



# Building Tiny Private openSUSE Cloud

## @openSUSE.Asia Summit 2018

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<https://github.com/masayukig/cheap-cloud>

# Agenda

- ▶ Who I am?
- ▶ What is “the OpenStack”?
- ▶ What I did
- ▶ Why do I need it?
- ▶ How to build it?
- ▶ Benefits
- ▶ Issues
- ▶ Demo
- ▶ Future Work
- ▶ Conclusion

## DISCLAIMER

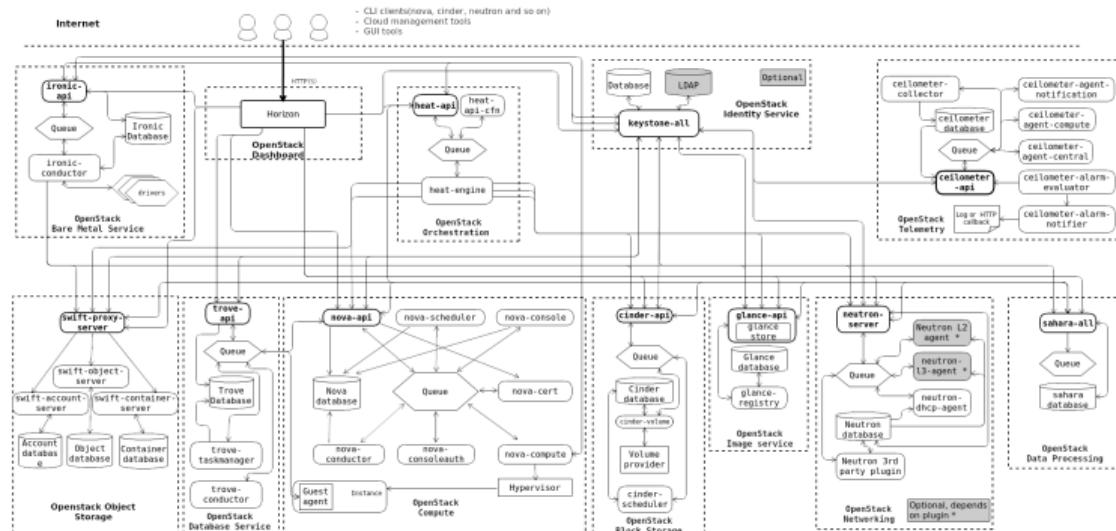
These slides are my own opinion

# Who I am?

- ▶ Company : 2017.3- SUSE/Novell Japan -> 2019 ??? ("Further Independence for SUSE")
  - ▶ SUSE OpenStack Cloud QE(Quality Engineering) Team (I'm the only one person who are in Japan and Japanese)  
["SUSE Acquires OpenStack IaaS and CF PaaS Talent and Tech Assets from HPE ..."](#)
- ▶ Job: Senior Software Engineer/Open Source Programmer
  - ▶ [OpenStack QA](#) Up/Downstream development, Core Reviewer  
(Tempest, OpenStack-Health, Subunit2SQL, Stackviz)
  - ▶ [stackalytics.com/?user\\_id=igawa](http://stackalytics.com/?user_id=igawa), [github.com/masayukig](https://github.com/masayukig)
- ▶ Books
  - ▶ [OpenStack Cloud Integration \(OpenStack クラウドインテグレーション\)](#)
  - ▶ [Infra CI Pragmatic Guide - Ansible/GitLab \(インフラ CI 実践ガイド\)](#) (as a reviewer)
- ▶ Hobby
  - ▶ Bike, Diet, etc.

# What is the “OpenStack”?

- Open Source Cloud OS Software: Apache License Version 2.0
- Written in Python
- There are a lot of ‘OpenStack’ projects: [65 projects\(2018-06-18\)](https://www.openstack.org/user-stories/)
- Released every 6 month: Latest version is called ‘Queens’
- Users: AT&T, AA, BBVA, Bloomberg, CERN, China Mobile, Gap, VEXXHOST, Volkswagen, WALMART, etc.. <https://www.openstack.org/user-stories/>



## What I did

- ▶ Got 1U servers \* 3
- ▶ Set up the servers
- ▶ Installed openSUSE
- ▶ Installed OpenStack
- ▶ Using VMs

# Why do I need the private Cloud?

- ▶ Very Good Excercise to learn Computer, Network, Storage
- ▶ Understand the Cloud architecture
- ▶ Use VMs for sandboxes such as k8s, mesos, etc.
- ▶ **FUN!!**

# How to get cheap servers?

# Yahoo! Auction



すべてのカテゴリ > コンピュータ

検索条件 この条件を保存

▼ カテゴリ

コンピュータ (706)

周辺機器 (313)

モニタ (116)

サブウーハー (106)

マウス (91)

キーボード (86)

バッテリー (27)

ワームドライブ (11)

▼ 価格帯

~13,999円 (202)

14,000円~27,999円 (240)

28,000円~37,999円 (240)

38,000円~47,999円 (16)

58,000円~67,999円 (16)

78,000円~87,999円 (16)

98,000円~127,999円 (16)

128,000円~157,999円 (16)

158,000円~187,999円 (16)

188,000円~217,999円 (16)

218,000円~247,999円 (16)

248,000円~277,999円 (16)

278,000円~307,999円 (16)

308,000円~337,999円 (16)

338,000円~367,999円 (16)

368,000円~397,999円 (16)

398,000円~427,999円 (16)

価格帯

すべての地域

すべての条件から絞る

▼ オプション

NEW

決済手数料

送付手数料

コンビニ受取

▼ 出品者

すべてのストア (1人)

出品者評議会 (0人)

有賀 (0人)

すべての検索条件を表示

保存した検索条件

ログインして検索条件を保存

削除することもできます

検索条件を表示

保存した検索条件を表示

検索条件を表示

</

# Get 1U servers \* 3

## ► Yahoo! Auction!!

Dell PowerEdge R410 \* 3: 59.58k JPY

☆Dell PowerEdge R410 [2\*X L5640-2.27GHz(6C)/32GB/2\*250GB] !

落札価格: **18,520 円**

入札件数: **18** (入札履歴)

残り時間	終了
入札単位	500円
商品状態	中古
終了日時	2017年9月18日 22時59分

1U, Xeon L5640(6cores \* 2CPU HT), 32GB RAM, 250GB HDD\*2  
(Cost: 18.52k JPY \* 3 servers = 55.56k, 4.02k (for a rental car))

# Install the servers

## Problem

- ▶ Stack on the floor? -> Hard to move
- ▶ Rack? -> Too expensive

LackRack: <https://wiki.eth0.nl/index.php/LackRack>



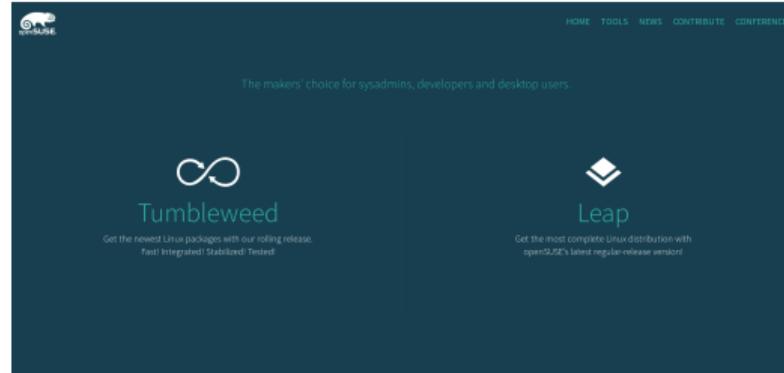
# Implemented



# Install openSUSE

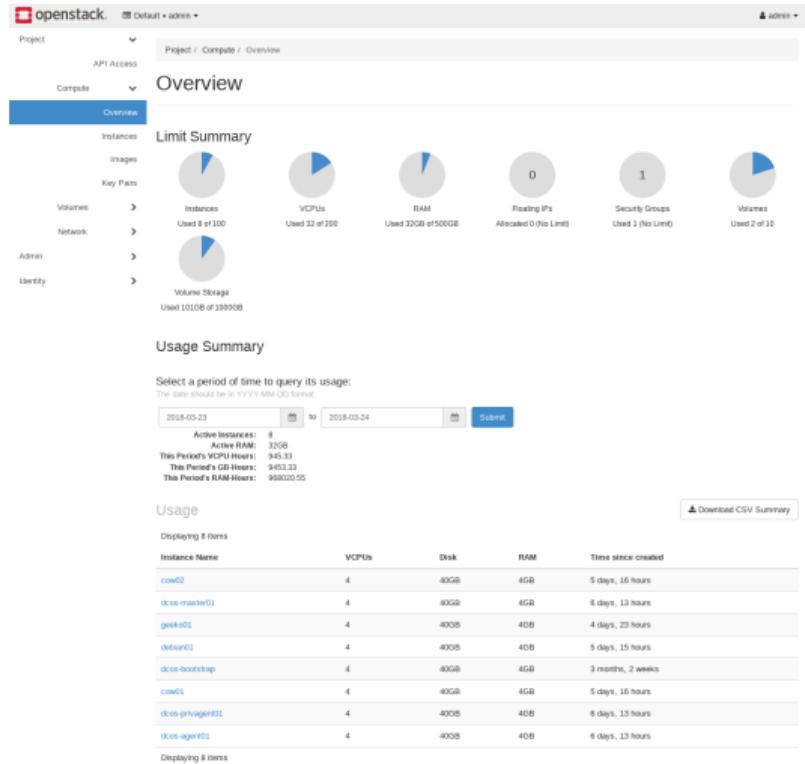
No automation such as autoyast, ansible, puppet, etc

- ▶ Download image and burn it to a USB stick  
(<https://software.opensuse.org/distributions/leap>)
- ▶ Install from that media
- ▶ Update it to the latest: \$ sudo zypper dup

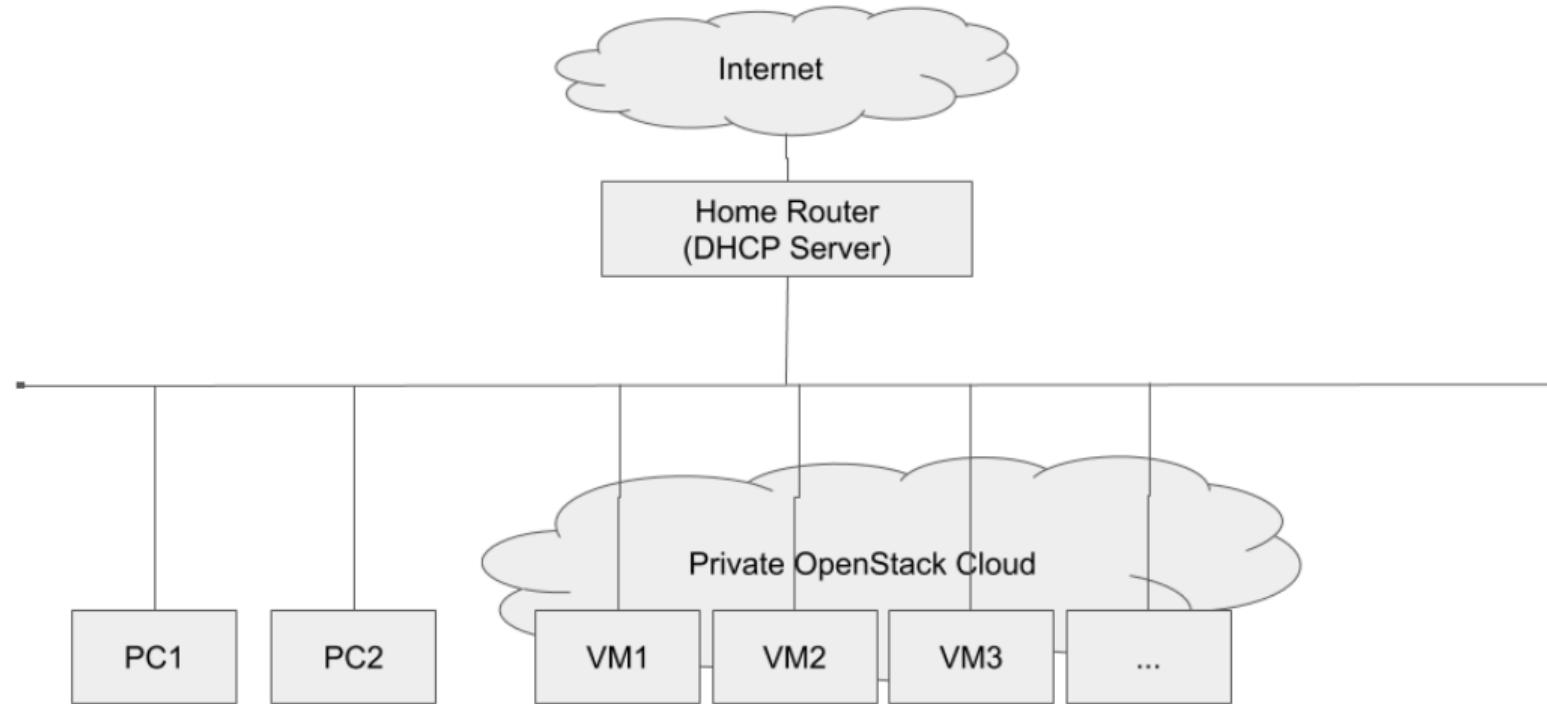


# Install OpenStack: Use openSUSE rpm packages

- ▶ Read the Doc (e.g. <https://docs.openstack.org/install-guide/>)
- ▶ Install from the openSUSE repo
- ▶ Configure



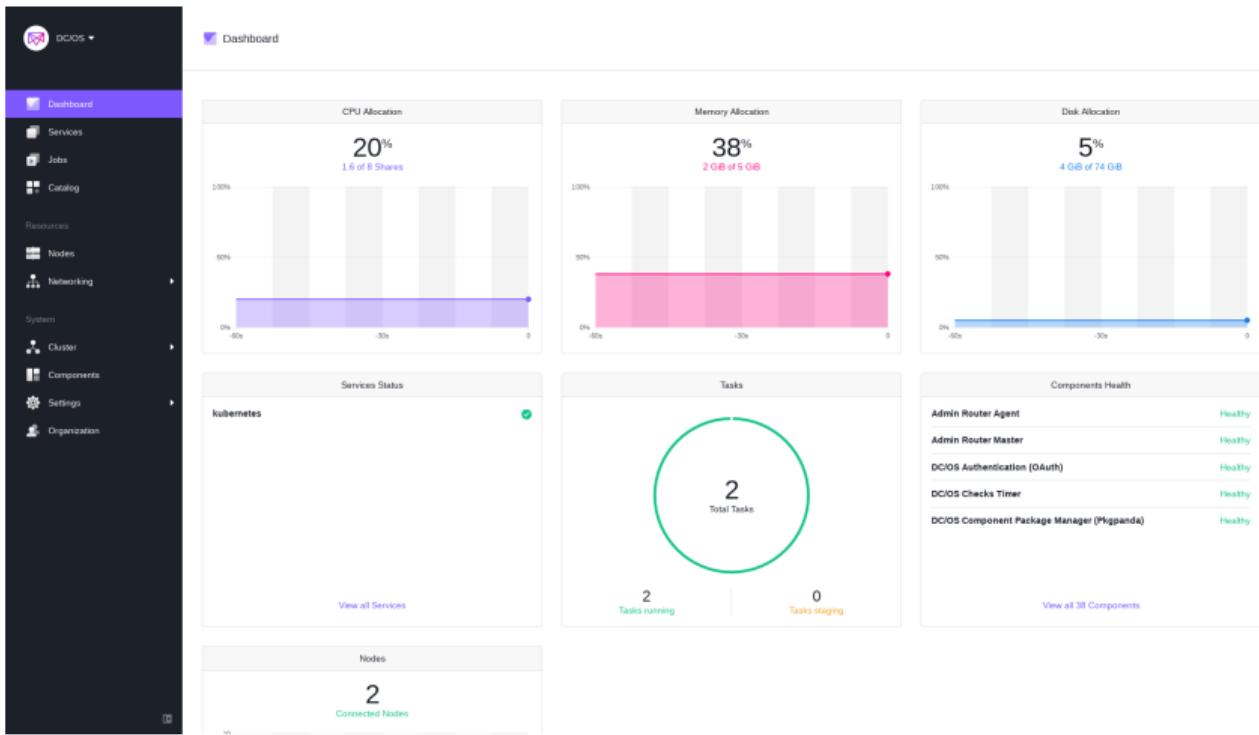
# My Cloud Network



# Update OpenStack

- ▶ Update the repo and just zypper update
- ▶ **No configuration change!**

# Use VMs: Mesos DC/OS



# Use VMs: Rancher

The screenshot shows the Rancher interface with two hosts listed:

- Host 1: cow01.novalocal**
  - IP: 172.17.0.1 | Version: 17.09.1-ce
  - OS: RancherOSv1.3.0-rc1 (4.15.9)
  - CPU: 4x3.4 GHz | RAM: 3.85 GiB | Storage: 7.43 GiB
  - Stack: healthcheck**
    - ..healthcheck-1 IP: 10.42.177.204
  - Stack: ipsec**
    - ..cni-driver-1 None
    - ..ipsec-1 IP: 10.42.101.159
    - Sidekicks**: ..cni-driver-2 (None), ..ipsec-2 IP: 10.42.59.40
- Host 2: cow02.novalocal**
  - IP: 10.0.0.63 | Version: 17.09.1-ce
  - OS: RancherOSv1.3.0-rc1 (4.15.9)
  - CPU: 4x3.4 GHz | RAM: 3.85 GiB | Storage: 7.43 GiB
  - Stack: ipsec**
    - ..cni-driver-2 None
    - ..ipsec-2 IP: 10.42.59.40
    - Sidekicks**: ..cni-driver-2 (None), ..ipsec-2 IP: 10.42.59.40
  - Namespace: kube-system**
    - tiller-deploy-cc9... Failed to find lab...
    - Containers**: ..tiller-deploy-cc9... (Warning)

# Benefits

- ▶ Free to use!!!
- ▶ Low Cost to start
- ▶ Powerful
- ▶ Low Network Latency
- ▶ Warm (in winter)

## Issues

- ▶ Electricity cost: 10,000 JPY/month (Expensive)
- ▶ Noise (Imagin a server room)
- ▶ Space (Expensive in Tokyo)
- ▶ Failures (HDD, Power Unit... Expensive)
- ▶ Abandonment (Expensive)

## Demo (if possible...)

- ▶ Boot an Instance or Cloud Native something?

## Future work

- ▶ Replace the broken HDD to SSD (Done)
- ▶ Upgrade openSUSE to Leap 15.0 (WIP)
- ▶ Use a RaspberryPi3 model B+ as a controller node
- ▶ Automation (Bash, Ansible, etc.)

# Conclusion

- ▶ Initial cost can be low but **EXPENSIVE** to maintain and **NOISY**
- ▶ Freedom of cloud usage
- ▶ Own physical servers and play with it is super **FUN!**