



# openSUSE でおうちクラウド @openSUSE mini Summit 2018

Masayuki Igawa

masayuki@igawa.io

masayukig on Freenode, GitHub,

Twitter

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

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# Agenda

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

# Who I am?

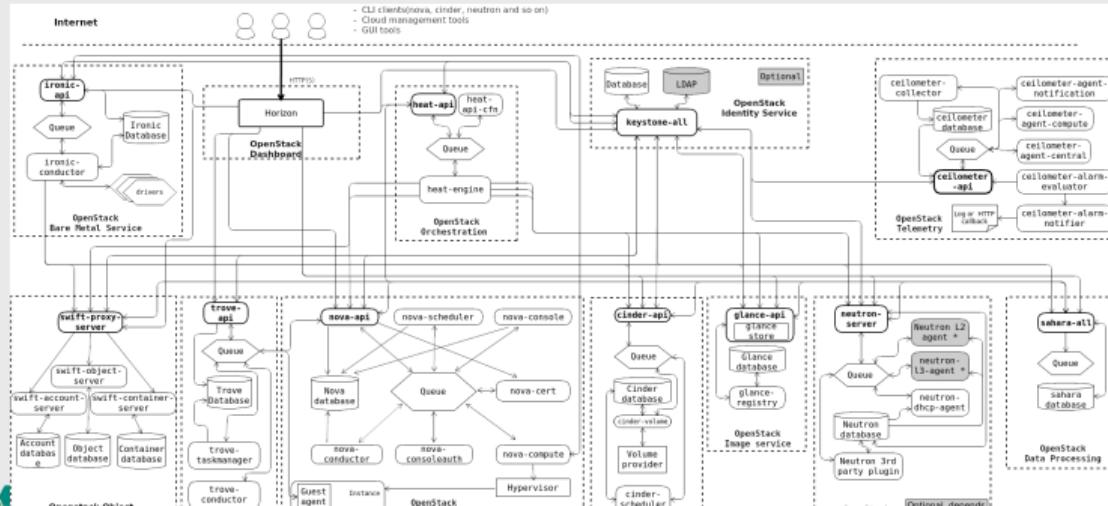
- ▶ Company : SUSE/ノベル株式会社
  - ▶ SUSE OpenStack Cloud QE(Quality Engineering) Team (日本にいるのは私だけ)  
SUSE Acquires OpenStack IaaS and Cloud Foundry PaaS Talent and Technology Assets from HPE to Accelerate Growth and Entry into New Markets
- ▶ Job: Senior Software Engineer/Open Source Programmer
  - ▶ OpenStack QA Up/Downstream development, Core Reviewer  
(Tempest, OpenStack-Health, Subunit2SQL, Stackvizi)
  - ▶ stackalytics.com/?user\_id=igawa
  - ▶ github.com/masayukig



- ▶ Books
  - ▶ OpenStack クラウドインテグレーション (オープンソースクラウドによるサービス構築入門)
  - ▶ インフラ CI 実践ガイド (Ansible/GitLabを使ったインフラ改善サイクルの実現)  
(レビュー参加)

# 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)
- Released every 6 month: Latest version is called ‘Queens’
- Users: AT&T, AA, BBVA, Bloomberg, CERN, China Mobile, Gap, Nike, 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

**ヤフオク!**

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

1u

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

**検索結果 約145件**

検索対象: タイトル キーワード: 1u X

1u ラック luxman p-1u p-1u wh-f1u で検索

▼ 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)

落札相場を調べる おすすめ順とは?



# Get 1U servers \* 3

## ► Yahoo! Auction!!

Dell PowerEdge R410 \* 3: 59.58k JPY

The screenshot shows a Yahoo! Auction listing for a Dell PowerEdge R410 server. The listing includes:

- 落札価格:** 18,520 円
- 入札件数:** 18 (入札履歴)
- 商品情報:**
  - 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))

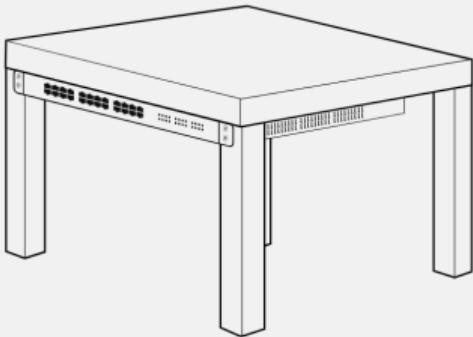
# Install the servers

## Problem

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

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

# LACKRACK



**HACK**  
Design and Quality  
IDEA of eth0

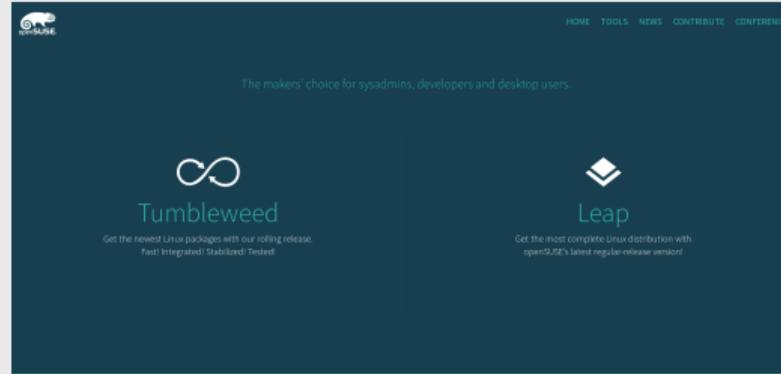
# Implemented



# Install openSUSE

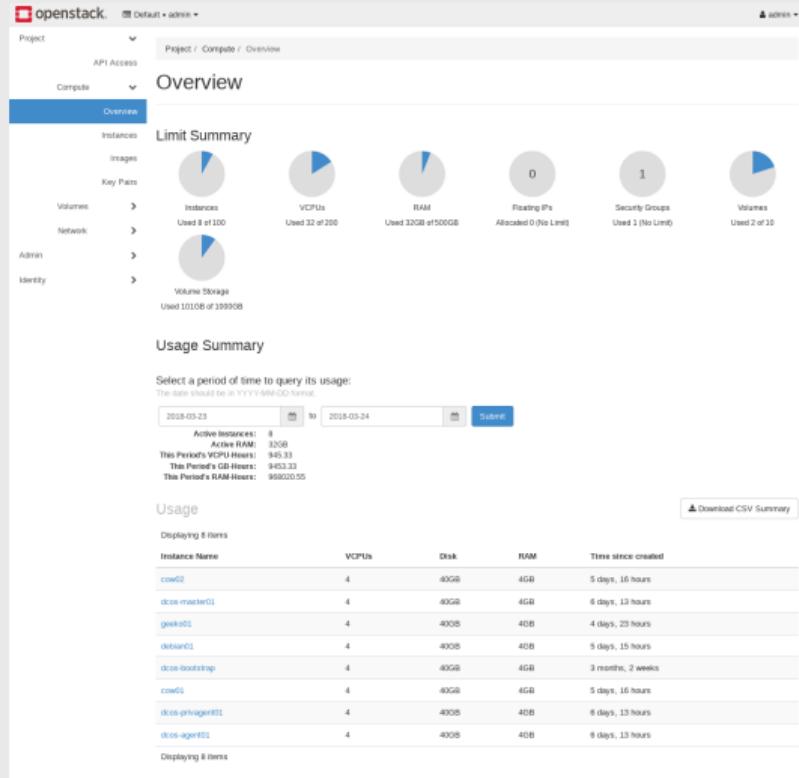
No automation such as autoyast, ansible, puppet, etc

- ▶ 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

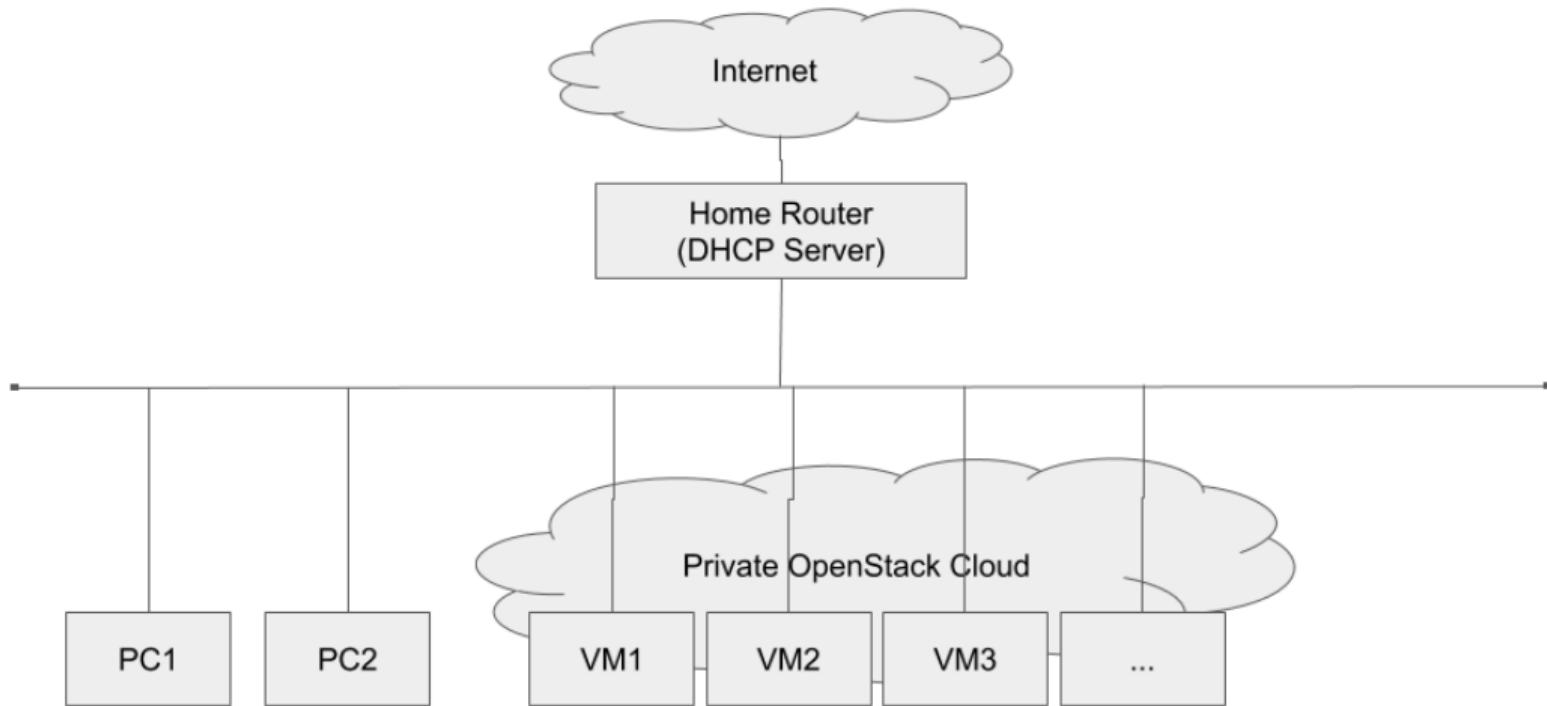


# Install OpenStack: Use openSUSE rpm packages

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



# My Cloud Network



# Update OpenStack

- ▶ Install from the openSUSE repo (Just needed to update repo URL)
- ▶ No Configuration changes

# Use VMs: Mesos DC/OS

The screenshot shows the DC/OS Dashboard interface. The left sidebar contains navigation links for Dashboard, Services, Jobs, Catalog, Resources (Nodes, Networking), System (Cluster, Components, Settings, Organization), and a search bar. The main dashboard area has a title "Dashboard". It features several cards:

- CPU Allocation:** Shows 20% usage of 8 shares.
- Memory Allocation:** Shows 38% usage of 5 GB.
- Disk Allocation:** Shows 5% usage of 74 GB.
- Services Status:** Shows the status of "kubernetes".
- Tasks:** Shows 2 total tasks, with 2 running and 0 staged.
- Components Health:** Lists components: Admin Router Agent (Healthy), Admin Router Master (Healthy), DC/OS Authentication (OAuth) (Healthy), DC/OS Checks Timer (Healthy), and DC/OS Component Package Manager (Pkgpanda) (Healthy).
- Nodes:** Shows 2 connected nodes.

# Use VMs: Rancher

The screenshot shows the Rancher interface for managing hosts. At the top, there's a navigation bar with tabs for Default, Kubernetes, Infrastructure, Admin (with a red exclamation mark), and API.

The main area displays two hosts:

- Host 1: cow01.novalocal**
  - Summary:** ACTIVE, IP: 172.17.0.1, OS: RancherOSv1.3.0-rc1(4.15.9), CPU: 4x3.4 GHz, Memory: 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 (IP: 10.42.59.40), ..ipsec-2 (IP: 10.42.177.204)
- Host 2: cow02.novalocal**
  - Summary:** ACTIVE, IP: 10.0.0.63, OS: RancherOSv1.3.0-rc1(4.15.9), CPU: 4x3.4 GHz, Memory: 3.85 GiB, Storage: 7.43 GiB.
  - Stack: ipsec:**
    - ..cni-driver-2 (None)
    - ..ipsec-2 (IP: 10.42.59.40)
  - Sidekicks:** ..cni-driver-2 (IP: 10.42.59.40), ..ipsec-2 (IP: 10.42.177.204)

At the bottom, there's a decorative footer with hexagonal patterns and a page number 17 / 22.

# 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 (WIP)
- ▶ Upgrade openSUSE to Leap 15.0 (WIP)
- ▶ Use a RaspberryPi as a controller node
- ▶ Automation

# 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!**