OpenStack Sahara

Big Data Processing Framework Provisioning

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Tentang Saya

- Koordinator Bidang Acara Asosiasi Cloud Computing Indonesia (ACCI)
- Direktur PT. Boer Technology (Btech)
- Anggota Komunitas openSUSE Indonesia
- Suami dari 1 istri dan ayah dari 3 anak

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Tentang ACCI

- Asosiasi Cloud Computing Indonesia (ACCI) adalah sebuah organisasi non-profit yang diharapkan akan mampu menselaraskan perkembangan teknologi Cloud Computing serta meningkatkan kualitas sumber daya manusia untuk memenuhi kebutuhan industri dan atau meningkatkan kewirausahaan di bidang teknologi informasi.
- Info lebih lanjut: https://www.acci.or.id

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Poin-poin Bahasan

- OpenStack
- Demo OpenStack
- OpenStack Sahara
- Demo OpenStack Sahara

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Referensi

- Web OpenStack: https://www.openstack.org
- Dokumentasi OpenStack: https://docs.openstack.org

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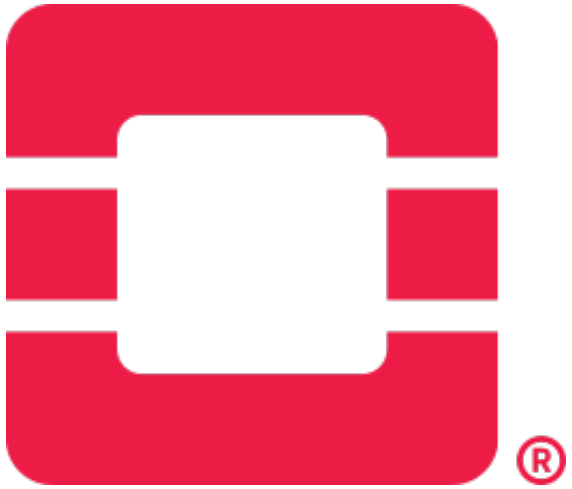

- Perangkat lunak sumber terbuka untuk membangun *Infrastructure as a Service (IaaS) cloud*.
- Dikembangkan di bawah Yayasan OpenStack dengan dukungan perusahaan-perusahaan TIK populer di seluruh dunia (https://www.openstack.org/foundation/companies/).

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OpenStack Identity Services

KEYSTONE

Identity service

BARBICAN

Key Management

CONGRESS

Governance

MISTRAL

Workflow service

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OpenStack Compute Services

NOVA

Compute Service

GLANCE

Image Service

IRONIC

Bare Metal Provisioning Service

MAGNUM

Container Orchestration Engine Provisioning

STORLETS

Computable Object Store

ZUN

Container Management Service

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OpenStack Storage Services

SWIFT

Object Store

CINDER

Block Storage

MANILA

Shared Filesystems

KARBOR

Application Data Protection as a Service

FREEZER

Backup, Restore, and Disaster Recovery

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OpenStack Networking Services

NEUTRON
Networking

DESIGNATE
DNS Service

DRAGONFLOW
Neutron Plugin

KURYR
Container plugin

OCTAVIA
Load Balancer

TACKER
NFV Orchestration

TRICIRCLE
Networking Automation for Multi-Region Deployments

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OpenStack Data Services

TROVE

Database as a Service

SAHARA

Big Data Processing Framework Provisioning

SEARCHLIGHT

Indexing and Search

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OpenStack Management Services

HORIZON

Dashboard

OPENSTACK CLIENT (CLI)

Command-line client

RALLY

Benchmark service

SENLIN

Clustering service

VITRAGE

RCA (Root Cause Analysis service)

WATCHER

Optimization Service

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OpenStack Application Services

HEAT

Orchestration

ZAQAR

Messaging Service

MURANO

Application Catalog

SOLUM

Software Development Lifecycle Automation

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OpenStack Monitoring & Metering

CEILOMETER

Metering & Data Collection Service

CLOUDKITTY

Billing and chargebacks

MONASCA

Monitoring

AODH

Alarming Service

PANKO

Event, Metadata Indexing Service

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OpenStack Deployment Tools

CHEF OPENSTACK

Chef cookbooks for OpenStack

KOLLA

Container deployment

OPENSTACK CHARMS

Juju Charms for OpenStack

OPENSTACKANSIBLE

Ansible Playbooks for OpenStack

PUPPET OPENSTACK

Puppet Modules for OpenStack

TRIPLEO

Deployment service

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OpenStack Use Cases

- Web Applications
- Big Data
- Ecommerce
- Containers
- Video Processing and Content Delivery
- Telecom and NFV
- Enterprise
- Scientific Research
- HPC/HTC

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OpenStack Version

Series	Status	Release Date	EOL
Queens	Under Development		
Pike	Stable	2017-08-30	
Ocata	Maintained	2017-02-22	2018-02-26
Newton	Maintained	2016-10-06	2017-10-11

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OpenStack Distributions

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Distribution Deployment Tools

- RHEL/CentOS: Packstack & Triple O: https://www.rdoproject.org
- Ubuntu: Conjure-up & Autopilot: https://www.ubuntu.com/cloud/openstack
- SUSE/openSUSE: Crowbar: http://crowbar.github.io
- Mirantis: Fuel: https://www.fuel-infra.org
- Huawei: Compass: http://www.syscompass.org

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OpenStack Images

- Cirros: http://download.cirros-cloud.net
- CentOS: http://cloud.centos.org/centos/
- OpenSUSE: http://download.opensuse.org/repositories/Cloud:/Images:/
- Ubuntu: http://cloud-images.ubuntu.com
- Debian: http://cdimage.debian.org/cdimage/openstack/
- Windows Server: https://cloudbase.it/windows-cloud-images/

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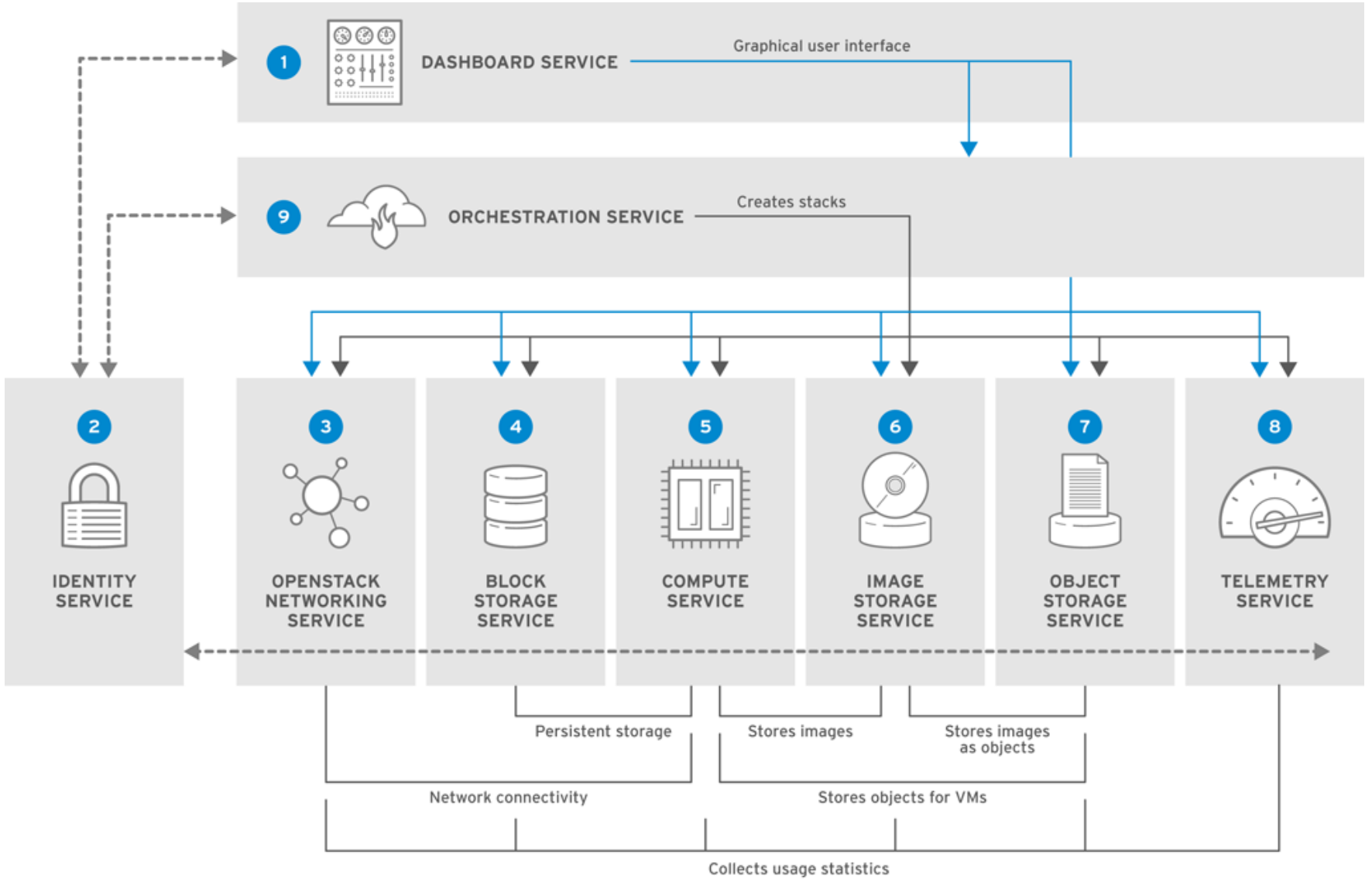
OpenStack Services Diagram



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Demo Praktik OpenStack

Kebutuhan Praktikum

- Kemampuan administrasi Linux, administrasi jaringan dan administrasi storage
- 1 VM: CPU 4 cores, RAM 12 GB, HDD 128GB, NIC 2
- Sistem operasi: CentOS 7
- Skema partisi disk: partisi1 root (/) 100GB xfs, partisi2 swap 8GB, partisi3&4 10GB xfs
- Internet

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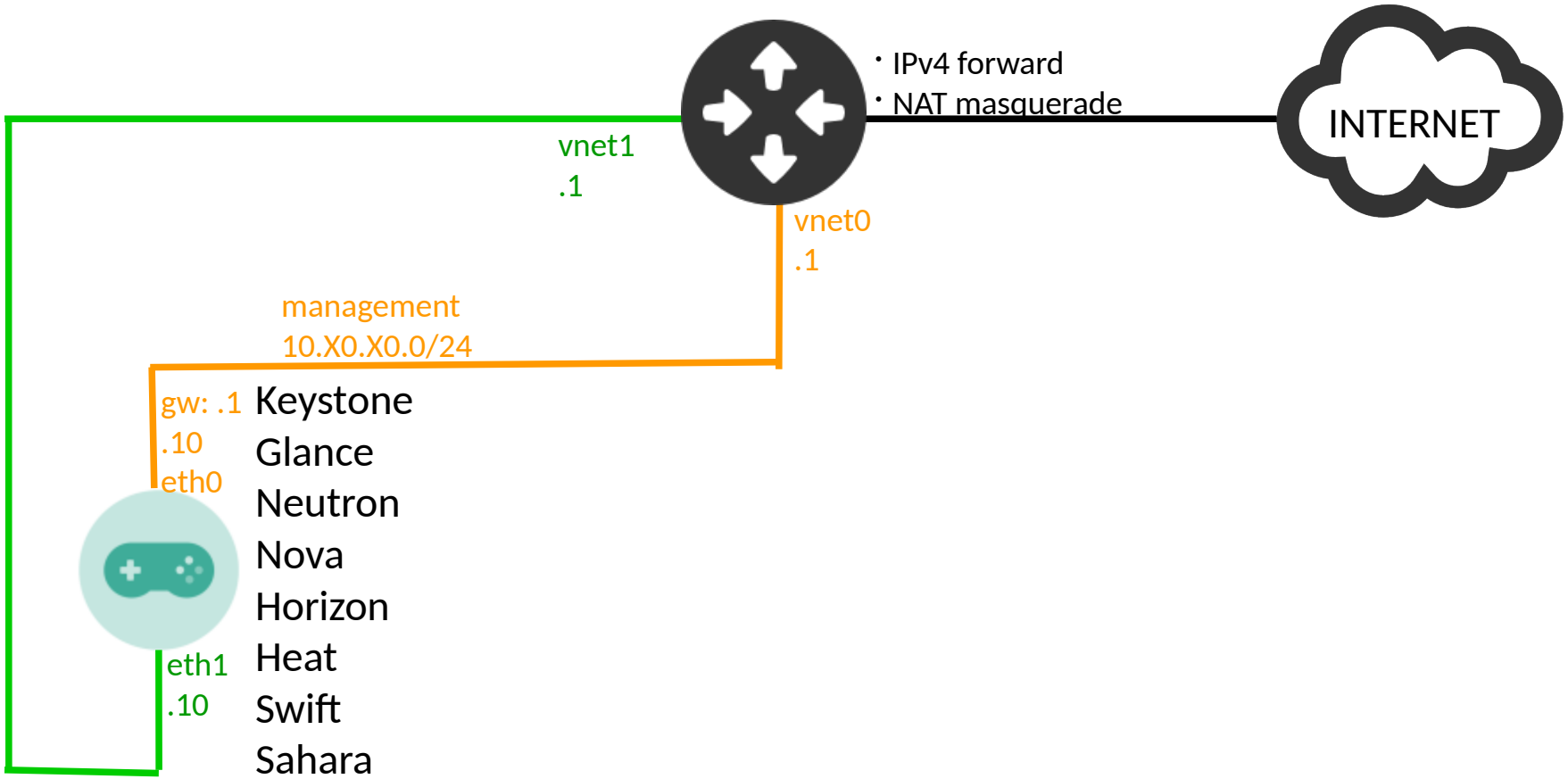
Topologi Praktikum



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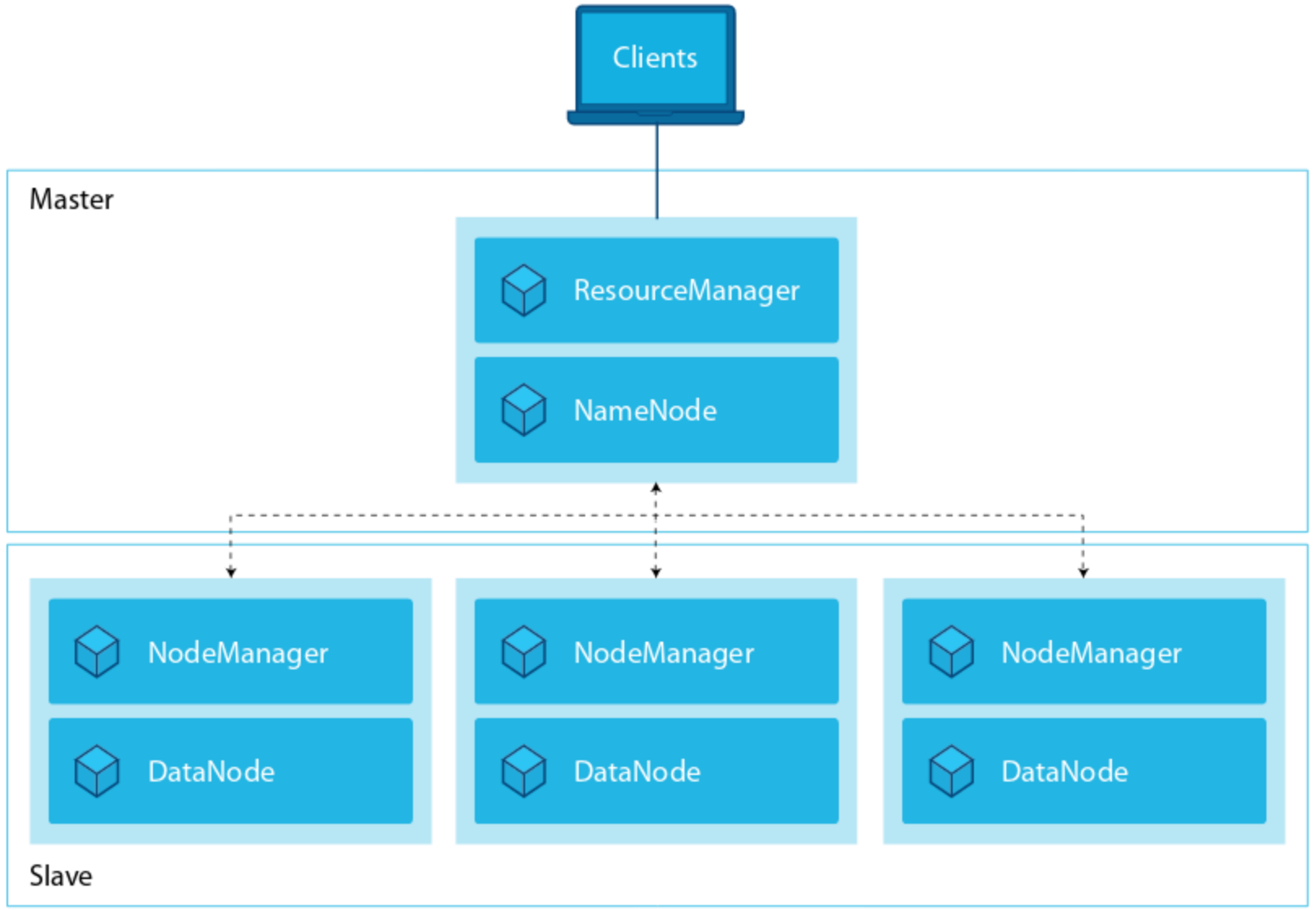
Hadoop High Level Architecture



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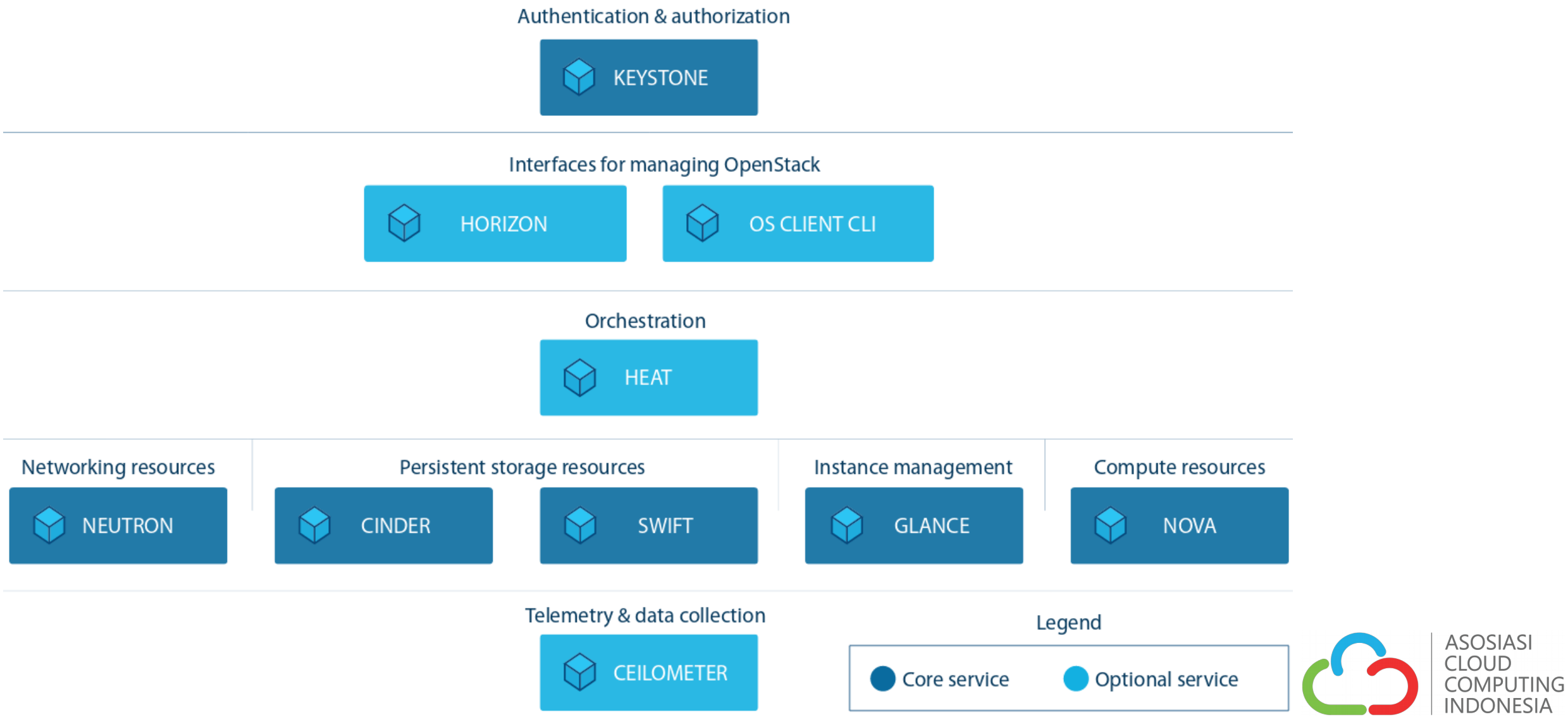
OpenStack Services to support Hadoop



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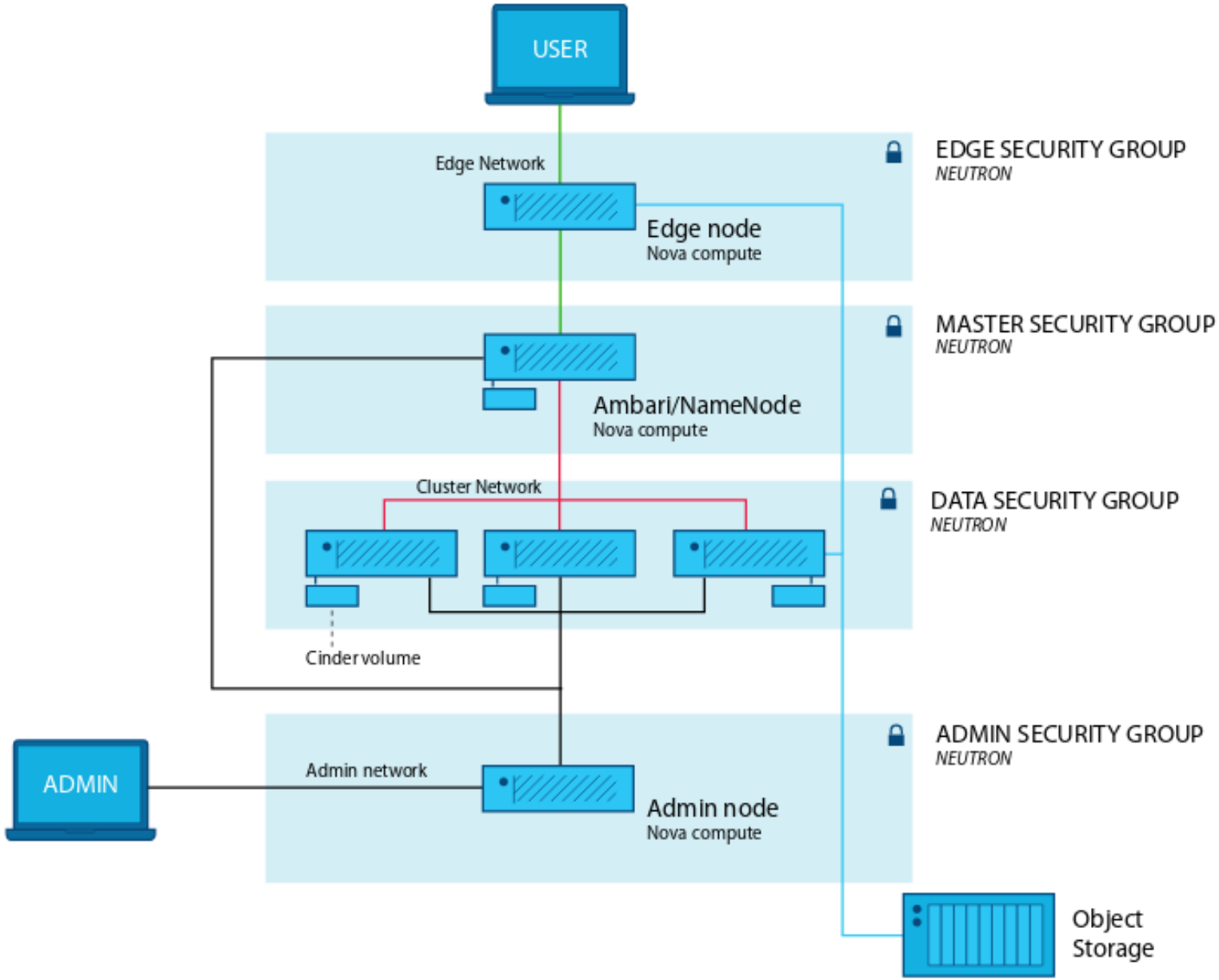
Hadoop Cluster on OpenStack



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Sahara Introduction

Provide users with a simple means to provision data processing frameworks (Hadoop, Spark, Storm) clusters by specifying several parameters such as the version, cluster topology, hardware node details and more.

Use cases:

- Fast provisioning of data processing clusters on OpenStack for development and quality assurance(QA).
- Utilization of unused compute power from a general purpose OpenStack IaaS cloud.
- “Analytics as a Service” for ad-hoc or bursty analytic workloads (similar to AWS EMR).

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Sahara Key Features

- Designed as an OpenStack component.
- Managed through a REST API with a user interface(UI) available as part of OpenStack Dashboard.
- Support for a variety of data processing frameworks:
  - Multiple Hadoop vendor distributions.
  - Apache Spark and Storm.
  - Pluggable system of Hadoop installation engines.
  - Integration with vendor specific management tools, such as Apache Ambari and Cloudera Management Console.
- Predefined configuration templates with the ability to modify parameters.

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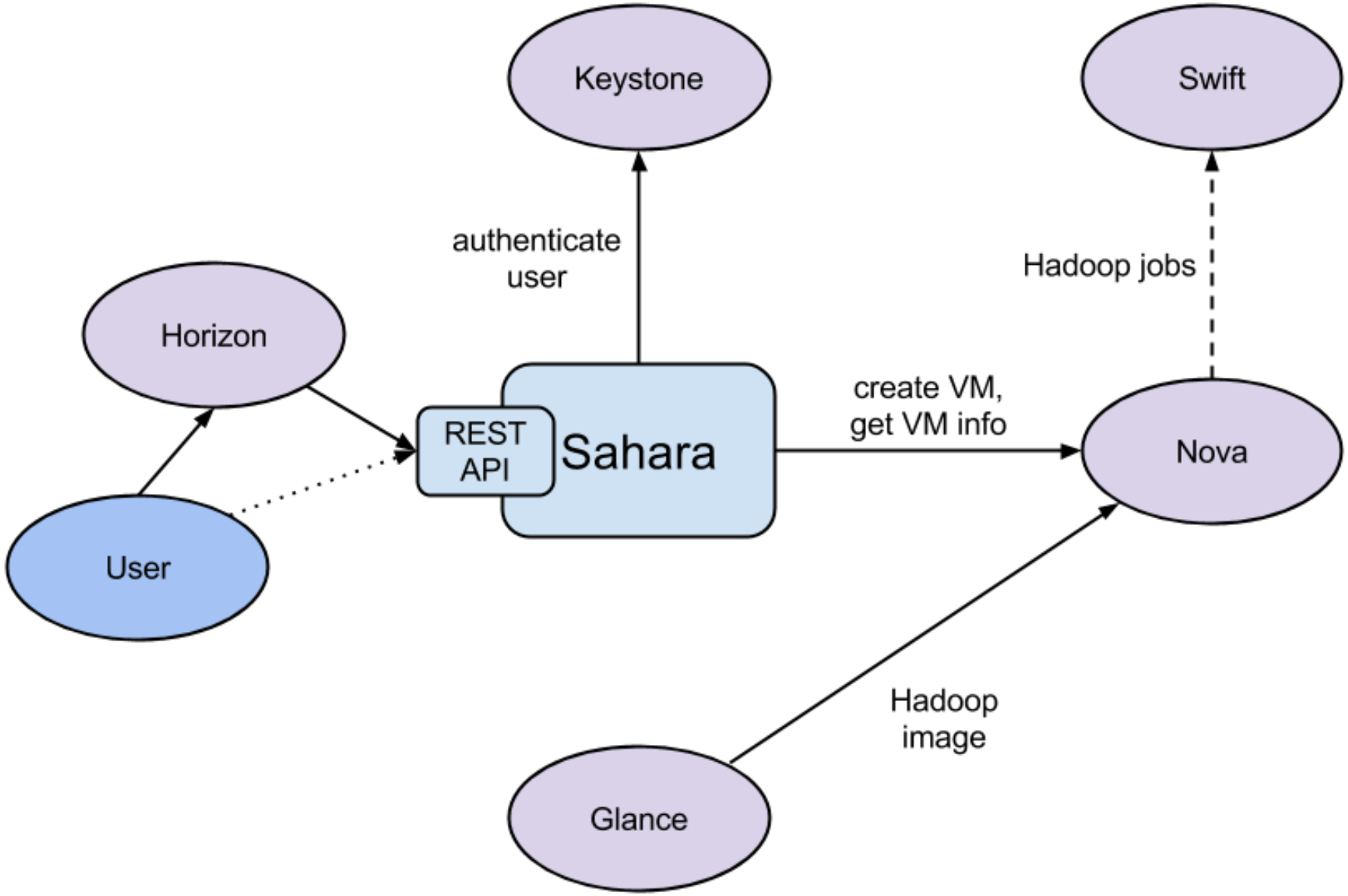
Sahara and Other OpenStack Services



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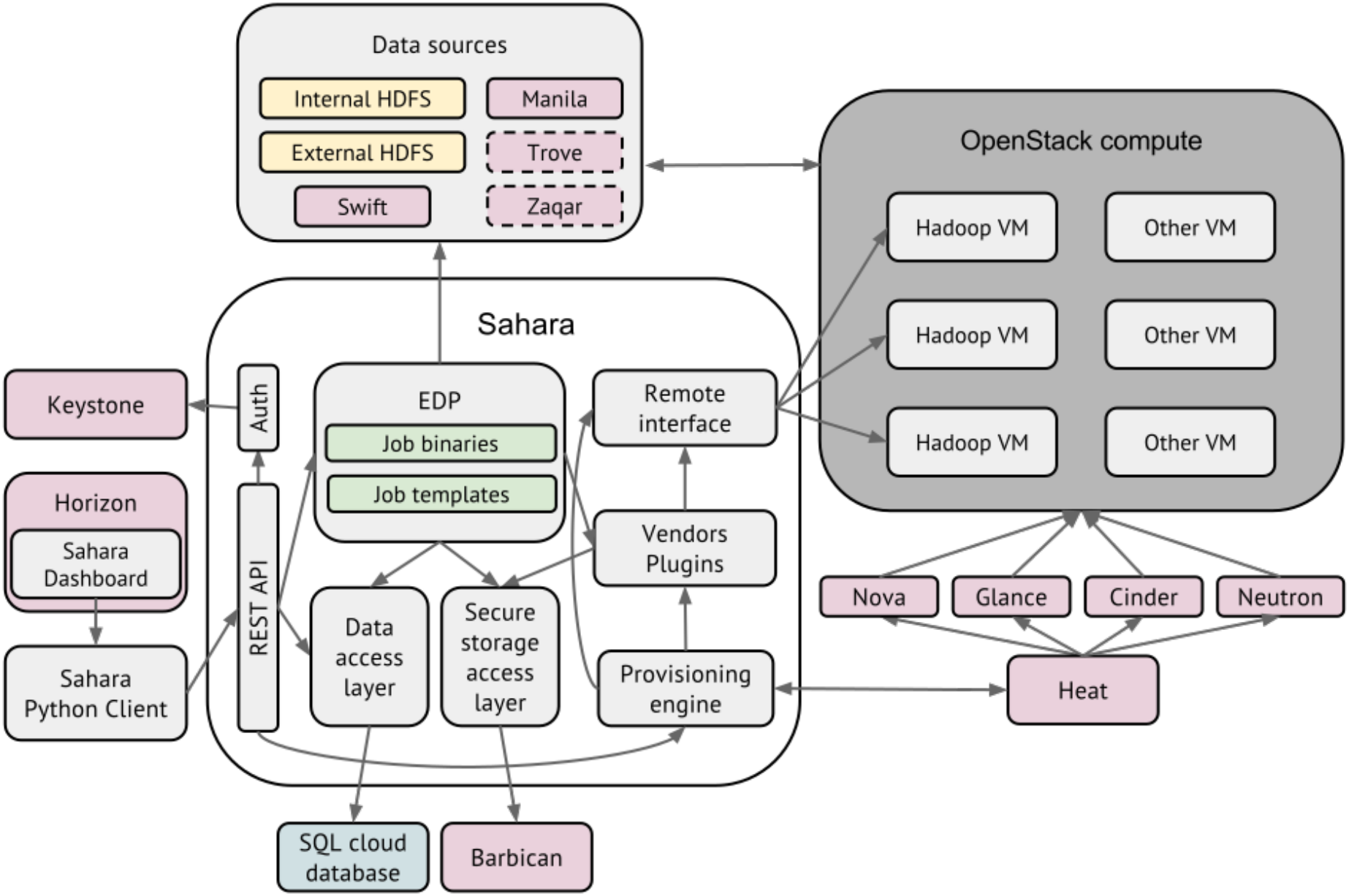
Sahara Architecture



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Cluster Provisioning Workflow

- Select a Hadoop (or framework) version.
- Select a base image with or without pre-installed data processing framework. Download prepared up-to-date images from http://sahara-files.mirantis.com/images/upstream/
- Define cluster configuration, including cluster size, topology, and framework parameters (configurable templates are provided).
- Provision the cluster; sahara will provision VMs, install and configure the data processing framework.
- Perform operations on the cluster; add or remove nodes.
- Terminate the cluster when it is no longer needed.

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Analitycs as a Service Workflow

- Select one of the predefined data processing framework versions.
- Configure a job.
- Set the limit for the cluster size.
- Execute the job.
- Get the results of computations (for example, from swift).

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Demo Praktik Sahara

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Terima Kasih

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