



Building A Tiny Private openSUSE Cloud

@openSUSE.Asia Summit 2018

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August 11, 2018

@openSUSE.Asia Summit 2018 in Taipei
<https://github.com/masayukig/cheap-cloud>

Agenda

1. Who I am?
2. What is “the OpenStack”?
3. What I did
4. Why do I need it?
5. How to build it?
6. Benefits
7. Issues
8. Demo
9. Future Work
10. Conclusion

DISCLAIMER

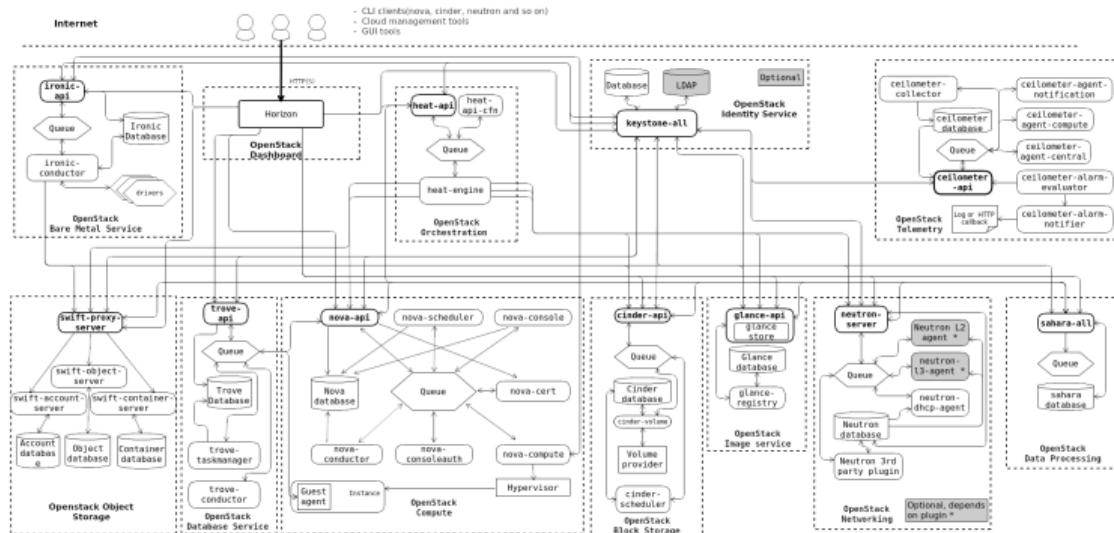
These slides are my own opinion

Who I am?

- ▶ Company : 1998.4-2015.12 Traditional IT company in Japan, 2016.1-2017.3 HPE
-> 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](#), [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 Operation System: 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

1. Got 1U servers * 3
2. Set up the servers
3. Installed openSUSE
4. Installed OpenStack
5. Using VMs

Why do I need the private Cloud?

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

How to get cheap servers?

Yahoo! Auction (similar to ebay)

ログイン
IDでもっと便利に新規取得

フリマ オークション すべて

lu

すべてのカテゴリ > コンピュータ > サーバー

検索条件 この条件を保存

▼ カテゴリ 解除

コンピュータ
サーバー (145)
サーバー本体 (134)
サーバーラック (7)
その他 (4)

検索結果 約145件

検索対象：タイトル キーワード：lu X

lu ラック luxman p-lu p-lu wh-f1u で検索

落札相場を調べる おすすめ順とは？

おおまかに ▼

Get 1U servers * 3

► Yahoo! Auction!!

Dell PowerEdge R410 * 3: 59.58k JPY (16.4k TWD/538 USD)

☆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 - Where should I put them?

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

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



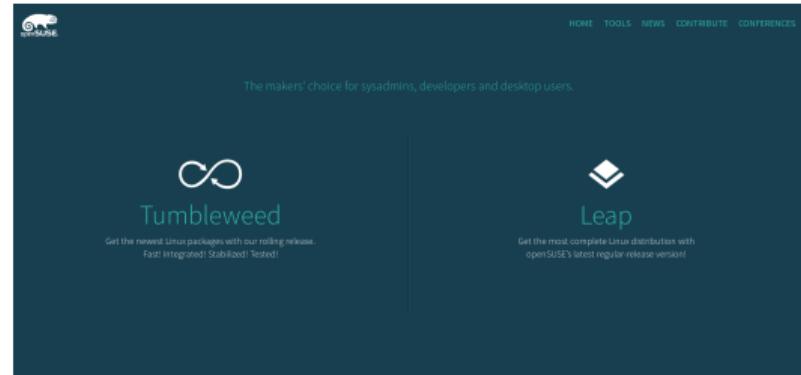
Implemented



Install openSUSE

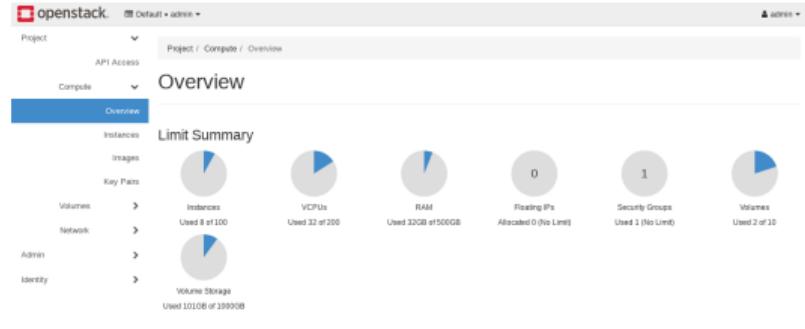
(No automation such as autoyast, ansible, puppet, etc.)

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



Install OpenStack: Use openSUSE rpm packages (No automation as well)

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



Usage Summary

Select a period of time to query its usage:
The date should be in YYYY-MM-DD format.

2018-03-23 to 2018-03-24

Active Instances: 8 Active RAM: 32GB
This Period's VM-Hours: 945.33 This Period's GB-Hours: 3452.33
This Period's RAM-Hours: 98820.55

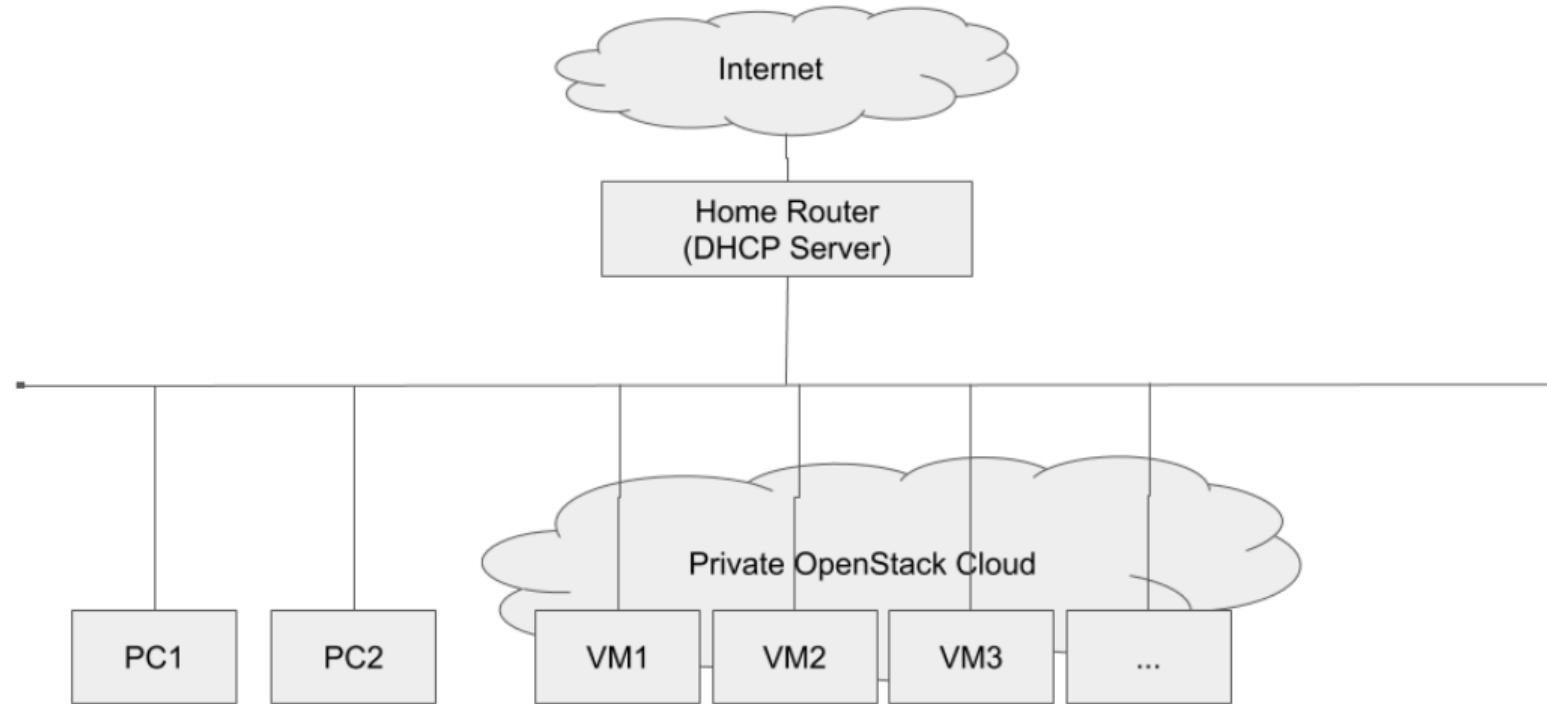
Usage

Displaying 8 items

Instance Name	VCPUs	Disk	RAM	Time since created
cse01	4	40GB	4GB	5 days, 16 hours
docs-master01	4	40GB	4GB	6 days, 13 hours
geek01	4	40GB	4GB	4 days, 23 hours
debian01	4	40GB	4GB	9 days, 15 hours
docs-bootstrap	4	40GB	4GB	3 months, 2 weeks
cse01	4	40GB	4GB	5 days, 16 hours
docs-privagen01	4	40GB	4GB	6 days, 13 hours
docs-agent01	4	40GB	4GB	6 days, 13 hours

Displaying 8 items

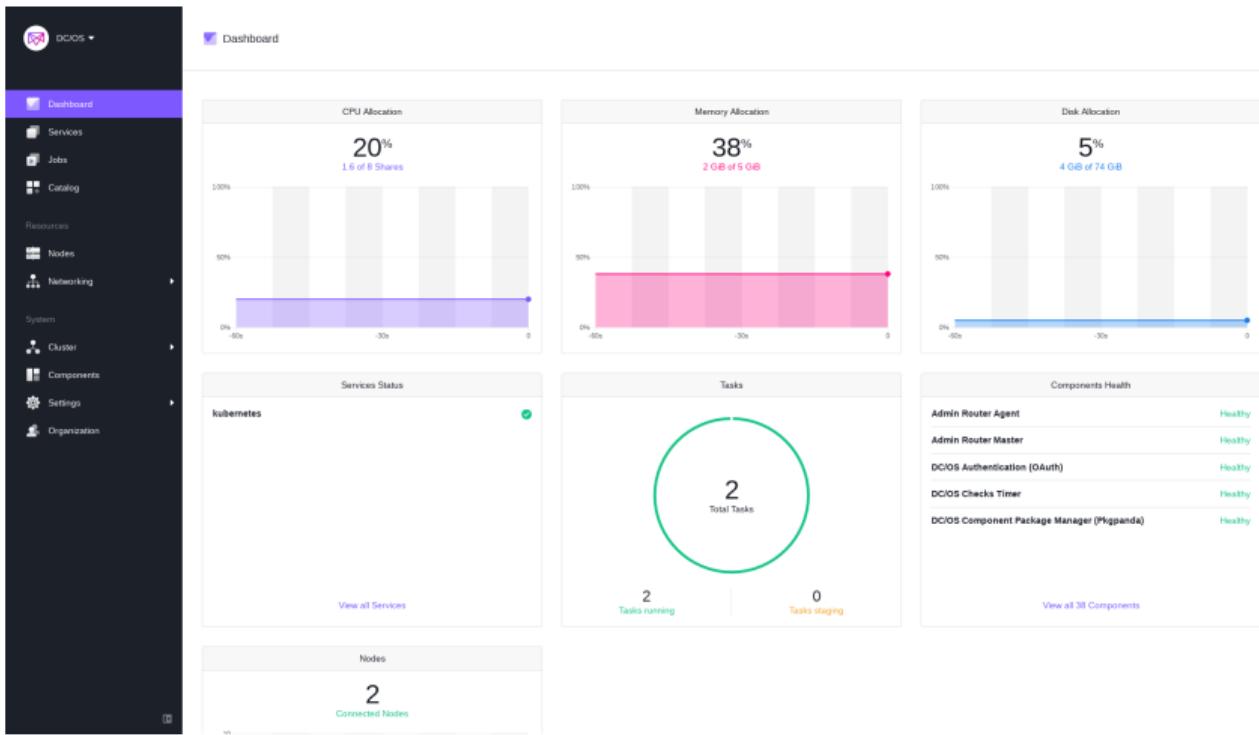
My Cloud Network



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 for managing hosts. There are two hosts listed:

- Host 1: cow01.novalocal**
 - Stack: healthcheck**: Contains one green circle labeled "...healthcheck-1" with IP 10.42.177.204.
 - Stack: ipsec**: Contains one green circle labeled "...cni-driver-1" with IP None, and one red triangle labeled "...ipsec-1" with IP 10.42.101.159. It also lists "Sidekicks" with two green circles.
 - Namespace: kube-system**: Contains one green circle labeled "tiller-deploy-cc9..." and one red triangle labeled "Failed to find lab...".
- Host 2: cow02.novalocal**
 - Stack: ipsec**: Contains one green circle labeled "...cni-driver-2" with IP None, and one red triangle labeled "...ipsec-2" with IP 10.42.59.40. It also lists "Sidekicks" with two green circles.
 - Namespace: kube-system**: Contains one red triangle labeled "Containers".

Benefits

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

Issues

- ▶ Electricity cost: 10,000 JPY(2,800 TWD)/month (Expensive)
- ▶ Noise (Imagine in a server room)
- ▶ Space (Expensive in Tokyo)
- ▶ Failures (HDD, Power Unit... Expensive)
 - > Replaced the broken HDD to SSD
- ▶ Abandonment (Expensive)

Demo (if possible...)

- ▶ Boot an Instance

Future work

- ▶ Upgrade openSUSE to Leap 15.0 (WIP)
- ▶ Use a Raspberry Pi3 model B+ as a controller node
- ▶ Use more k8s things (vanila k8s, SUSE CaaS)
- ▶ 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!**

Appendix

- ▶ My slides: <https://github.com/masayukig/cheap-cloud>
- ▶ Contact info: masayukig on [Freenode](#), [GitHub](#), [Twitter](#), [LinkedIn](#)
- ▶ Original Idea:
<https://github.com/mtreinish/dirty-clouds-done-dirt-cheap>