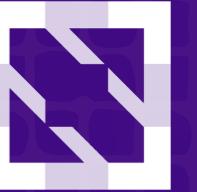




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China 2019



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Cluster of Palm-Sized Personal Kubernetes Cluster Using 100 Raspberry Pi

Masaya Aoyama (@amsy810) - CyberAgent, Inc.

About me



Masaya Aoyama (@amsy810)

Infrastructure Engineer



- Implemented Kubernetes as a Service on private cloud
 - includes customized ingress controller for container-native loadbalancing
- Conference Co-Chair of CloudNative Days Tokyo
- Organizer of Cloud Native Meetup Tokyo & Kubernetes Meetup Tokyo
- Contribute to Kubernetes :)





Probably everyone like Kubernetes, isn't it?



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So everyone have
a personal kubernetes cluster
just like a smartphone, right?

In the coffee shop



You can use physical local kubernetes cluster anywhere!

On the airplane



You can use physical local kubernetes cluster anywhere!

In the kitchen???



You can use physical local kubernetes cluster anywhere!

On the airplane



You can use physical local kubernetes cluster anywhere!



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Why this cluster is suitable? only for stylish?



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I'd like to...

1. attract non-k8s users
2. provide an opportunity to learn



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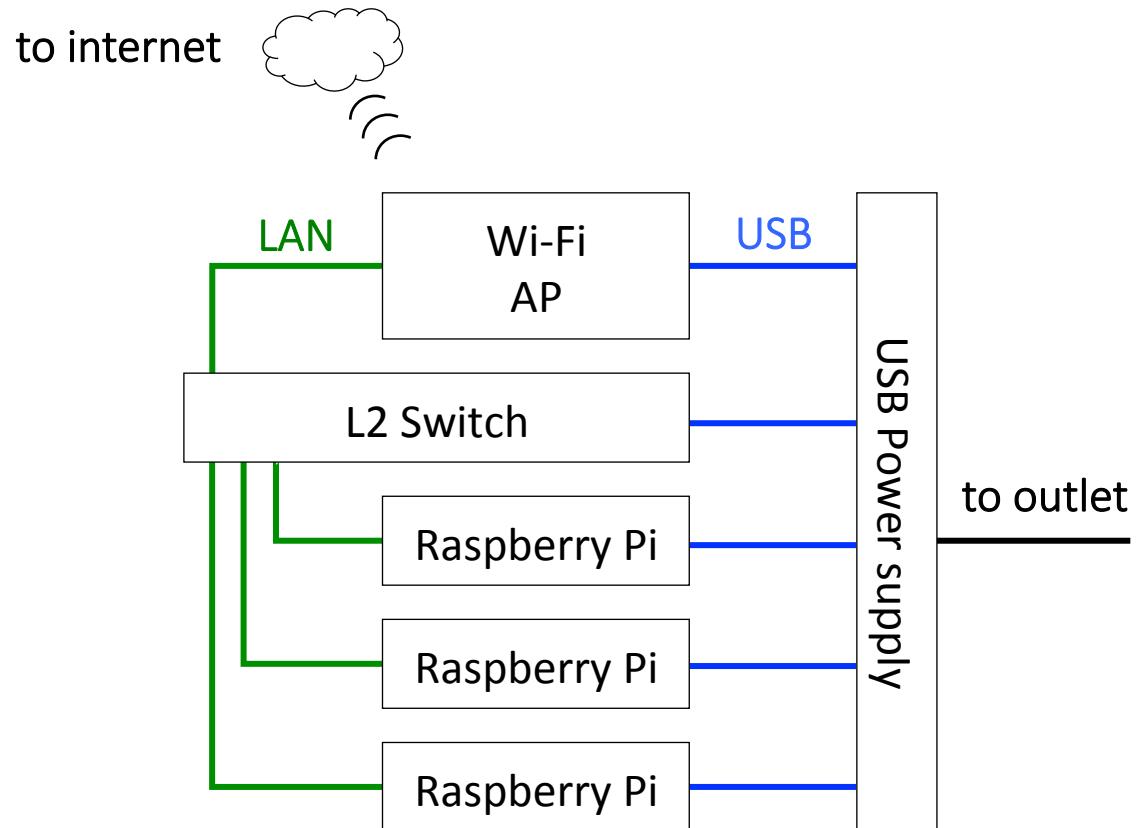
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I'd like to...

1. attract non-k8s users
2. provide an opportunity to learn
3. enjoy :)

Create cluster [hardware]

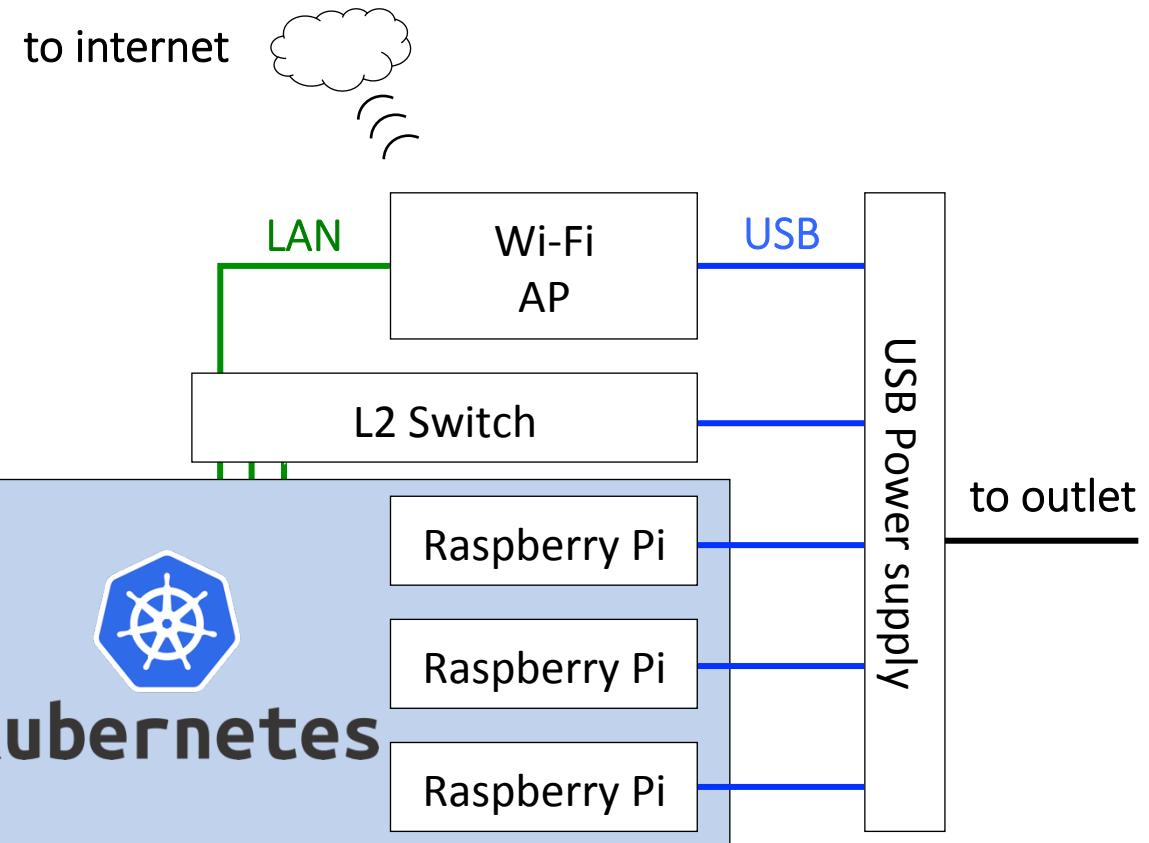
- Palm-sized is important
- Sophisticated architecture for single electrical outlet



- USB power is supplying to
 - Raspberry Pi * 3
 - L2 Switch * 1
 - Wi-Fi AP* 1

Create cluster [hardware]

- Palm-sized is important
- Sophisticated architecture for single electrical outlet



- USB power is supplying to
 - Raspberry Pi * 3
 - L2 Switch * 1
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Create cluster [software]

- we need to go through the hardway for understanding kubernetes deeply
 - kubeadm is so good, but we need to create cluster atomicly once
- we will be understanding:
 - Kubernetes consists of some compoments, and what it is doing
 - chaos engineering caused by both software and hardware





try easily

- we can try some components easily
 - MetallLB (<https://metallb.universe.tf/>)
 - L2 ARP load balancing has little risk
- You can do any testing for both infrastructure and your application



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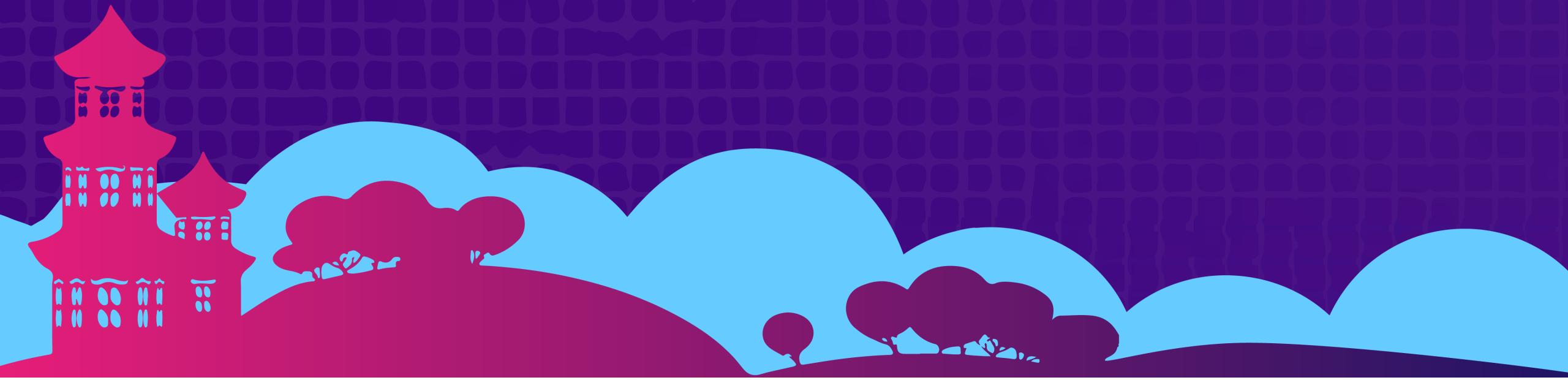


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But, it's just boring



Cluster of Cluster

- we built a large cluster with 33 little clusters (\approx 100 Raspberry Pi)



Future work

- try Intel NUC + kind
 - Kubernetes in Docker
 - <https://github.com/kubernetes-sigs/kind>
- kind launches containers as kubernetes nodes in a single machine

!!!NOTE!!!

Of course, we use a good cluster at work.

this is like hobby and for students :)



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We like Kubernetes?
Get your palm-sized
personal kubernetes cluster :)



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Thank you for your attention

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