

# OpenStack: a Formal Definition

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# Overview



Definition of “cloud computing”  
and OpenStack

History of OpenStack

What makes up OpenStack?

Where to find information



# Cloud Computing Essential Characteristics



**On-demand self-service via the network**



**Resource pooling**



**Elasticity**



**Metering**

# Cloud Service Models



## SaaS: Software as a Service

Provides applications e.g. email, office



## PaaS: Platform as a Service

Provides app deployment platform, e.g. web servers, DBs, languages



## IaaS: Infrastructure as a Service

Provides fundamental resources, e.g. servers, storage, networks

# OpenStack Timeline

**July 2010**

NASA and Rackspace  
form OpenStack

**October 2016**

**Newton**  
Used in Red Hat exam



**October 2010**

**Austin**  
First release

**August 2018**

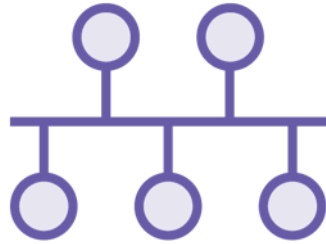
**Rocky**



# Main OpenStack Components



Servers



Networks



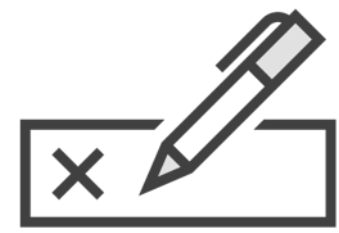
Block Storage



Object Storage



Images

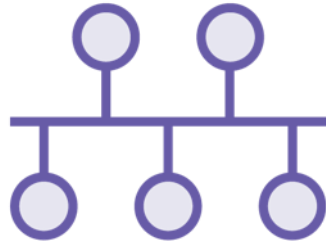


Identity

# Main OpenStack Components



**Servers**



**Networks**



Block Storage



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**Images**

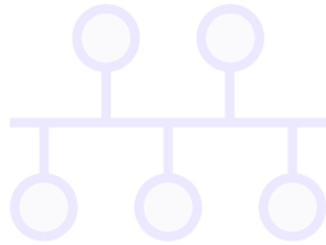


**Identity**

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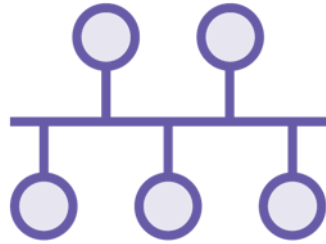
Identity



# Main OpenStack Components



**Nova:** Compute



**Neutron:** Network



**Cinder:** Block Storage



**Swift:** Object Storage



**Glance:** Image



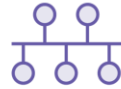
**Keystone:** Identity

# The Big Tent

## Core services:



Nova: Servers



Neutron: Networks



Cinder: Block Storage



Swift: Object Storage



Glance: Images



Keystone: Identity

## Big Tent services (selection)

**Mistral**  
Workflows

**Ironic**  
Baremetal management

**Horizon**  
GUI

**Zaqar**  
Message Queue

**Trove**  
DB provisioning

**Ceilometer**  
Metering

**Heat**  
Orchestration

**Designate**  
DNS server mgmt

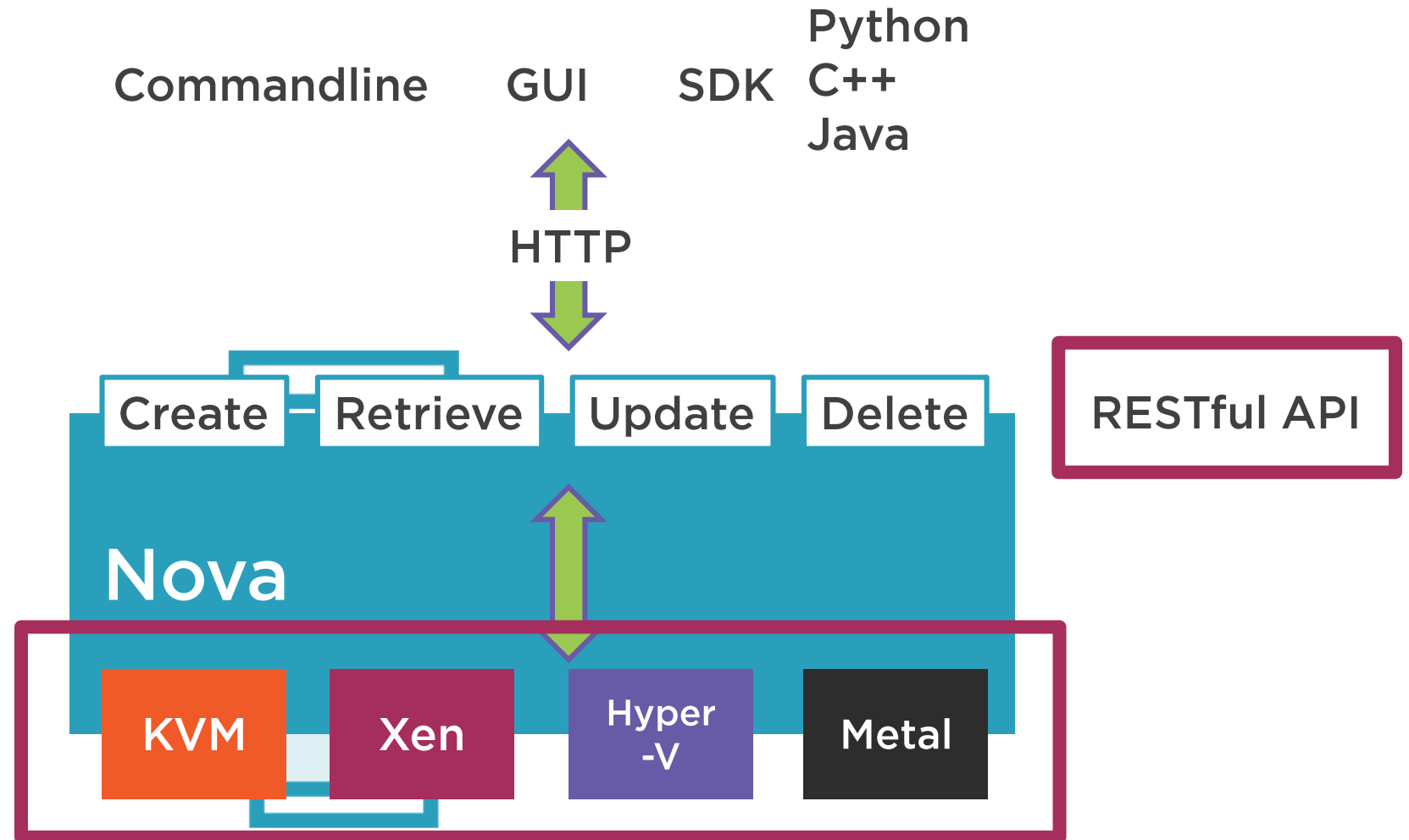
**Manila**  
File share provisioning

**Magnum**  
Container provisioning

**Sahara**  
Big Data provisioning



# Is OpenStack a Hypervisor?



# Demo



## OpenStack web resources



# Summary



## Where is OpenStack

- in the NIST frame of reference
- in time

## What is OpenStack

- its parts
- its resources