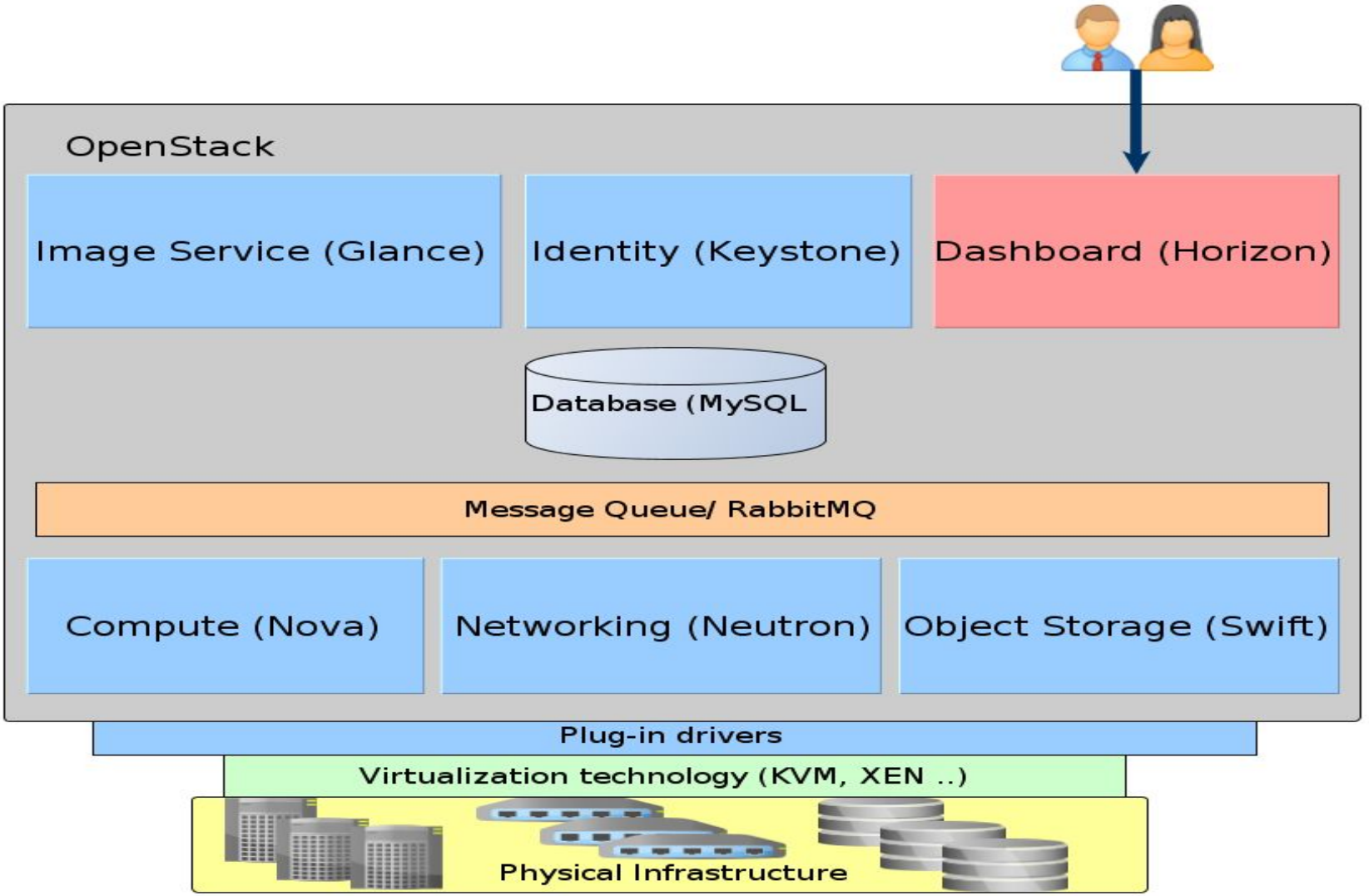
What is OpenStack ?

- OpenStack is a cloud software for managing a pool of virtualized resources and providing them over the Internet to the user
- It enables the creation of an **IaaS** cloud
- OpenStack characteristics:
  - Open source (Python)
  - Modular and extendable
  - Scalable

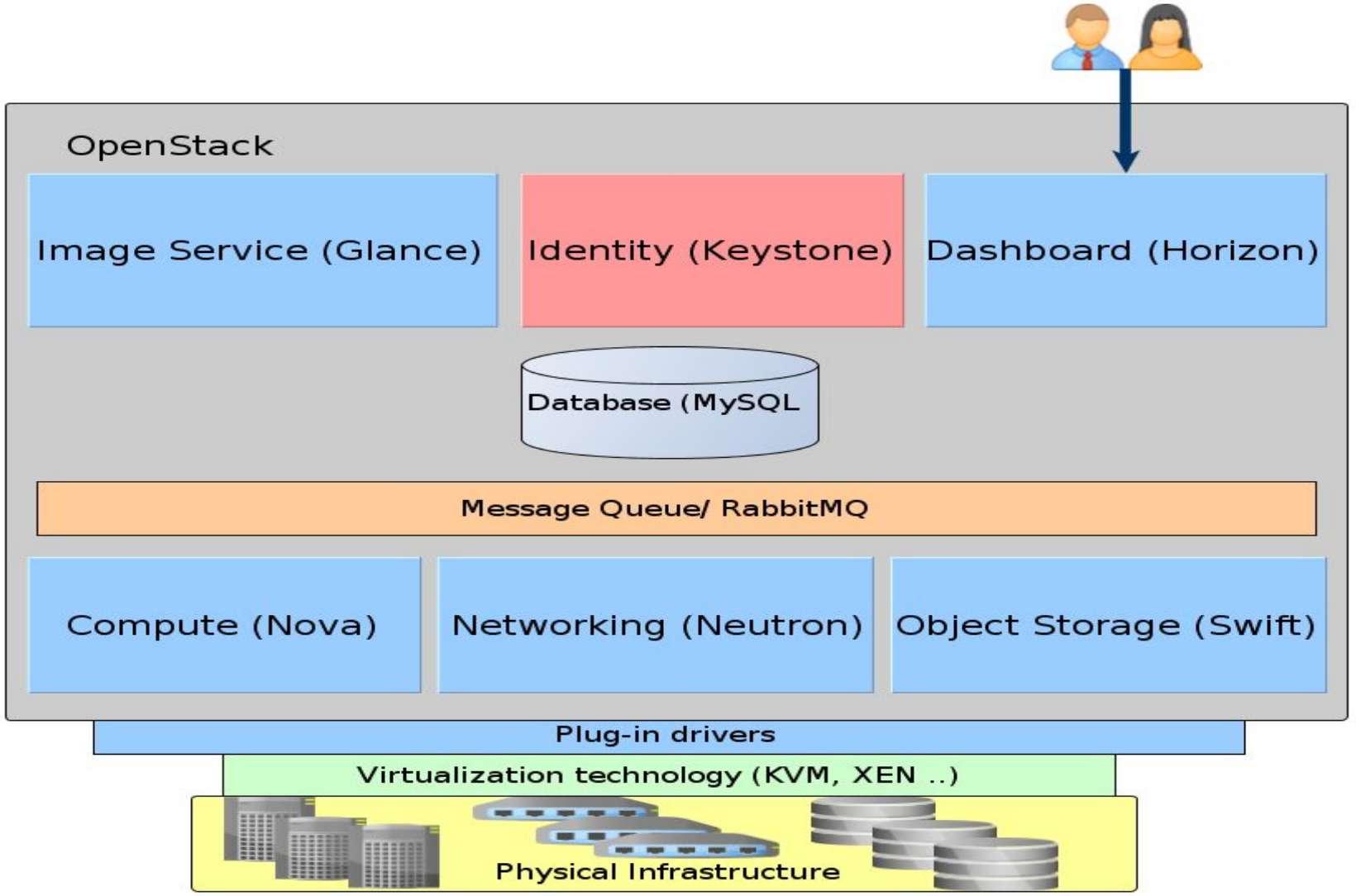
OpenStack Architecture



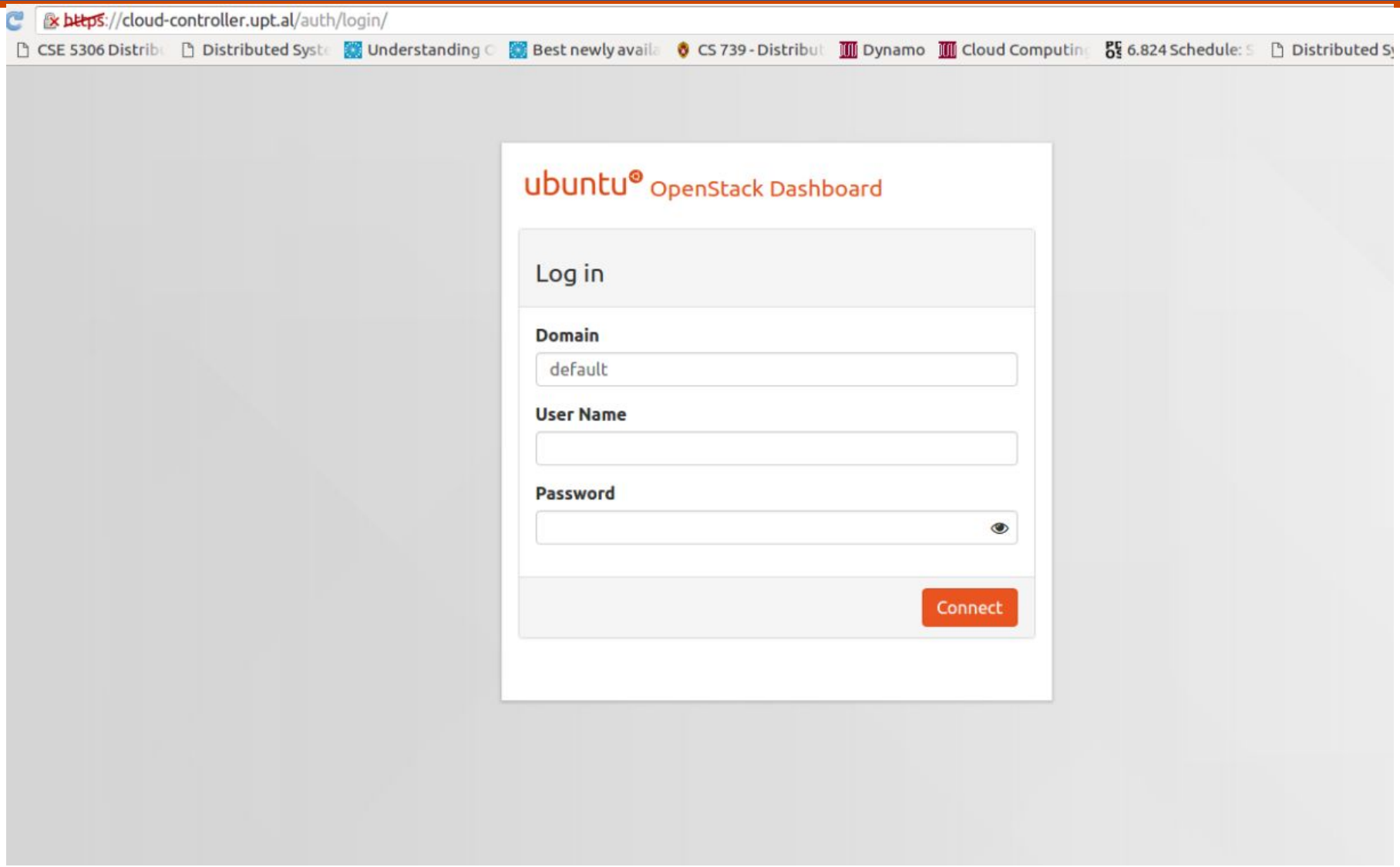
OpenStack Architecture



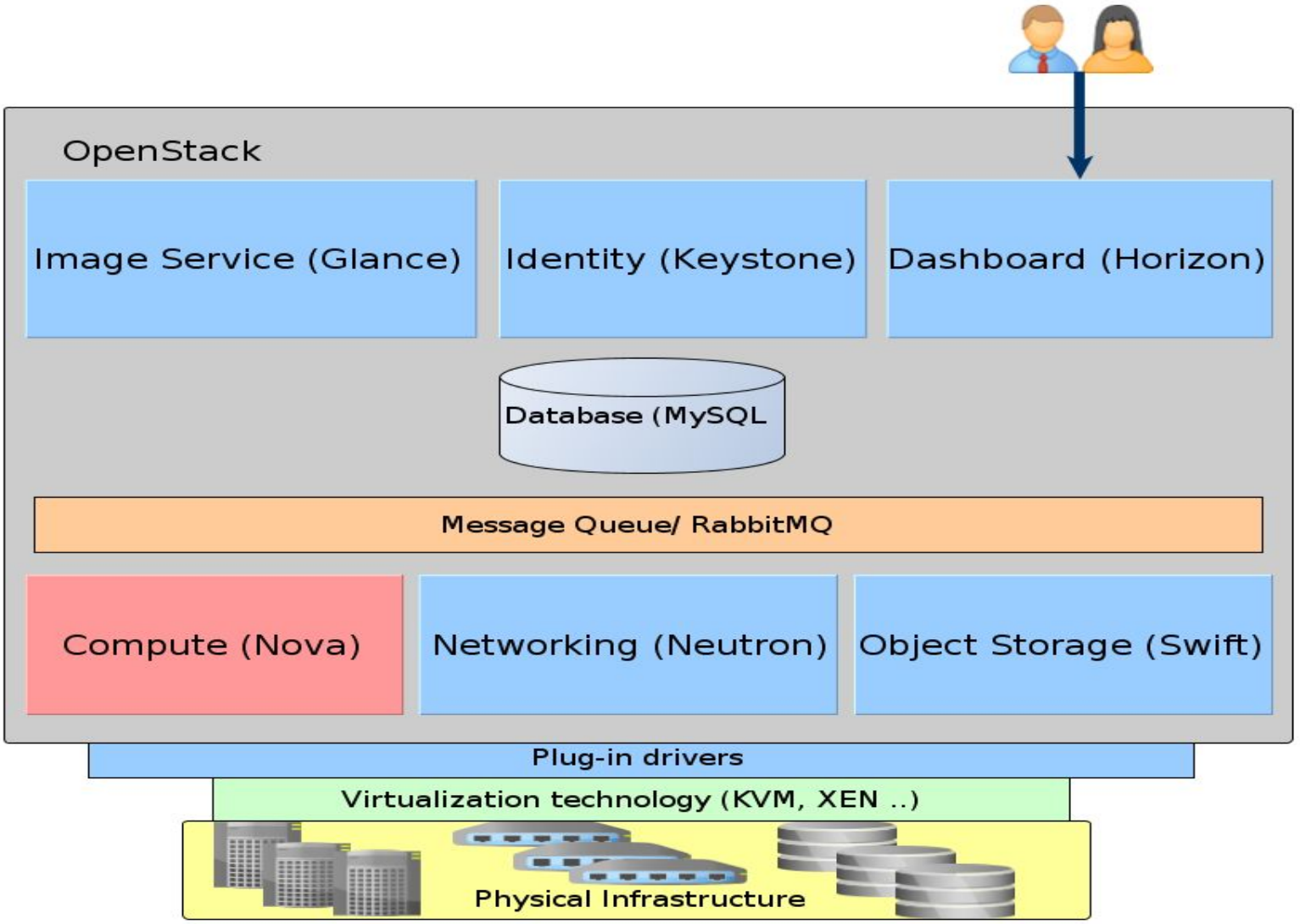
OpenStack Architecture



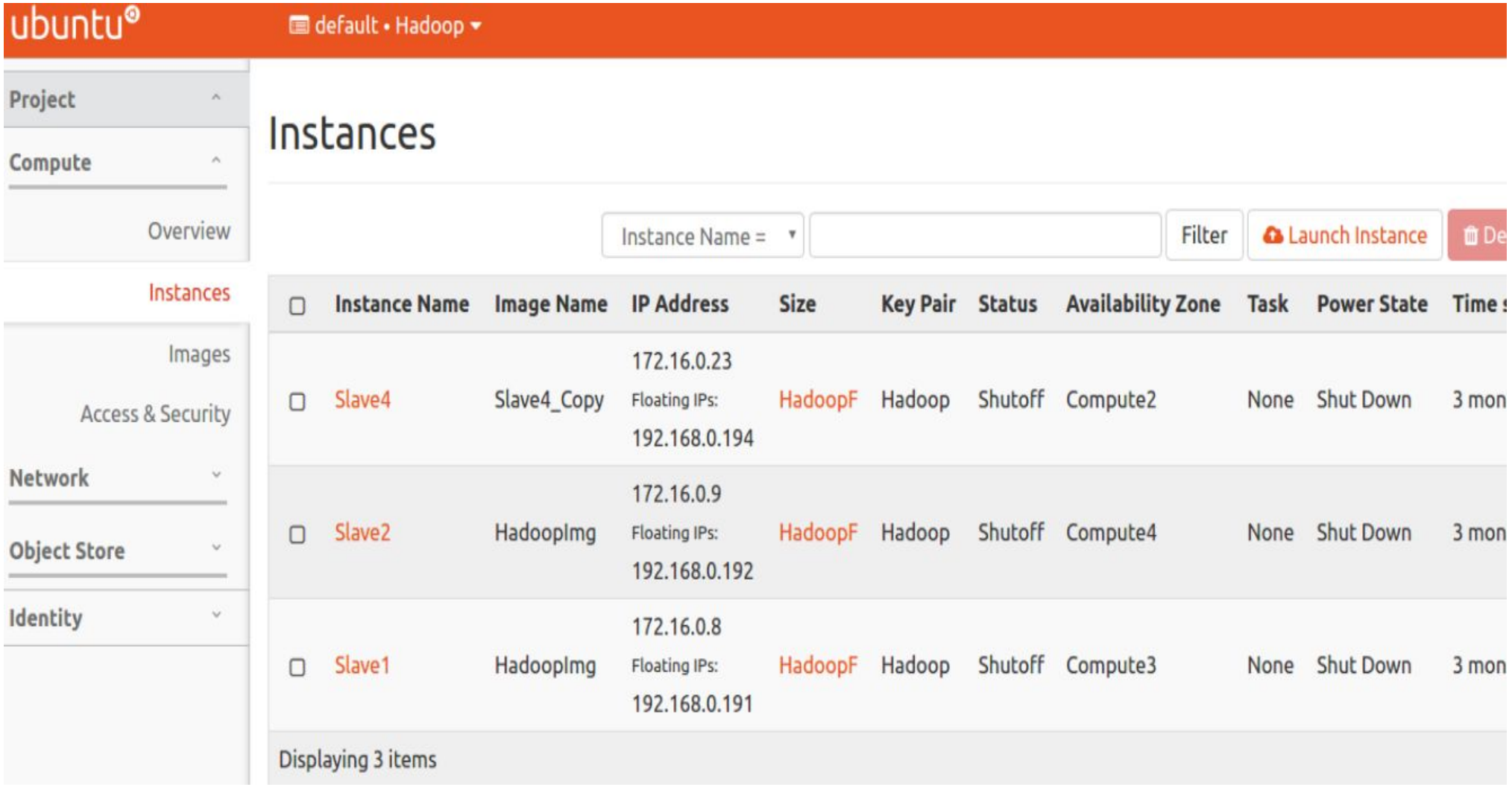
Identity (Keystone)



OpenStack Architecture



Compute (Nova)



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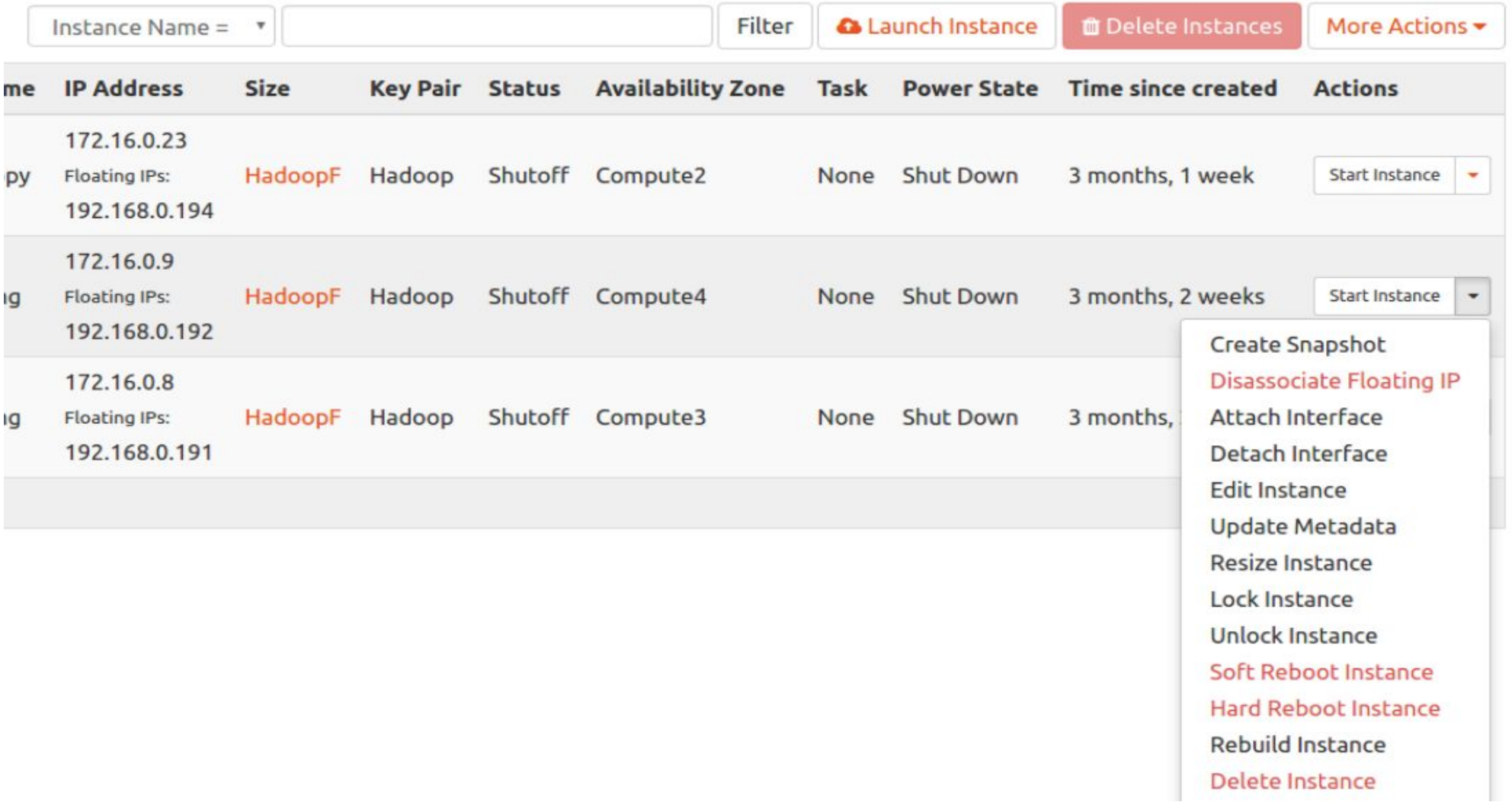

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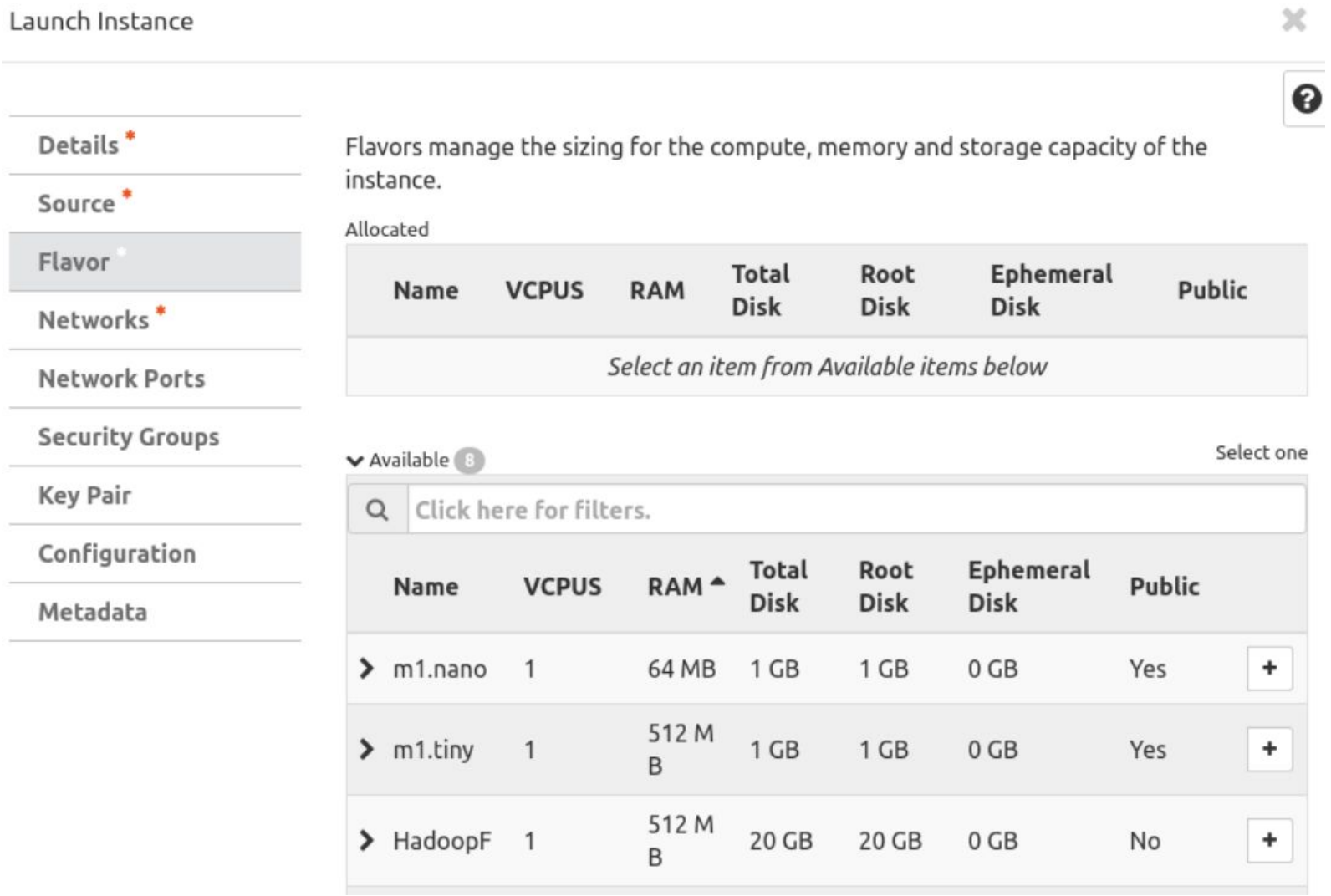


OpenStack Architecture

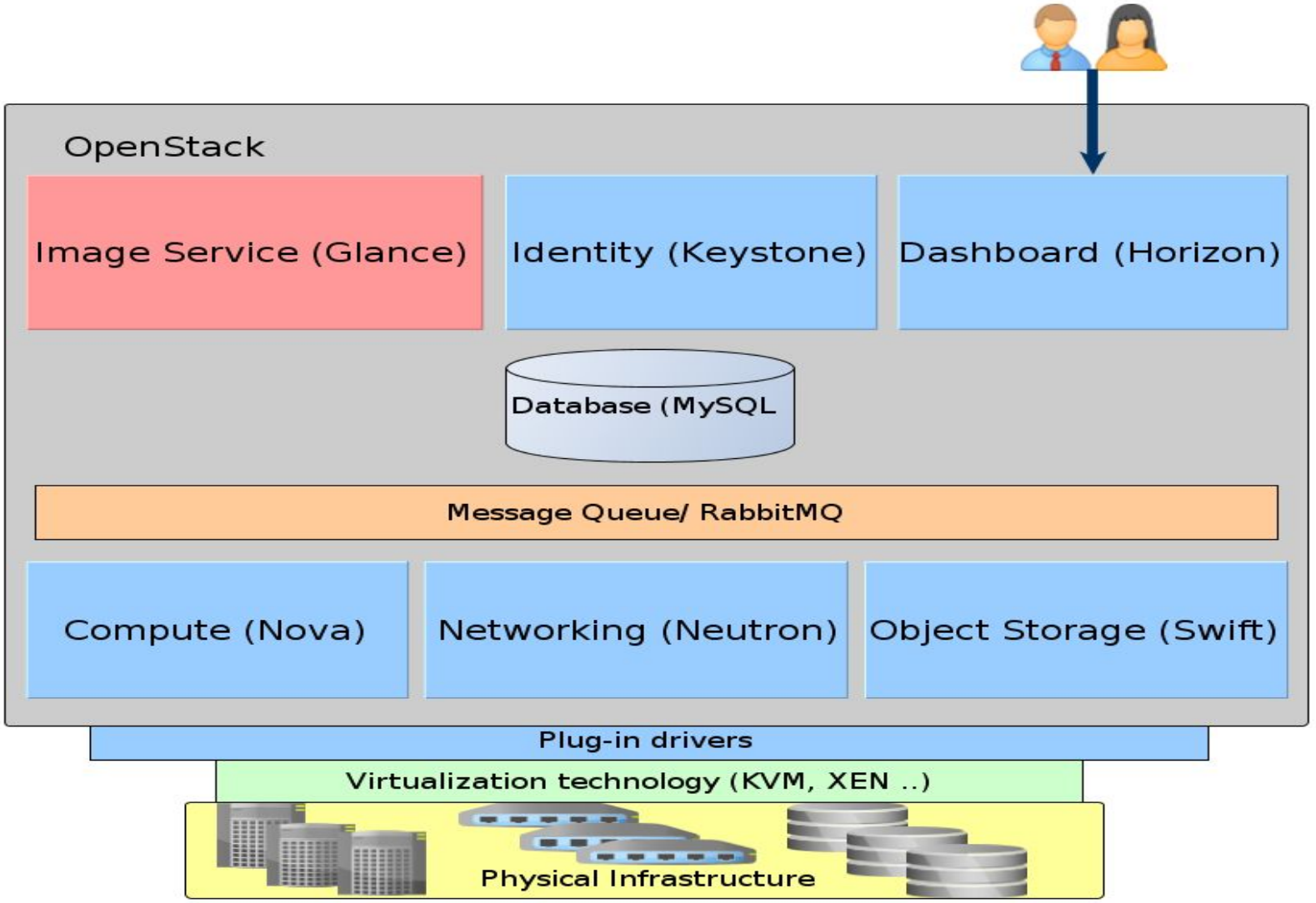
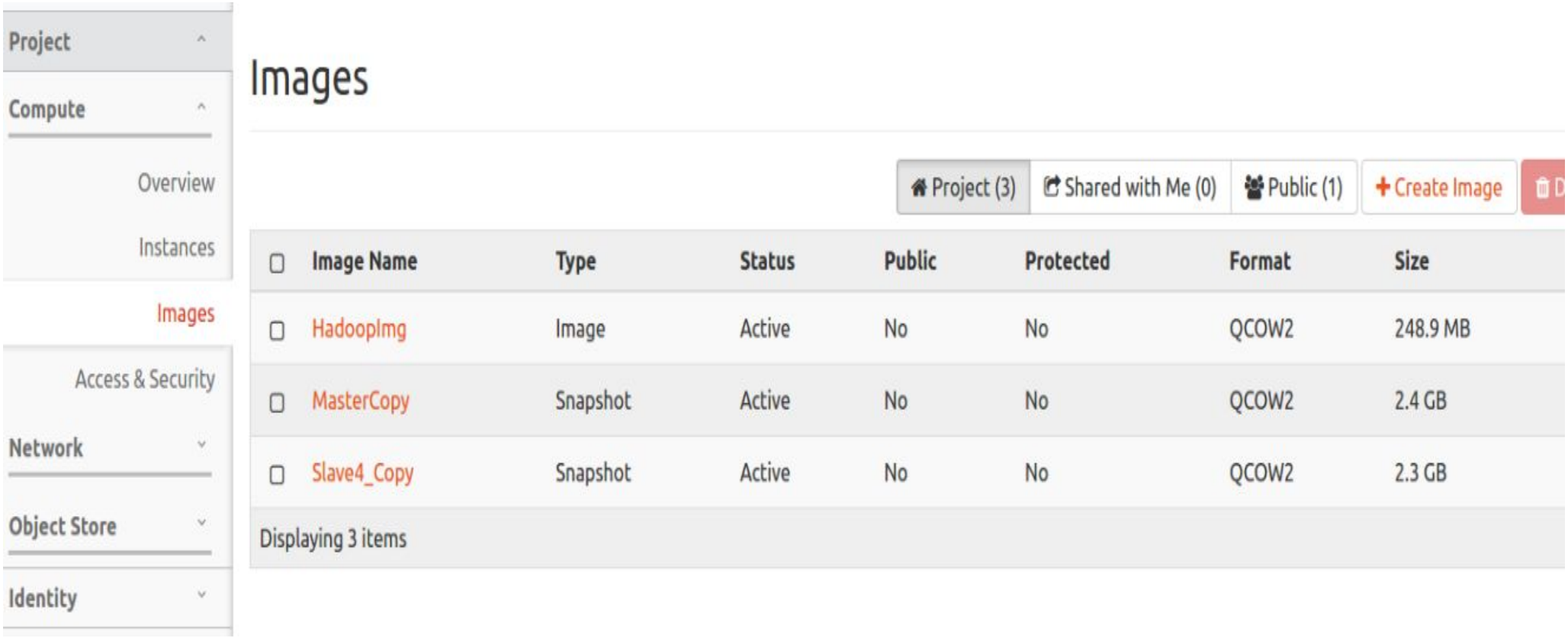


Image Service (Glance)



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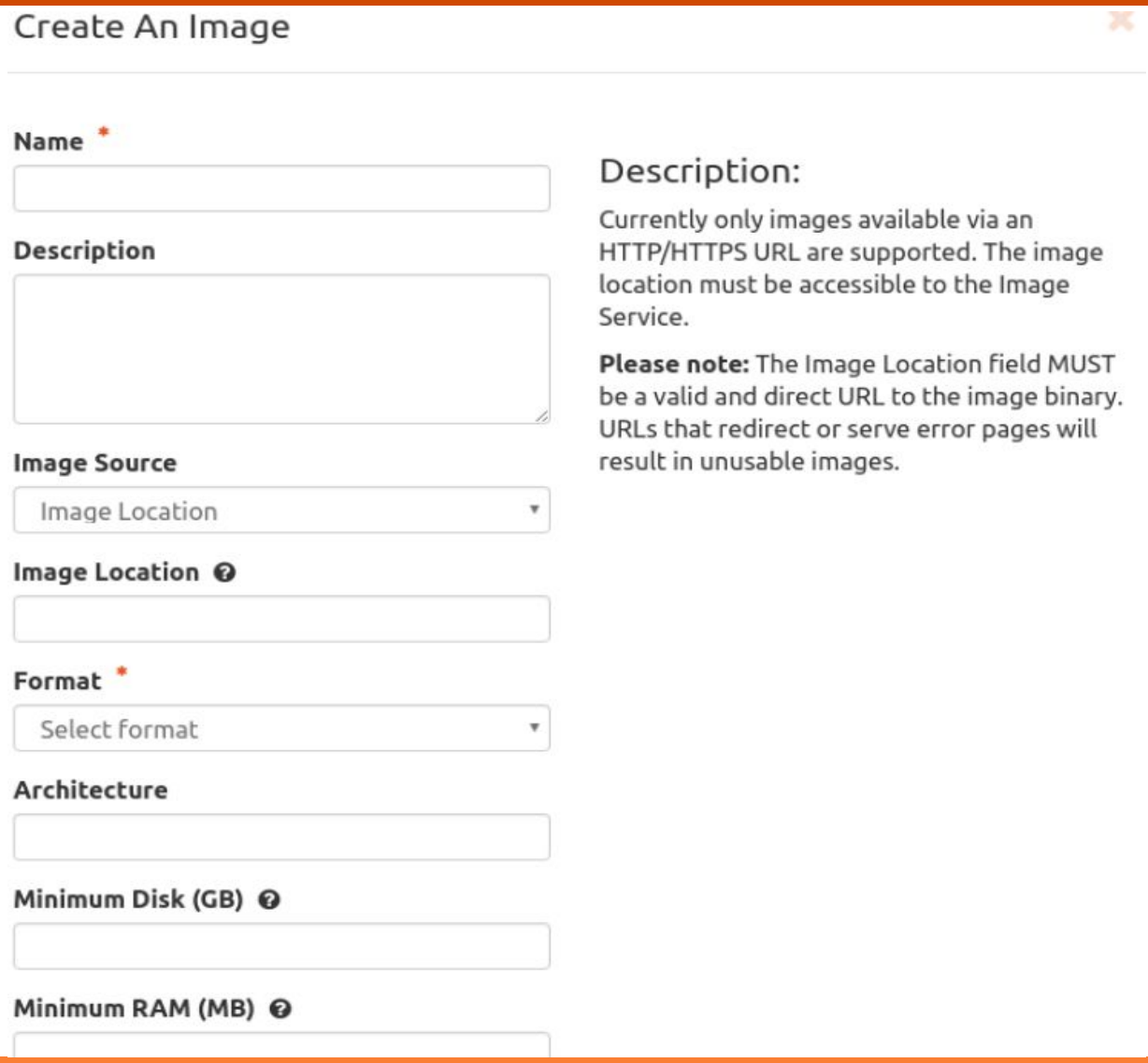
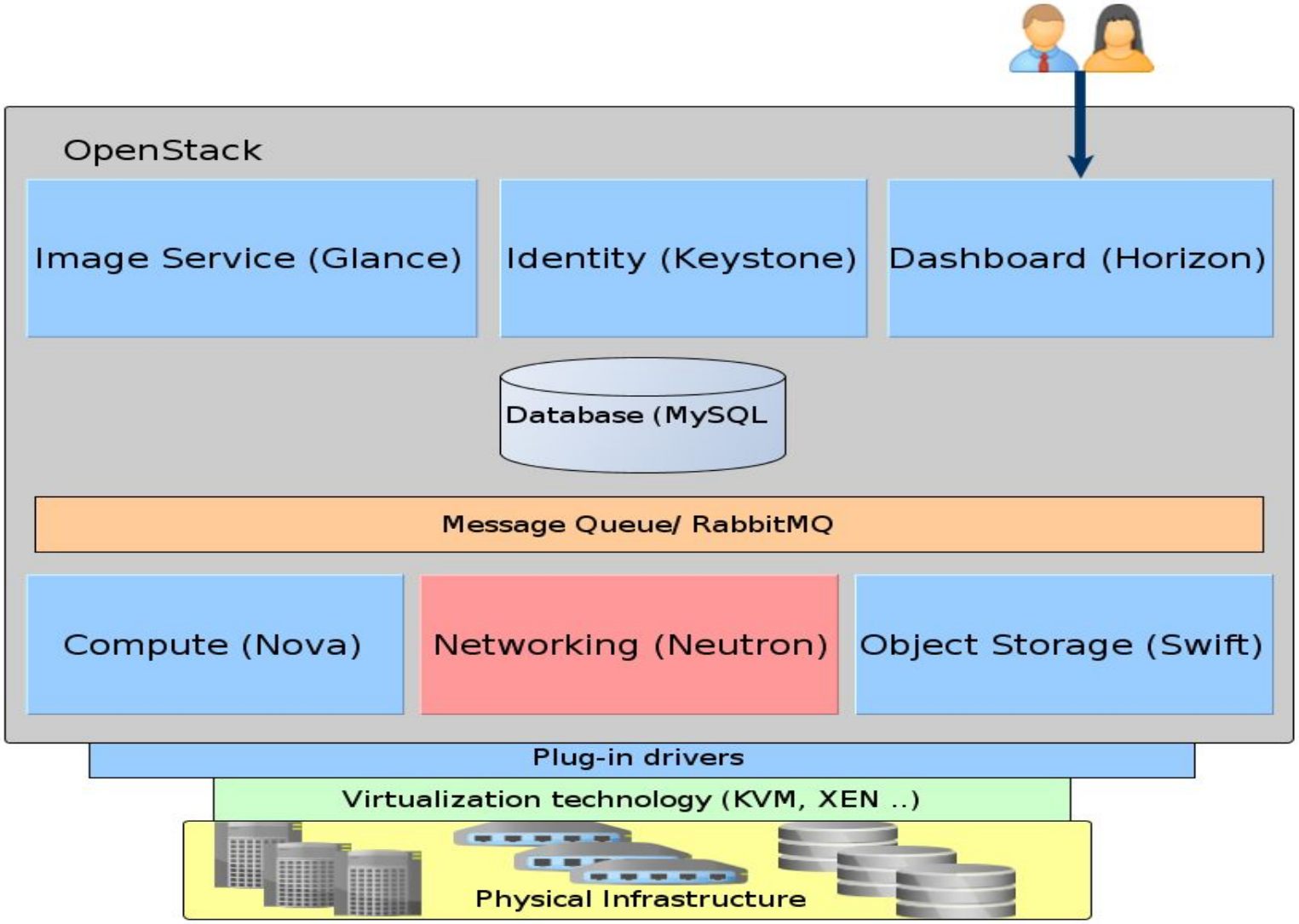


OpenStack Architecture



Networking (Neutron)

Project

Compute

Network

Network Topology

Networks

Routers

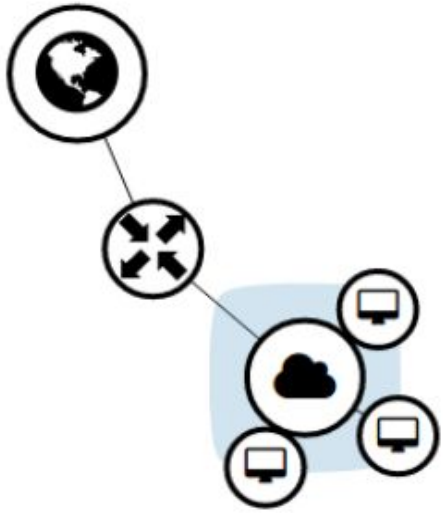
Object Store

Identity

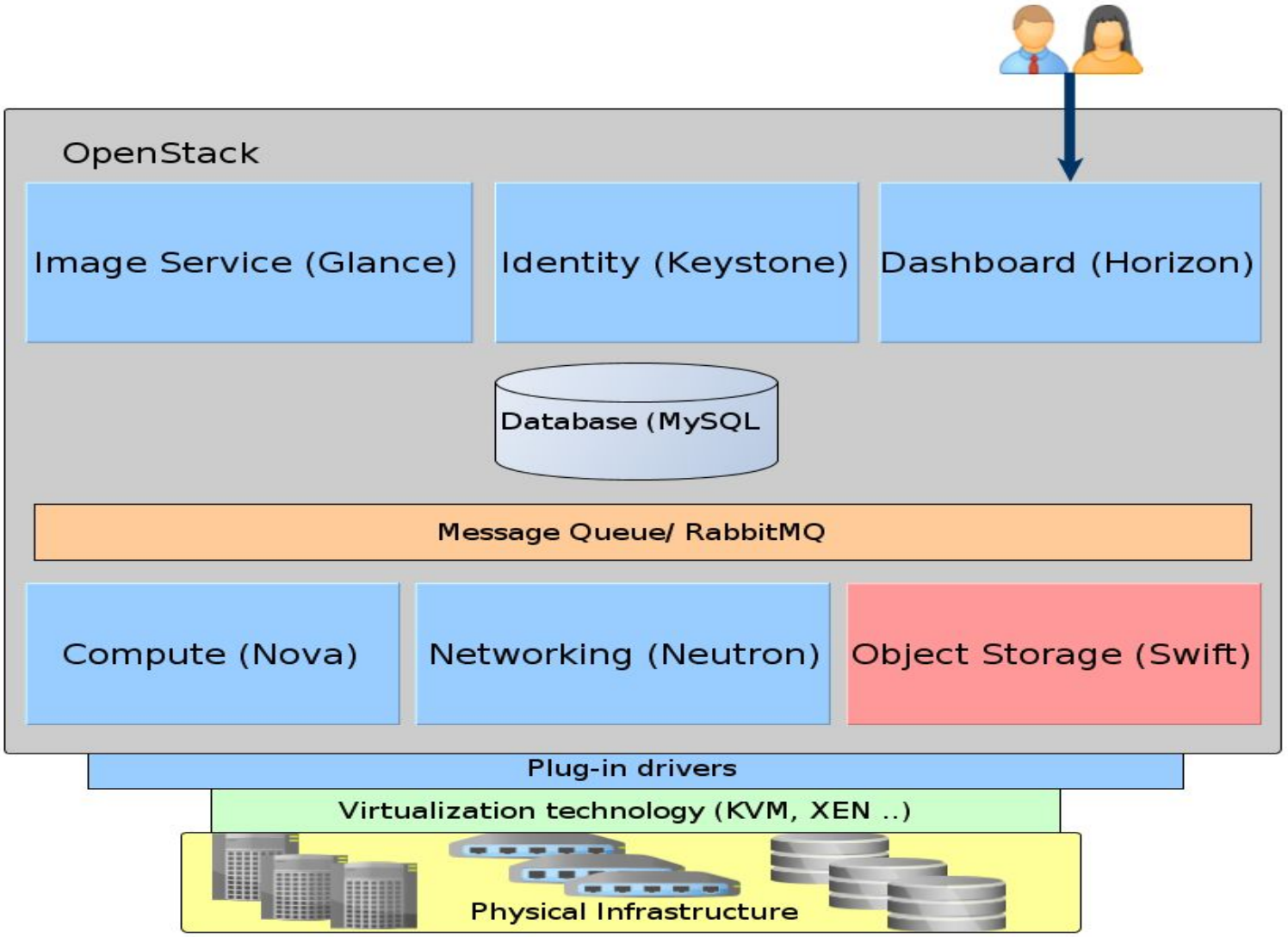
Network Topology

Resize the canvas by scrolling up/down with your mouse/trackpad on the topology. Pan around the canvas by click

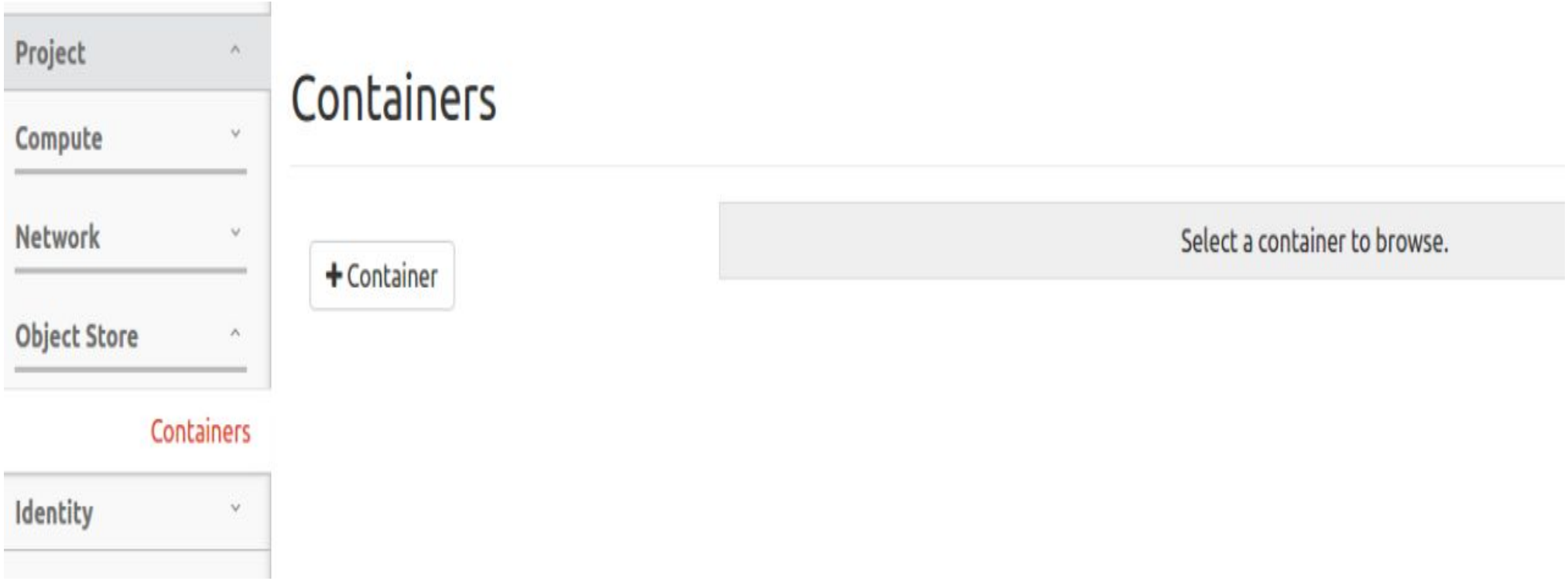
Toggle labels | Toggle Network Collapse



OpenStack Architecture



Object Storage (Swift)



Cloud Resource (UPT-Cloud)

- 4 nodes (dual-core Intel Xeon, 1.86GHz, 2GB RAM + 80GB HDD)

- OpenStack (Mitaka)
  - 1 cloud controller node (identity,image,compute,dashboard,network)
  - 3 compute nodes (running VM instances on KVM hypervisor)
  - 1 VM has: 1 VCPU , 512MB - 1GB RAM, 30GB HDD
  - VMs running Ubuntu 14.04 Linux
  - Total: 6 VMs available for the project
  - For the moment VMs have only private ip addresses