Viettel Digital Talent Program Cloud - 2021

IaaS - OpenStack

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Chapter 2.1 Infrasture as a Service
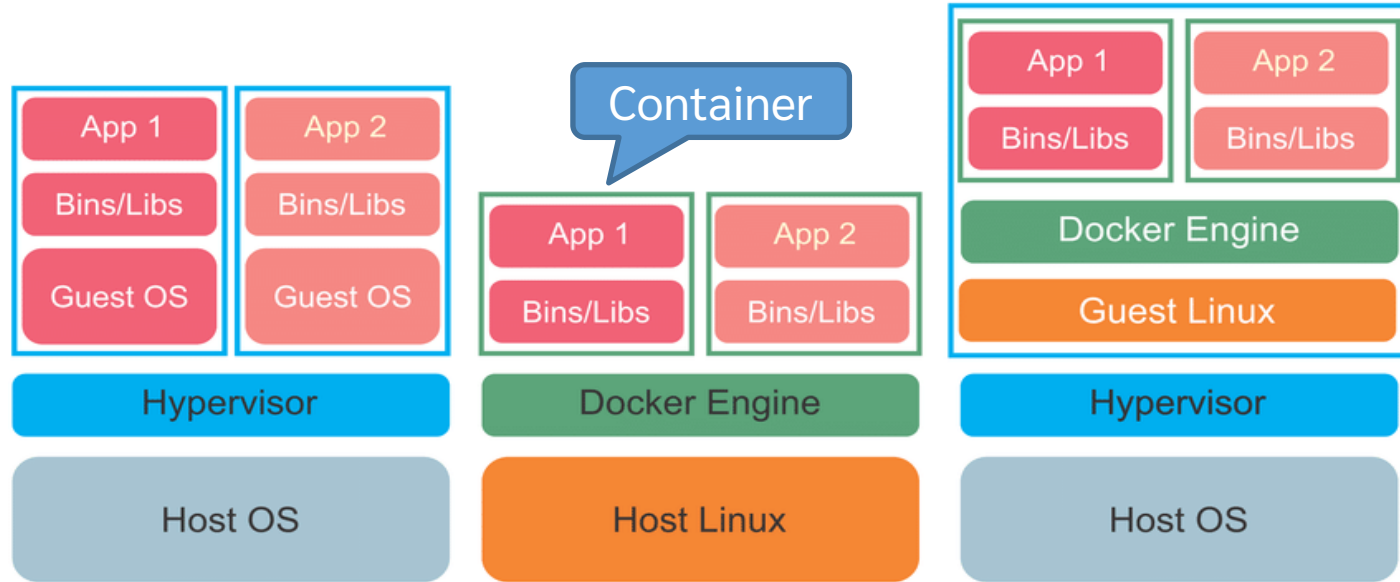
0. **Review**
1. IaaS
2. OpenStack
3. Viettel Cloud

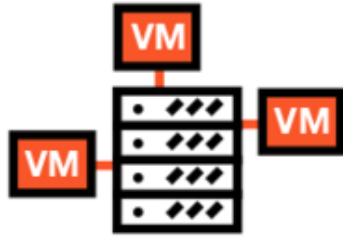**viettel**

Cloud Computing

Virtualization

Source Image: researchgate.net

Virtualization

Density

Application Isolation

Snapshots

Failover & HA

Migration

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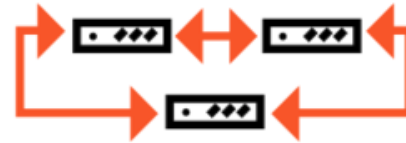
Automation

Automation has the most significant impact on cost

Automation

Productivity

Quality

Stability/Consistency

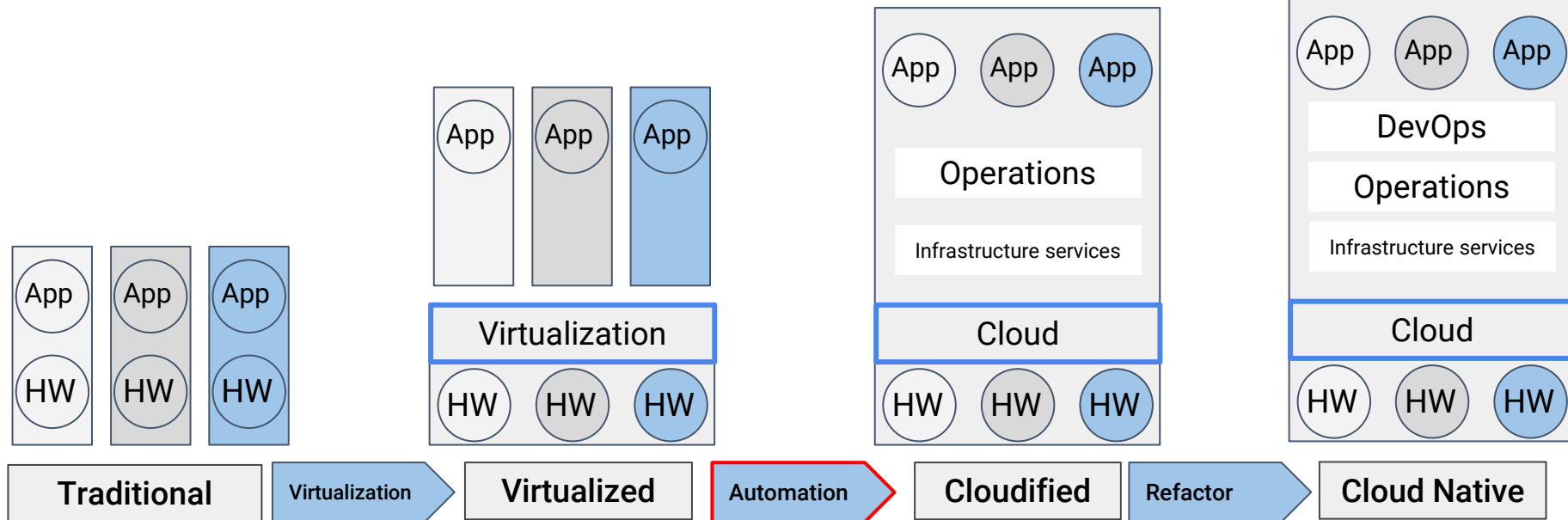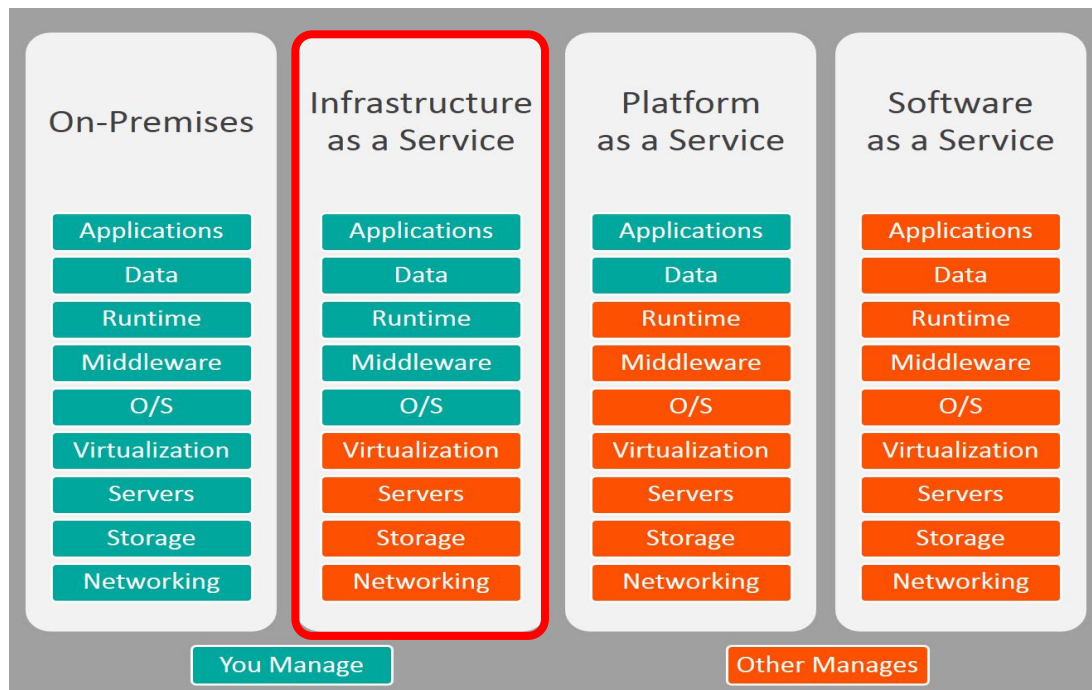**Budget**

Stress

Collaboration

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Automation x Virtualization

| Traditional | Virtualization | Virtualized | Automation | Cloudified | Refactor | Cloud Native |

1. IaaS

On-Premises	Infrastructure as a Service	Platform as a Service	Software as a Service
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

You Manage   Other Manages

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1. IaaS

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2. OpenStack – Cloud Timeline

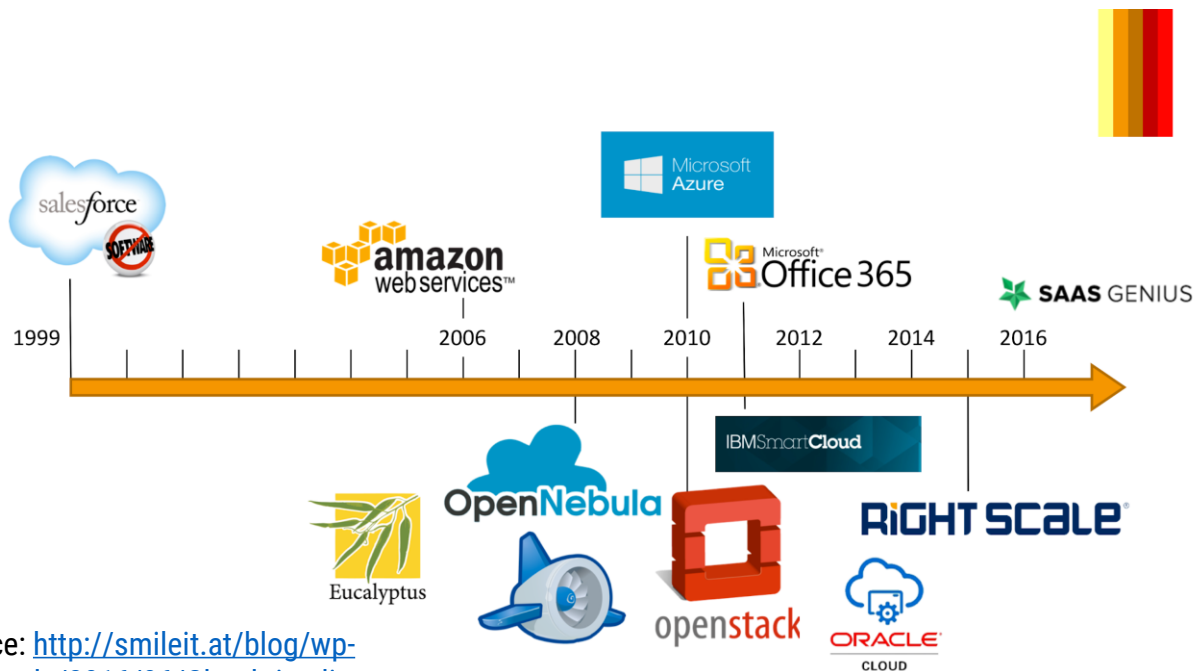Image source: http://smileit.at/blog/wp-content/uploads/2016/06/Cloud-timeline.png
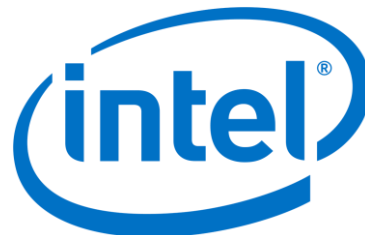
2. OpenStack

- ❑ The best cloud-computing open-source project aimed at providing an IaaS.
- ❑ Controls large pools of compute, storage, and networking resources throughout a datacenter, managed through a dashboard or via the OpenStack API.
- ❑ Begun in 2010 as a joint project of Rackspace and NASA
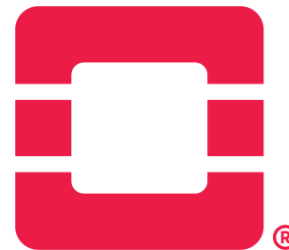
2. OpenStack - Distributions

2. OpenStack – Statistics

❑ One of the fastest growing open-source communities in the world with more than 15 000 contributors, more than 100 companies.

  ❑ Code submissions
  ❑ Code reviews
  ❑ Testing
  ❑ Documentation
  ❑ Patch set
  ❑ LOC

Commits by Company

Show 10 ▼ entries

Search

#	Company	Commits
1	● Red Hat	82712
2	● Rackspace	37207
3	● IBM	29351
4	● HP	29311
5	● *independent	27070
5	● Mirantis	26978
6	● Canonical	15828
7	● SUSE	12774
8	● Huawei	12039
9	NEC	10900

Showing 1 to 10 of 435 entries

Previous   Next

stackalytics.com

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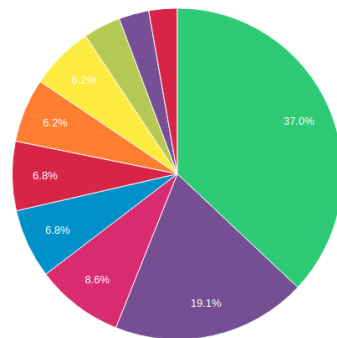
2. OpenStack – Core components
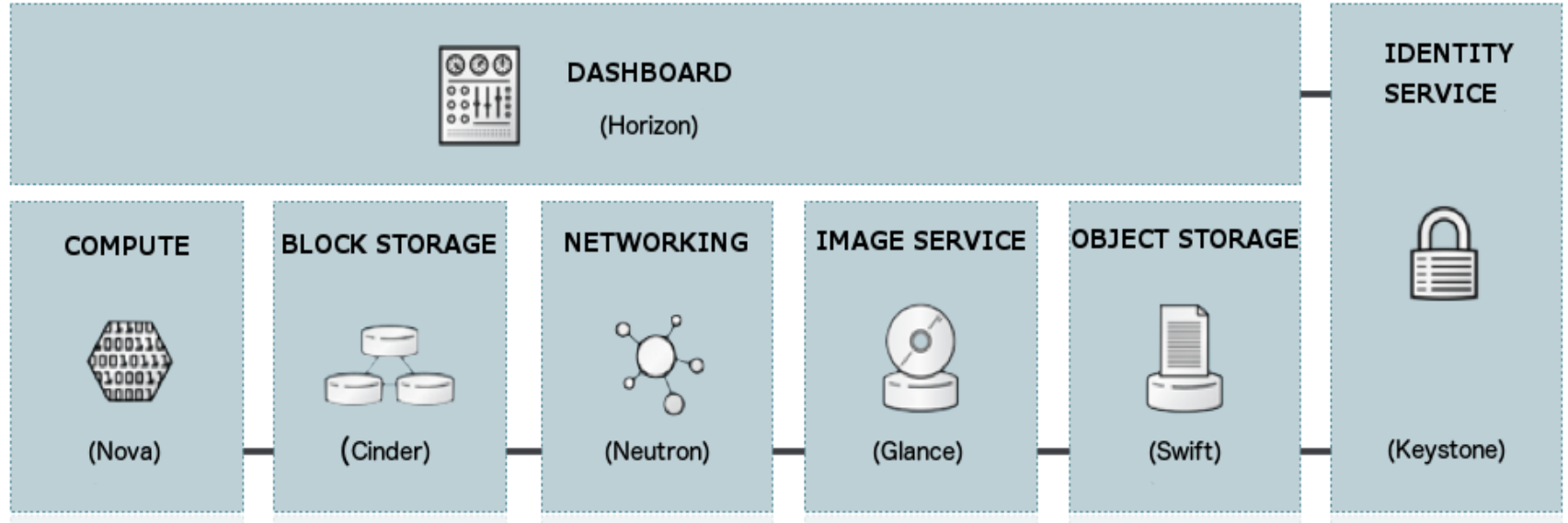
[OpenStack Project Navigator](#)

Internet

- CLI clients(nova, cinder, neutron and so on)
- Cloud management tools
- GUI tools

HTTP(S)

OpenStack Bare Metal Service

ironic-api

Queue

Ironic Database

ironic-conductor

drivers

OpenStack Dashboard

Horizon

OpenStack Orchestration

heat-api

heat-api-cfn

Queue

heat-engine

Database

LDAP

Optional

keystone-all

OpenStack Identity Service

OpenStack Telemetry

ceilometer-collector

ceilometer-agent-notification

ceilometer database

ceilometer-agent-compute

Queue

ceilometer-agent-central

ceilometer-api

ceilometer-alarm-evaluator

Log or HTTP callback

ceilometer-alarm-notifier

Openstack Object Storage

swift-proxy-server

swift-object-server

swift-account-server

swift-container-server

Account database

Object database

Container database

OpenStack Database Service

trove-api

Queue

Trove Database

trove-taskmanager

trove-conductor

OpenStack Compute

nova-api

nova-scheduler

nova-console

Nova database

Queue

nova-cert

nova-conductor

nova-consoleauth

nova-compute

Guest agent

Instance

Hypervisor

OpenStack Block Storage

cinder-api

Queue

Cinder database

cinder-volume

Volume provider

cinder-scheduler

OpenStack Image service

glance-api

glance store

Glance database

glance-registry

OpenStack Networking

neutron-server

Neutron L2 agent *

neutron-l3-agent *

Queue

neutron-dhcp-agent

Neutron database

Neutron 3rd party plugin

Optional, depends on plugin *

OpenStack Data Processing

sahara-all

Queue

sahara database

2. OpenStack – Get started

❏ Try OpenStack.

    ❏ Option 1: Sign up for a public cloud trial.

    ❏ Option 2: Local Dev Environment - Devstack

❏ Learn about OpenStack.

    ❏ OpenStack Documentation

    ❏ OpenStack Books

    ❏ Or join VTNET Cloud Computing & OpenStack Course.

2. OpenStack – Get started

❑ Deploy OpenStack

    ❑ Distributions: Ubuntu, RHEL & CentOS, openSUSE. Debian, Fedora.

    ❑ Follow the How-To guides.

    ❑ Download the Source code.

    ❑ Use Automation tools like OpenStack Kolla, OpenStack Puppet.

    ❑ Use Devstack.

    ❑ Use Packstack.

3. Viettel Cloud

- ❑ VTNET Cloud
    - ❑ 10000 servers, 500 services
    - ❑ Biggest OpenStack Platform in Vietnam
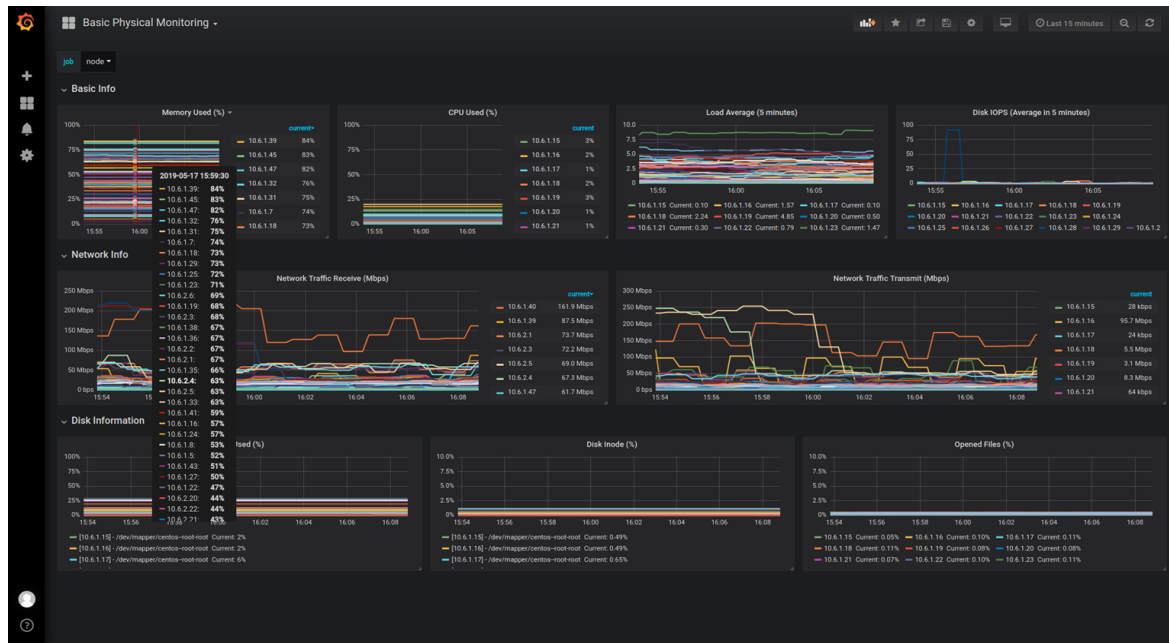   - ❑ Top 19% World Wide
    - ❑ **Make in Vietnam**

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3. Viettel Cloud

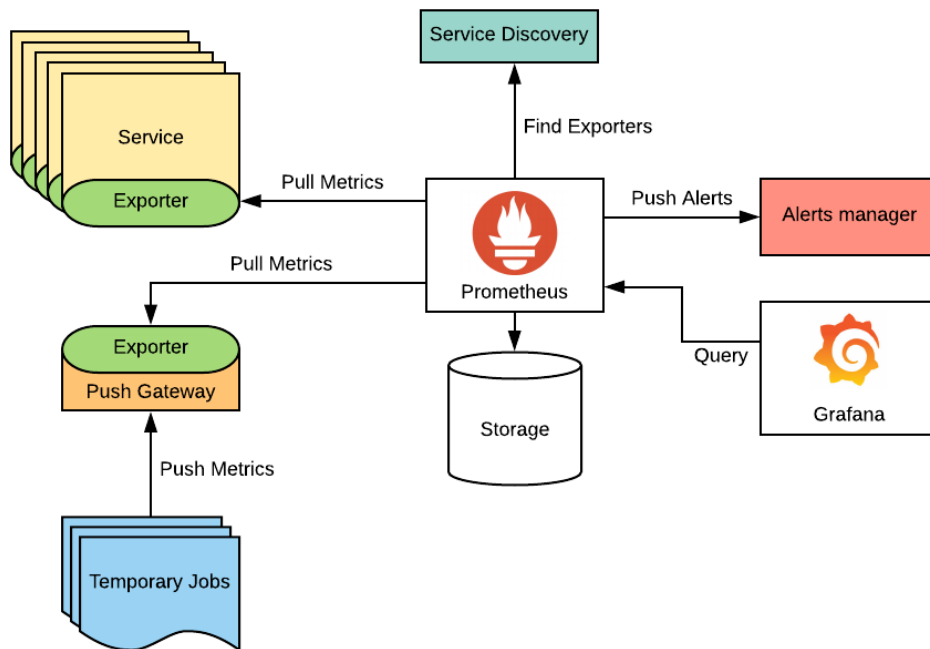# 3. Viettel Cloud

❑ Monitoring
    ❑ Physical
    ❑ OS
    ❑ Application
    ❑ VMs

3. Viettel Cloud

❑ Monitoring
  ❑ Physical
  ❑ OS
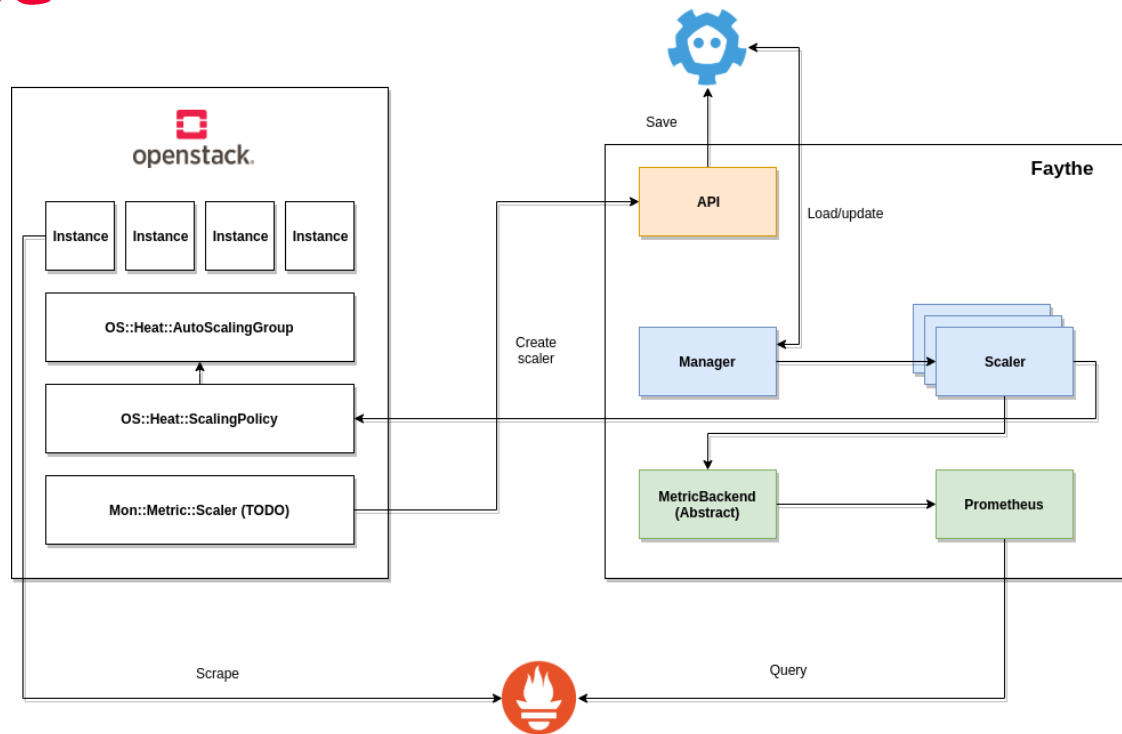 ❑ Application
  ❑ VMs

3. Viettel Cloud

❑ Monitoring
  ❑ Physical
  ❑ OS
  ❑ Application
  ❑ VMs

3. Viettel Cloud

- [ ] Auto-deploy
- [ ] Auto-upgrade
- [ ] Auto-scale
- [ ] Auto-healing
- [ ] Auto-balance
- [ ] ...
- [ ] Auto-everything

Practice

- Create Ubuntu virtual machine

- Setup OpenStack AIO inside VM with Kolla

  - https://docs.openstack.org/kolla-ansible/latest/user/index.html

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