

Triple 0 를 이용한 빠르고 쉬운 OpenStack® 설치

변상욱 부장

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Cloud Consultant

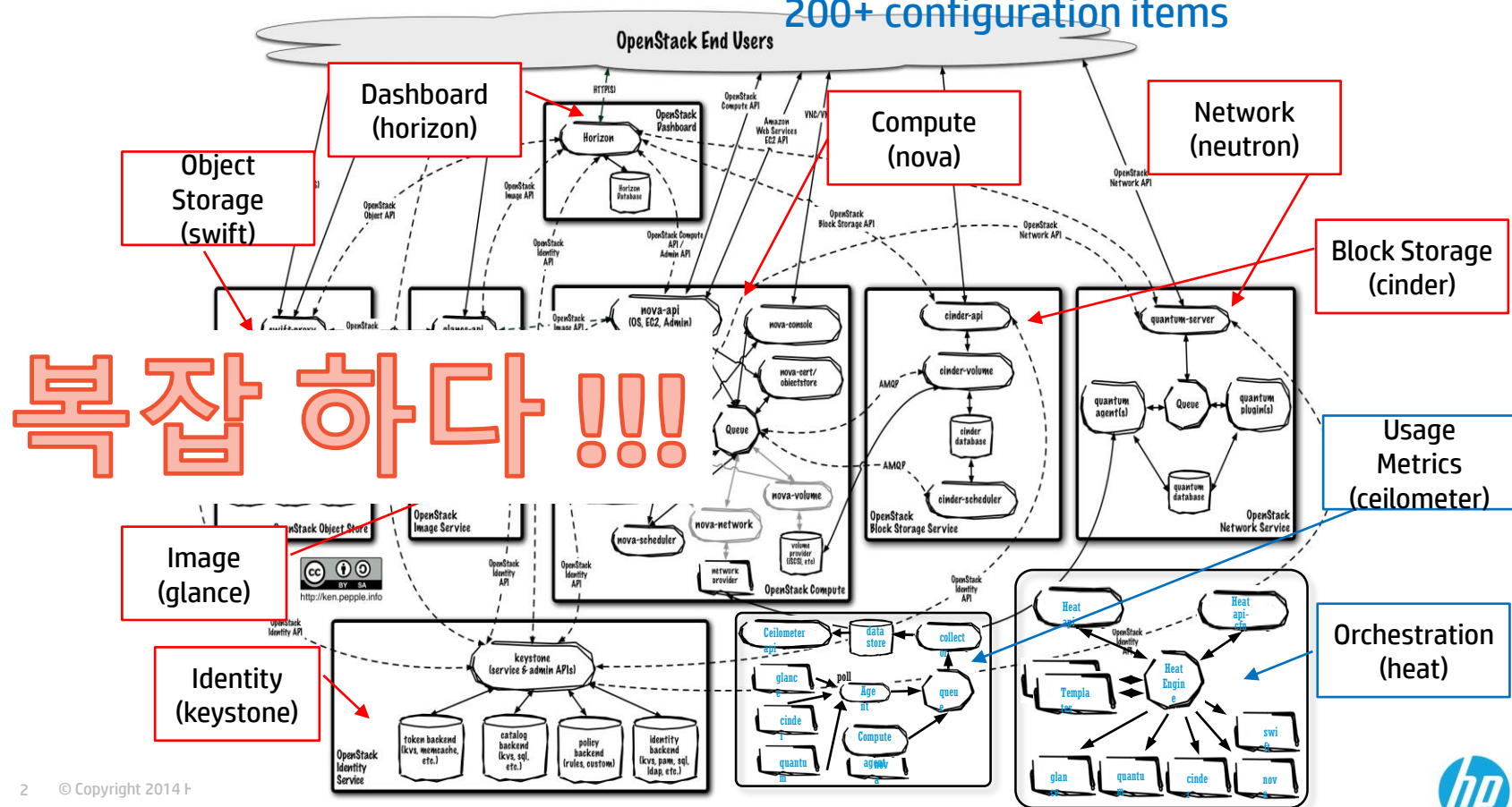
Hewlett Packard Korea

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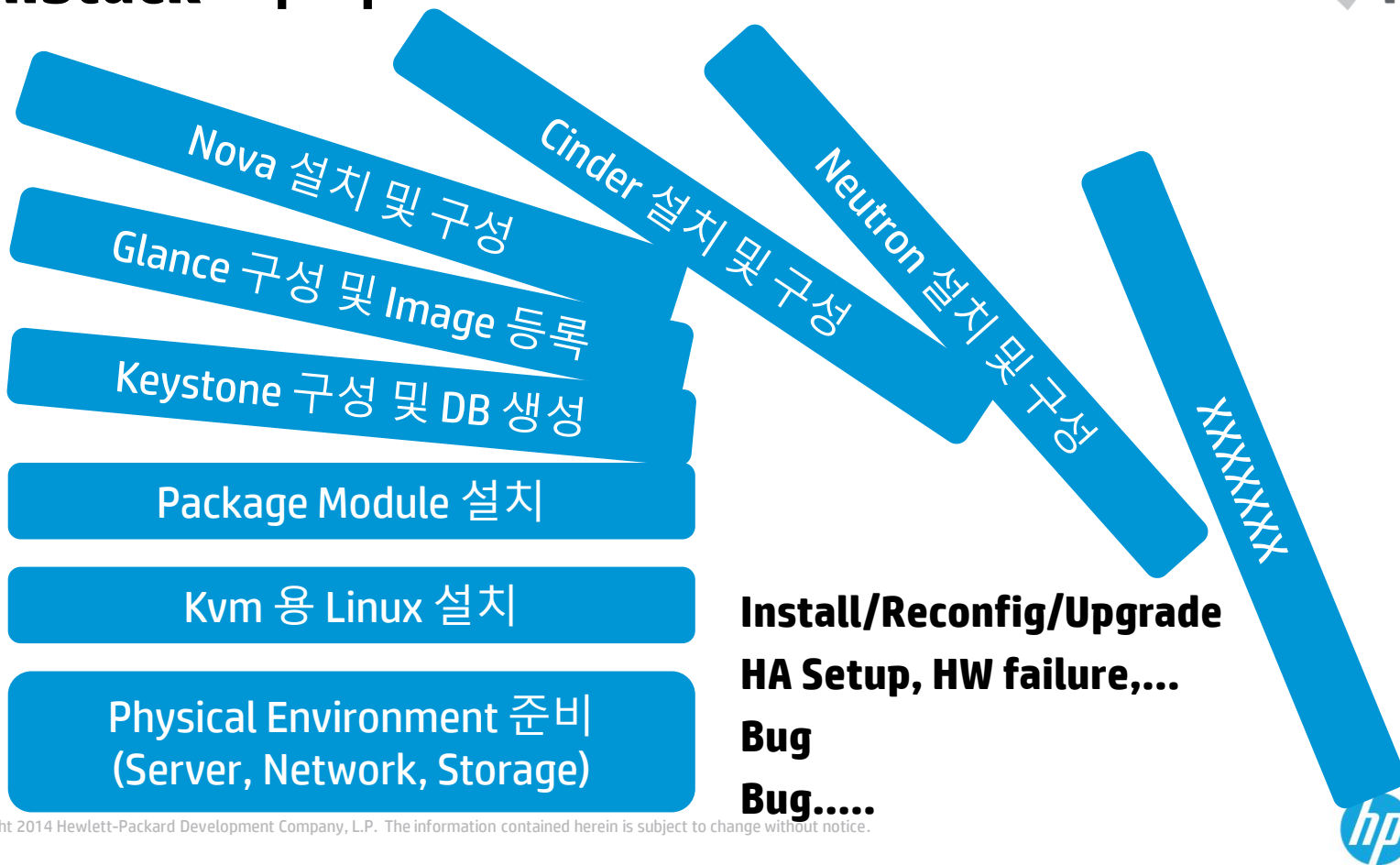


OpenStack® Programs

13 integrated, 2 supporting with
200+ configuration items



OpenStack® 구축



OpenStack® 구축 Sample



```
keystone role-create --name admin
```

```
keystone role-create --name Member
```

```
TENANT_ID=$(keystone tenant-list |grep cookbook|awk '{print $2}')
```

```
ADMIN_TENANT_ID=$(keystone tenant-list |grep admin |awk '{print $2}')
```

```
keystone user-create --name admin --tenant_id $TENANT_ID --pass password --email root@localhost --enabled true
```

```
USER_ID=$(keystone user-list |grep admin |awk '{print $2}')
```

```
ROLE_ID=$(keystone role-list |grep admin |awk '{print $2}')
```

```
keystone user-role-add --user $USER_ID --role $ROLE_ID --tenant_id $TENANT_ID
```

```
keystone user-role-add --user $USER_ID --role $ROLE_ID --tenant_id $ADMIN_TENANT_ID
```

```
keystone user-create --name demo --tenant_id $TENANT_ID --pass openstack --email demo@localhost --enabled true
```

```
DEMO_USER_ID=$(keystone user-list |grep demo |awk '{print $2}')
```

```
MEMBER_ROLE_ID=$(keystone role-list |grep Member|awk '{print $2}')
```

```
keystone user-role-add --user $DEMO_USER_ID --role $MEMBER_ROLE_ID --tenant_id $TENANT_ID
```



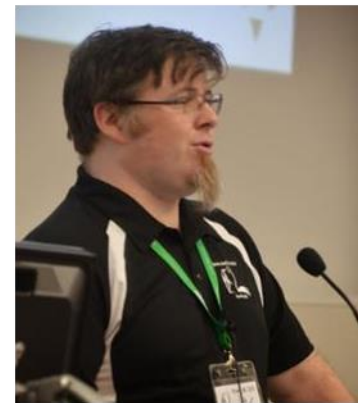
OpenStack® on OpenStack®



... 그래서 복잡한 것을 피하는 방법을 찾았습니다.
→ OpenStack 으로 OpenStack 을 배포해 버리기로...

Triple 0

- **OpenStack On OpenStack**
- **Triple 0** 는 OpenStack 이 가진 cloud 기능(nova, ironic, heat 등)을 이용하여, OpenStack 을 install/upgrade 하려는 목적의 program
- **2013 Portland Summit** 에서 발표
- **HP Robert Collins** 가 Project Leader
- **Production 배포 (deploy)** 용으로 사용됨
- **Incubator project** 이나 **production** 으로 사용 가능 하고, **HP Helion OpenStack** 에서 구현됨
- **Under Cloud /Over Cloud** 라는 용어 사용 (기존 **Deployer Cloud / Workload Cloud**)

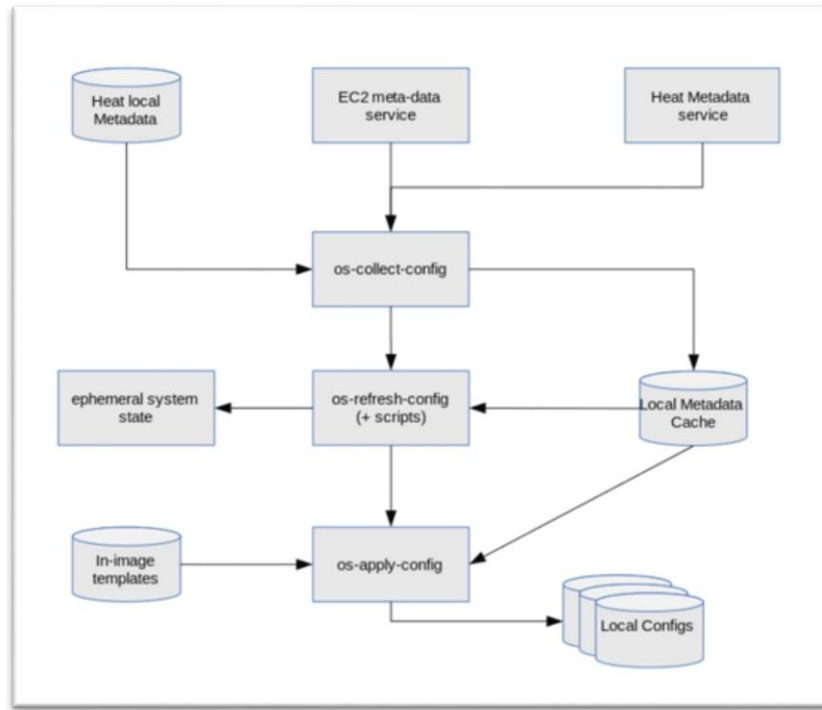


Robert Collins, HP NZ

Triple 0

- Triple 0 내부의 small projects

- **os-collect-config** : collect and cache metadata, run hooks on changes
- **os-refresh-config** : small templating layer for writing out config files
- **os-apply-config** : react to heat metadata changes and send heat events
- **os-cloud-config** : common code for tuskar and the seed initialization logic, the post heat completion initial configuration of a cloud
- **diskimage-builder** : build golden disk images



OpenStack Quick Review

... Glance 의 OS image 를 사용하여, Nova/Heat 을 통해 Compute nodes 에 가상 머신의 deploy

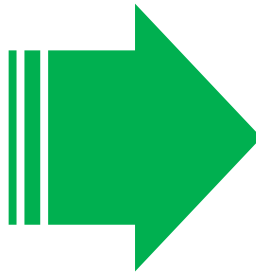


Nova

Neutron

Heat

Glance



가상 머신 **Deployment**

The Concept of Triple 0

... OpenStack 의 component 를 그대로 재 사용하여, HW 로 OpenStack 을 Deploy 하기

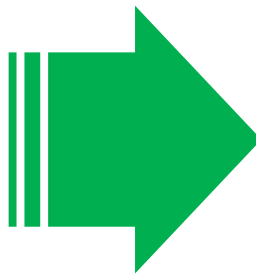


Nova

Neutron

Heat

Glance



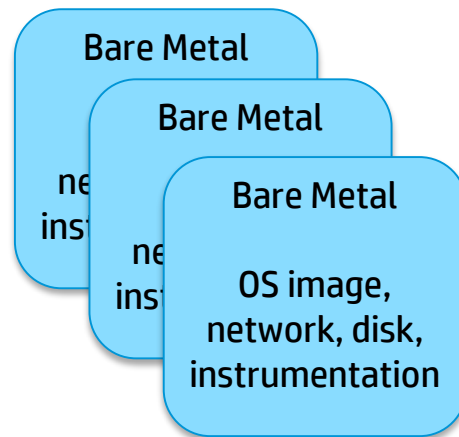
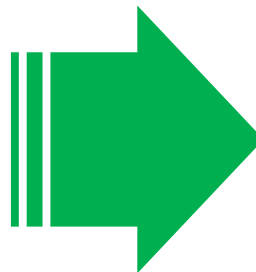
Bare Metal

OS image,
network, disk,
instrumentation

HW Node Deployment

Nova and Heat

... Heat 에서 Cloud Capsule 화를 진행하고 Nova 와 Ironic 을 이용하여 PXE,IPMI 를 통해 HW 를 배포 (캡슐화 한 Golden Image 사용)



HW Node Deployment

Tuskar

... Triple O 를 위한 **deploy management service**
... Operation 을 위한 **UI, CLI 및 API 제공**



Nova

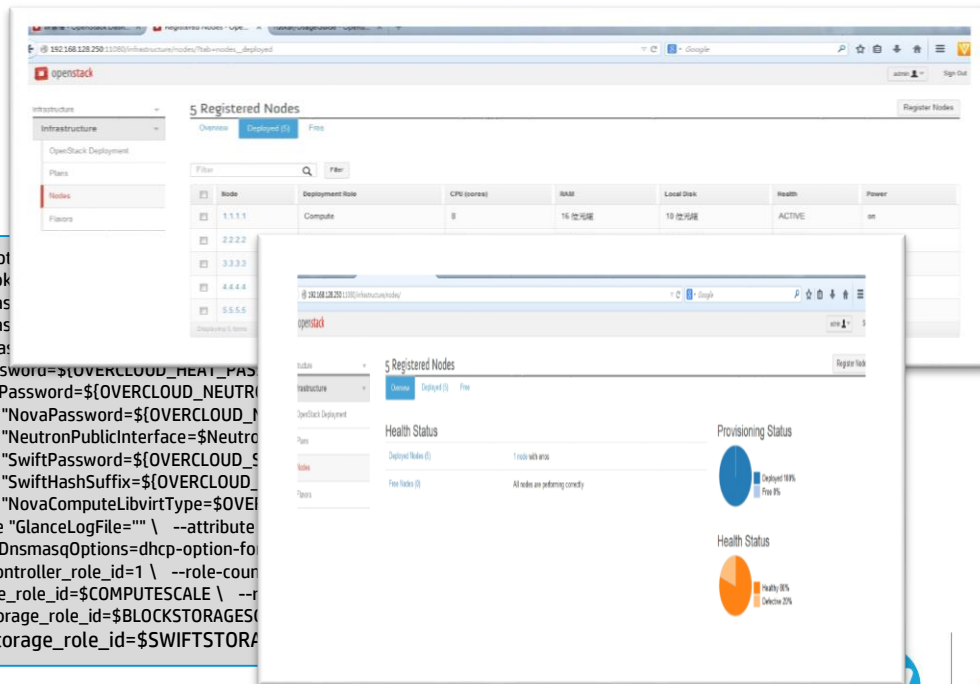
Baremetal

ironic

Heat



```
--description  
"AdminToken"  
"AdminPassword"  
"CinderPassword"  
"GlancePassword"  
"HeatPassword=${OVERCLOUD_HEAT_PASSWORD}  
"NeutronPassword=${OVERCLOUD_NEUTRON_PASSWORD}  
attribute "NovaPassword"=${OVERCLOUD_NOVA_PASSWORD}  
attribute "NeutronPublicInterface"=${NEUTRON_PUBLIC_INTERFACE}  
attribute "SwiftPassword"=${OVERCLOUD_SWIFT_PASSWORD}  
attribute "SwiftHashSuffix"=${OVERCLOUD_SWIFT_HASH_SUFFIX}  
attribute "NovaComputeLibvirtType"=${OVERCLOUD_NOVA_COMPUTE_LIBVIRT_TYPE}  
--attribute "GlanceLogFile"="" --attribute "GlanceLogLevel"="INFO"  
"NeutronDnsmasqOptions=dhcp-option-for-count $controller_role_id=1 \ --role-count $compute_role_id=$COMPUTESCALE \ --role-id $blockstorage_role_id=$BLOCKSTORAGE_SCALE \ --role-id $swiftstorage_role_id=$SWIFTSTORAGE_SCALE
```





Triple 0 Use Case



Triple O 를 이용한 HP Helion OpenStack Operational Design



on

Overcloud

- The cloud used by customers
- This is the production cloud

Nova • Neutron • Glance • Keystone • IroniC • Heat
Cinder • Swift • Horizon • Sherpa



Undercloud

- Operator tool for cloud management
- Triple-O / OpenStack

Nova • Neutron • Glance • Keystone • IroniC • Heat • TripleO • Sherpa



Seed Cloud to bootstrap the Undercloud

Nova • Neutron • Glance • Keystone • IroniC • Heat

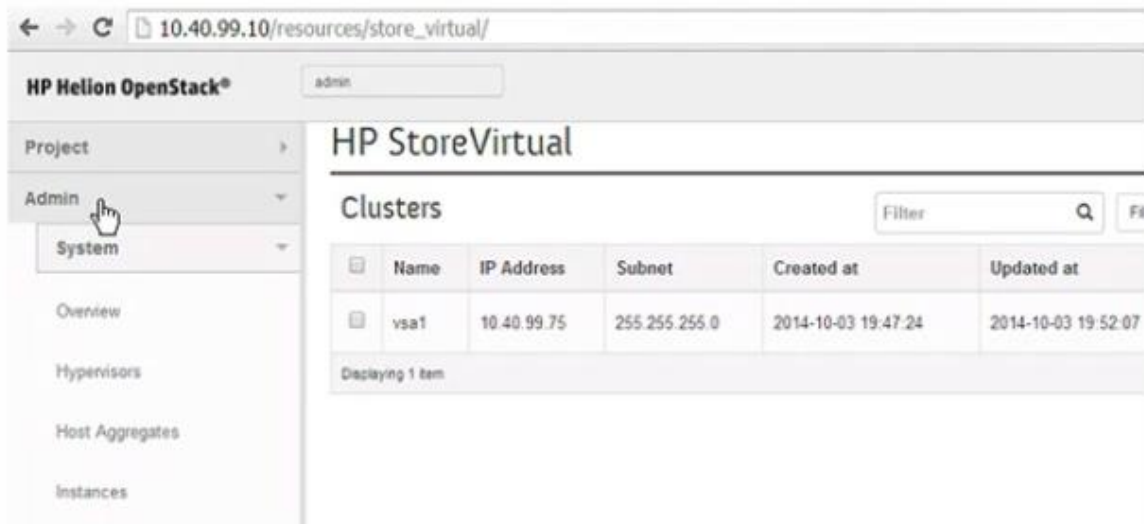


Under Cloud - Managing HP Helion OpenStack



Managing the Overcloud

- Horizon runs on Undercloud
- Scaling out Swift nodes
- Scaling out compute nodes
- Configuring StoreVirtual VSA
- Adding Cinder storage nodes
- Backing up and restoring the cloud
- Updating the cloud software
- Restarting the cloud after power loss



Over Cloud - Operating HP Helion OpenStack



Operating the cloud

- Creating tenants and users
- OpenStack user operations
- Adding storage types
- Configuring block storage

The screenshot shows the HP Helion OpenStack admin interface. The left sidebar contains a navigation menu with the following items: Project, Admin, System, Overview (selected), Hypervisors, Host Aggregates, Instances, Volumes, and Flavors. The main content area is titled 'Overview' and contains a 'Usage Summary' section. This section includes a form to 'Select a period of time to query its usage:' with 'From' and 'To' date pickers set to '2014-10-01' and '2014-10-02' respectively, and a 'Submit' button. Below the form, it displays summary statistics: 'Active Instances: 1 Active RAM: 512MB This Period's VCPU-Hours: 0.19 This Period's GB-Hours: 0.39'. There are also two small circular progress indicators. A 'Download CSV Summary' link is present. Below this is a table with the following data:

Project Name	VCPU	Disk	RAM	VCPU Hours	Disk GB Hours
demo	1	2GB	512MB	0.19	0.39

At the bottom of the table, it says 'Displaying 1 item'.



HP Helion OpenStack

Deploy step by step



HP Helion OpenStack Deploy (Triple O)



step by step

1. Infra 사전 준비

HW,N/W, Linux (Ubuntu)

OpenStack
Public LAN



ipmi
network



HP Helion OpenStack Deploy (Triple O)



step by step

1. Infra 사전 준비

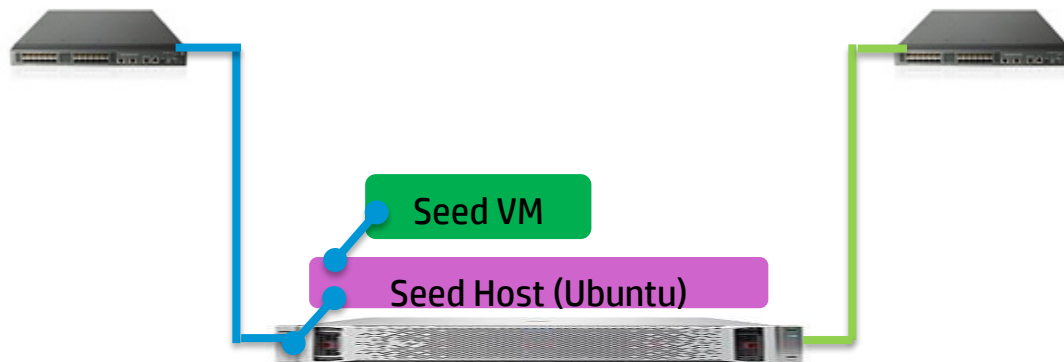
- HW, N/W, Linux (Ubuntu)

2. Unpacking the Package

- script 수행(public key 생성,gemu,libvirt 등 KVM 모듈 설치)
- baremetal.csv 파일 준비(max addr, ilouser, ilopasswd, iloadr, #cpu, #mem, disk space)
- Seed VM 생성

OpenStack
Public LAN

ipmi
network



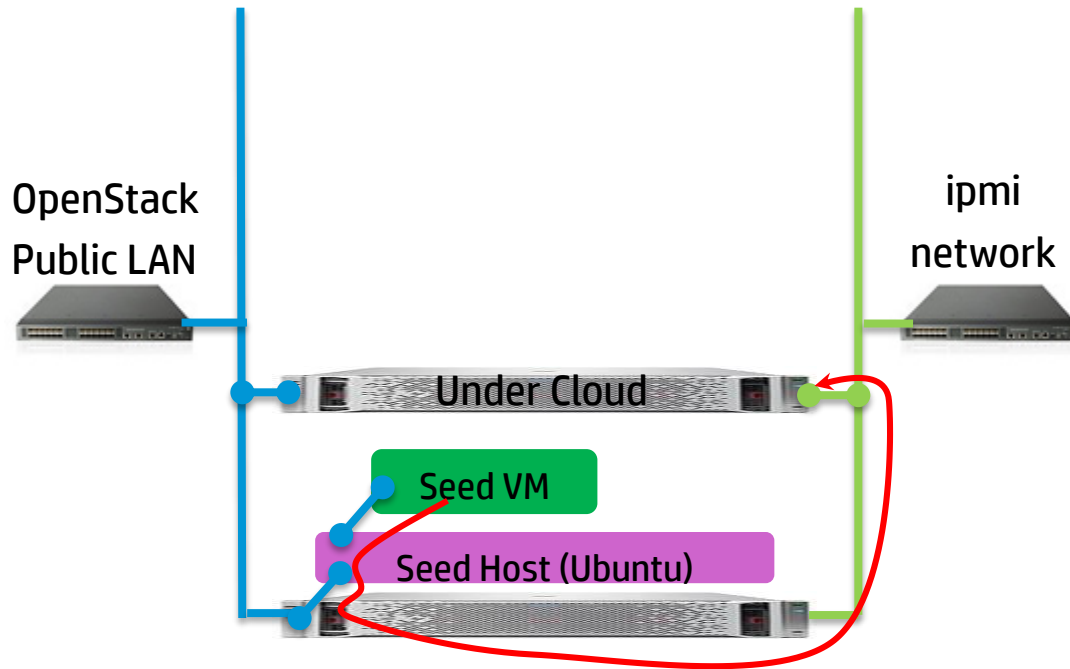
HP Helion OpenStack Deploy (Triple O)



step by step

3. Under Cloud 배포

- baremetal.csv 파일 준비
- Under Cloud 배포
(Bare Metal Cloud)
- Under Cloud 에서
OpenStack Portal 과 같은
UI 제공



HP Helion OpenStack Deploy (Triple O)



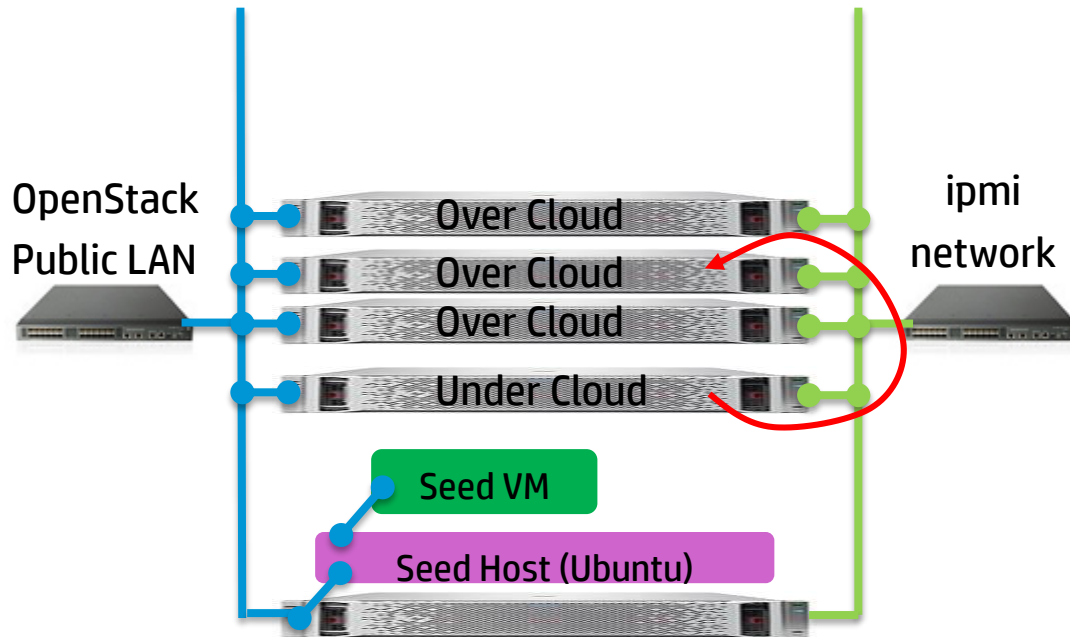
step by step

3. Under Cloud 배포

- baremetal.csv 파일 준비
- Under Cloud 배포

4. Over Cloud 배포

- Under Cloud 에서, Bare Metal 정보를 통해서 Cloud 의 배포
- Heat 을 이용하여, stack 들을 사용하여 구성
- HA 구성까지 해당 stack 을 이용하여 한번에 구성
- Glance 이미지 저장을 위해 Swift 사용

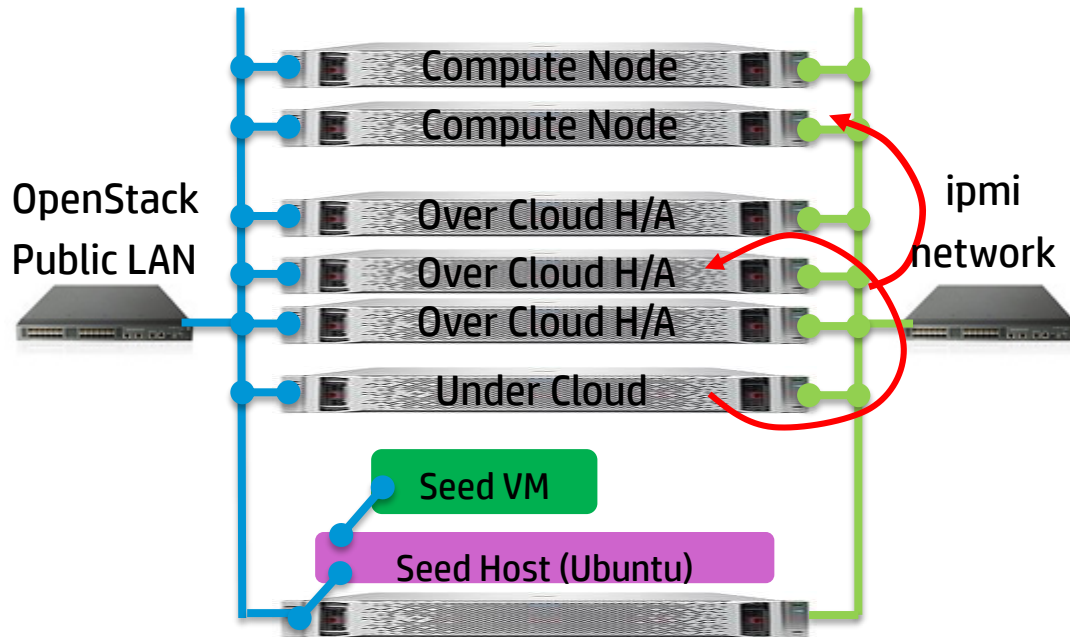


HP Helion OpenStack Deploy (Triple O)

step by step

5. Node 배포

- 추가 Node 배포
- Over Cloud 에서 사용하는 Swift Node, Ceph 등은 별도 구성 가능



END

감사합니다

