



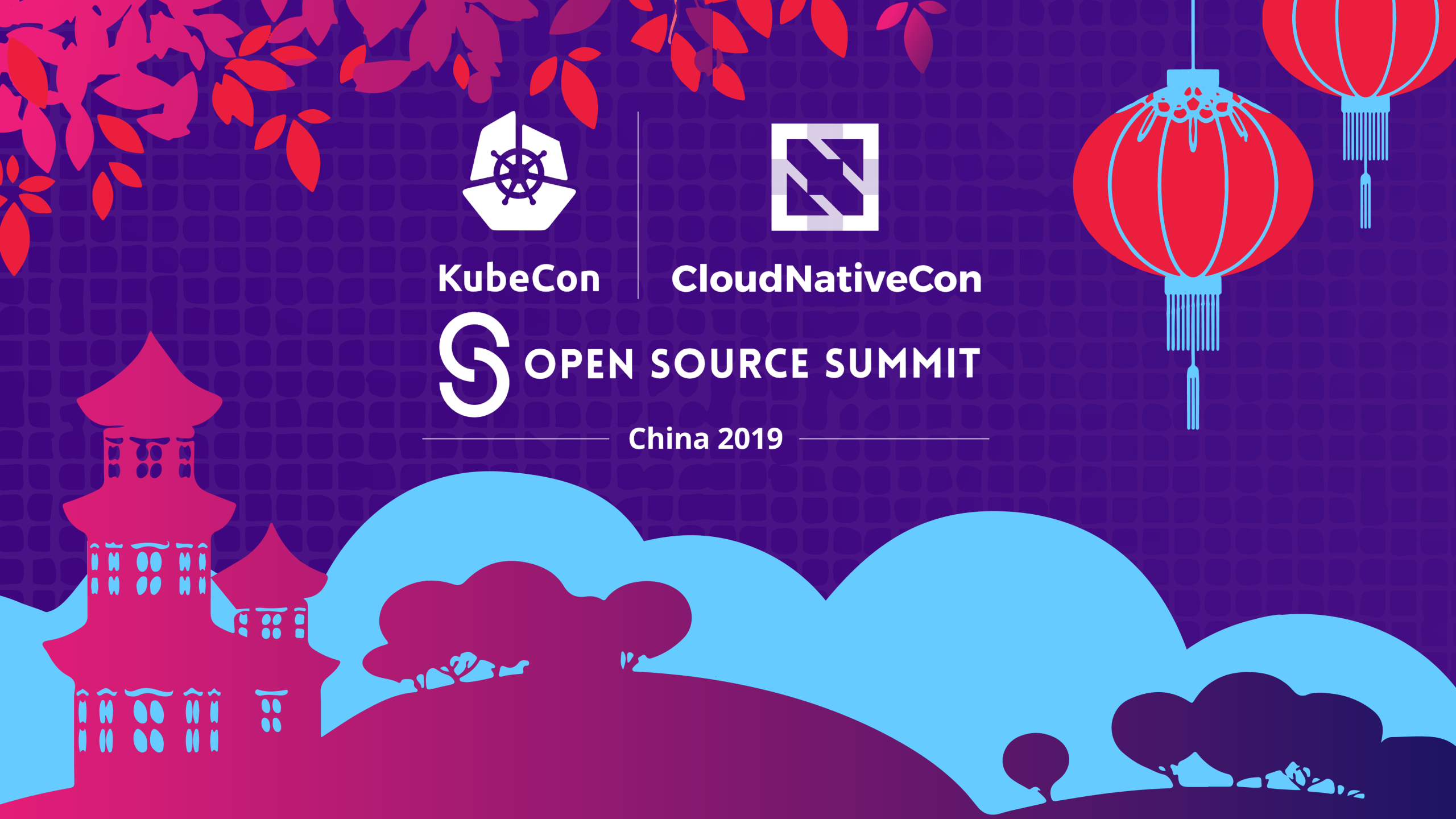
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Cluster of Palm-Sized Personal Kubernetes Cluster Using 100 Raspberry Pi

Masaya Aoyama (@amsy810) - CyberAgent, Inc.



About me



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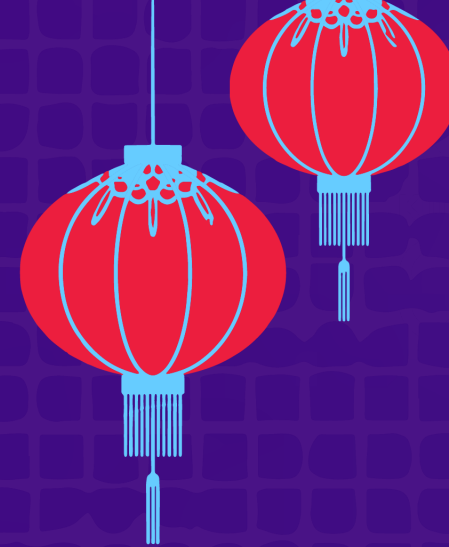
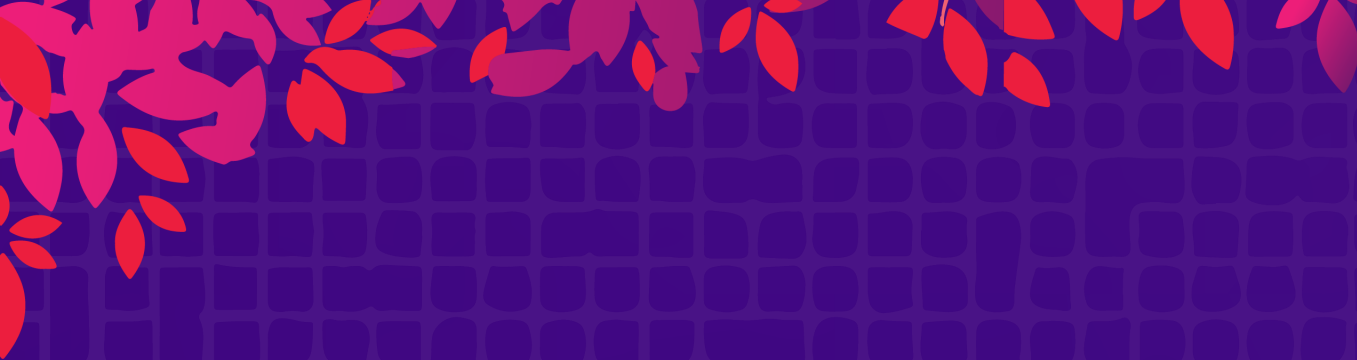


Masaya Aoyama (@amsy810)

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 :)



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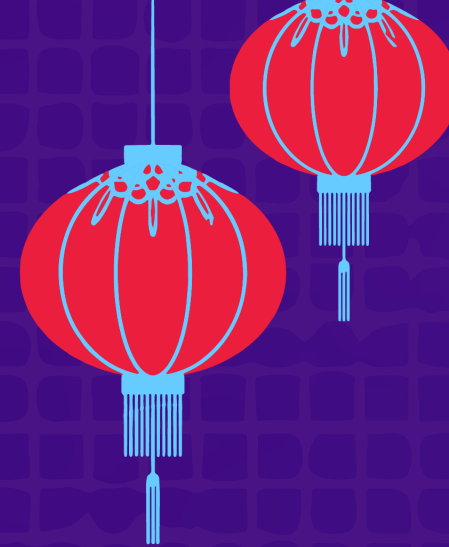
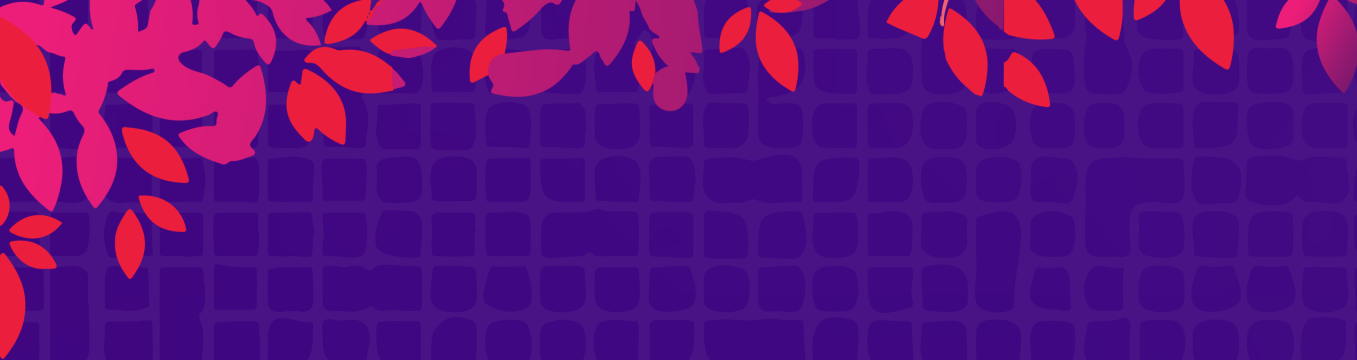


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Probably everyone like Kubernetes, isn't it?





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



In the coffee shop



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You can use physical local kubernetes cluster anywhere!

On the airplane



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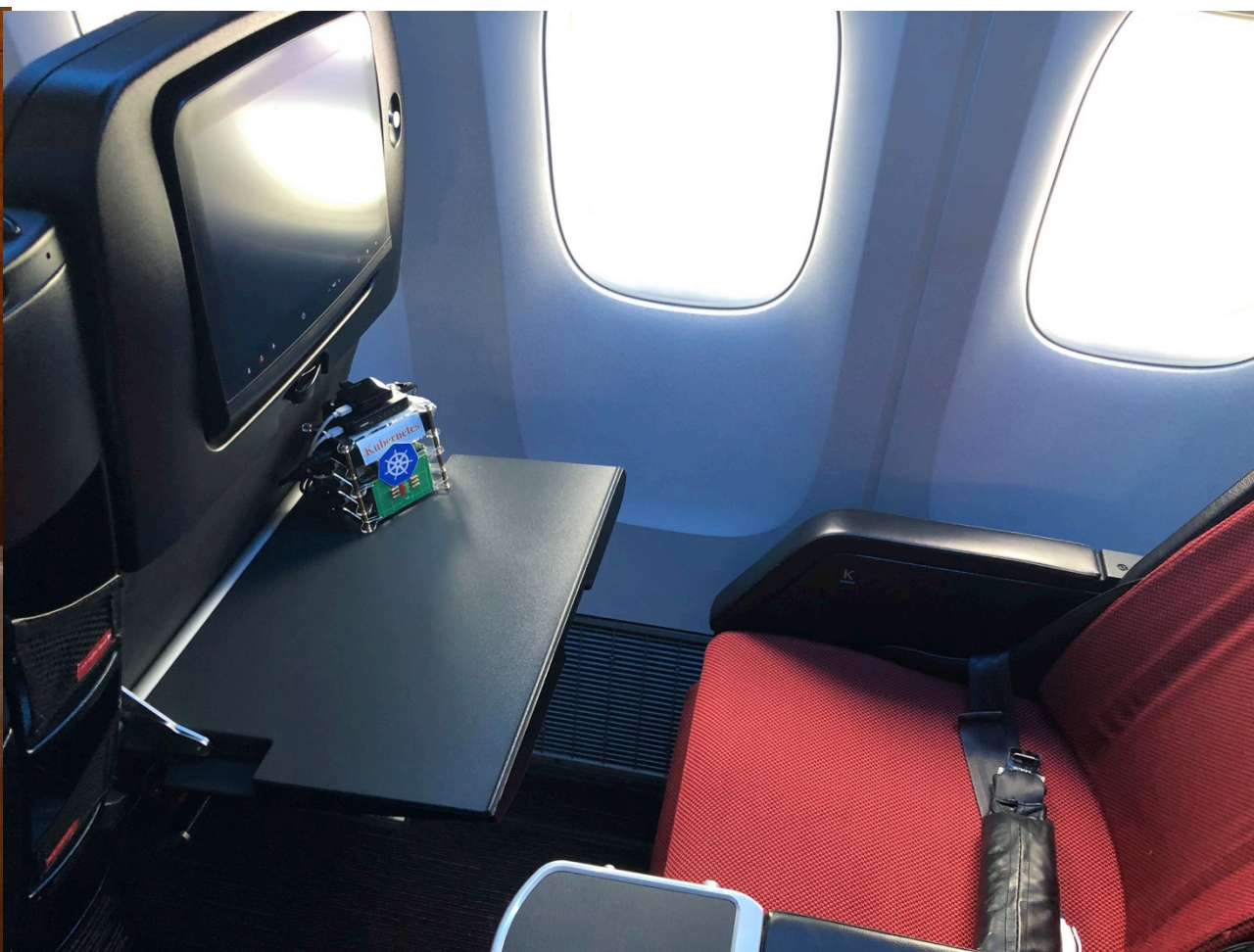


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You can use physical local kubernetes cluster anywhere!

In the kitchen???



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You can use physical local kubernetes cluster anywhere!

On the airplane



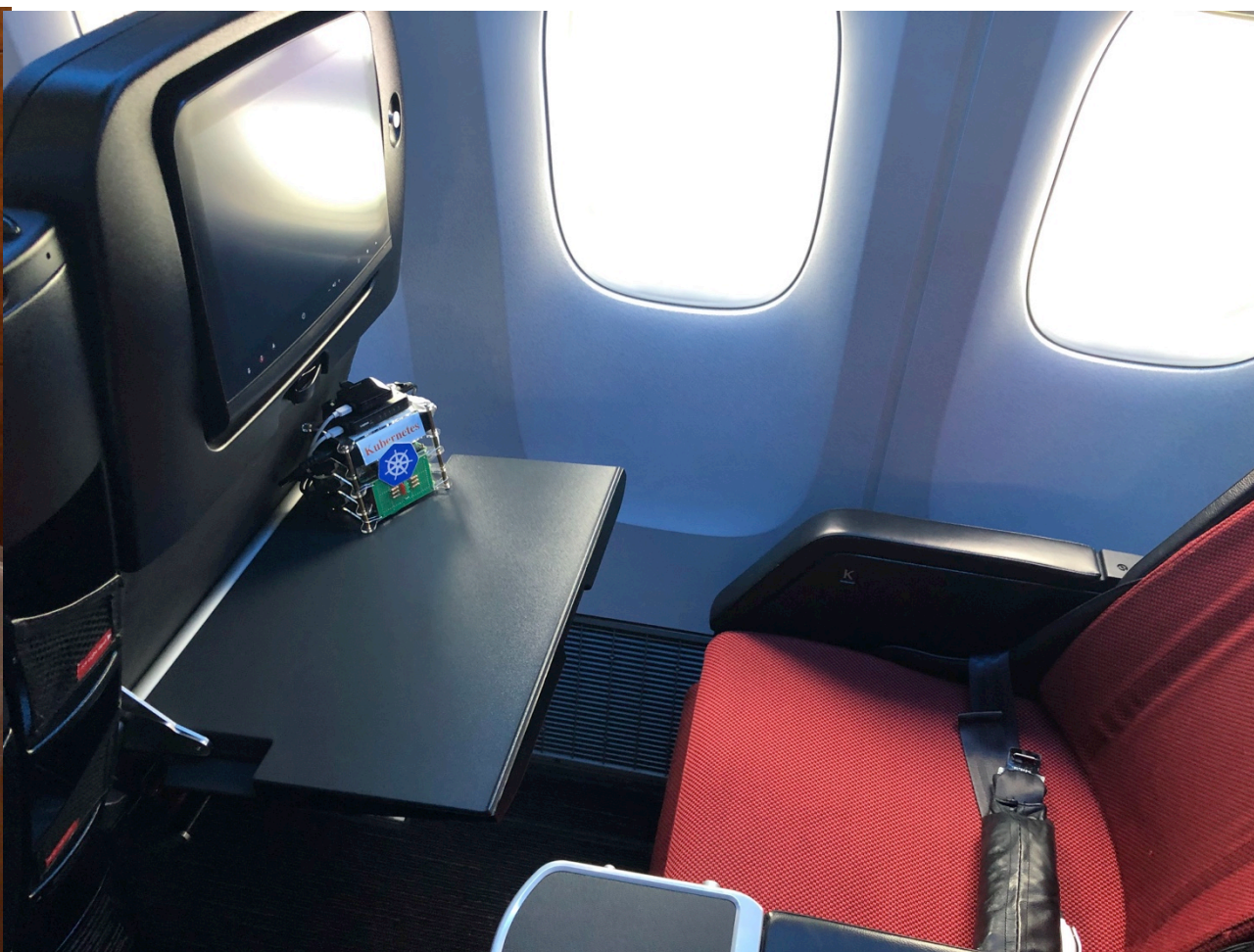
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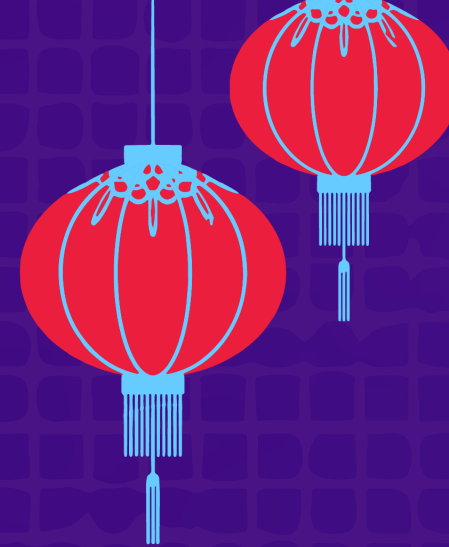
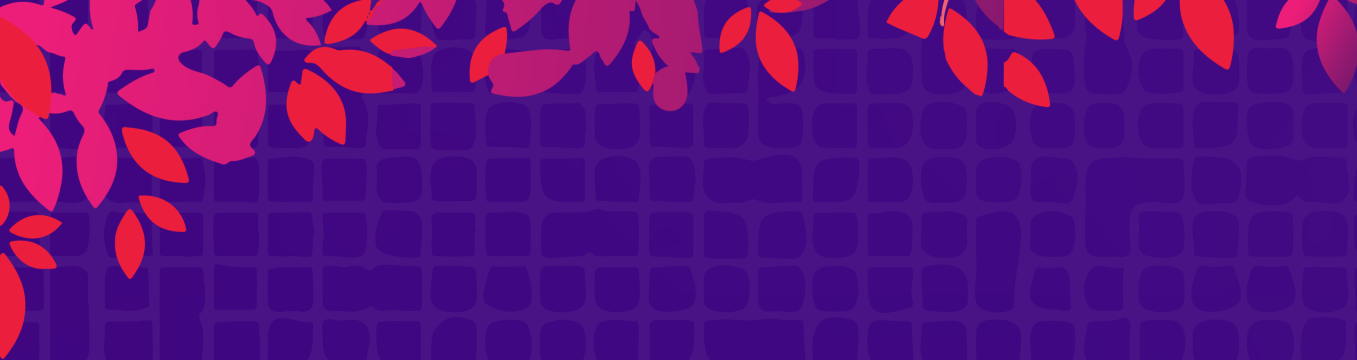
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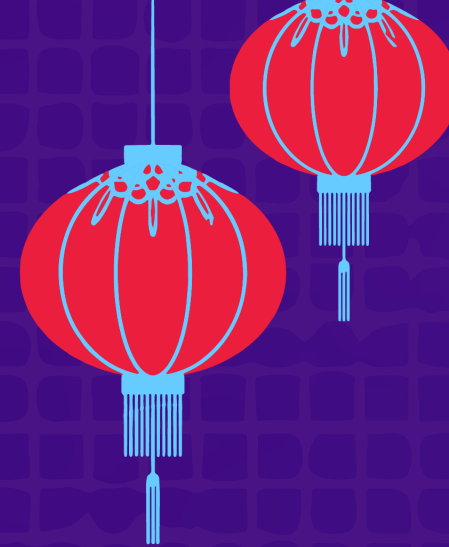
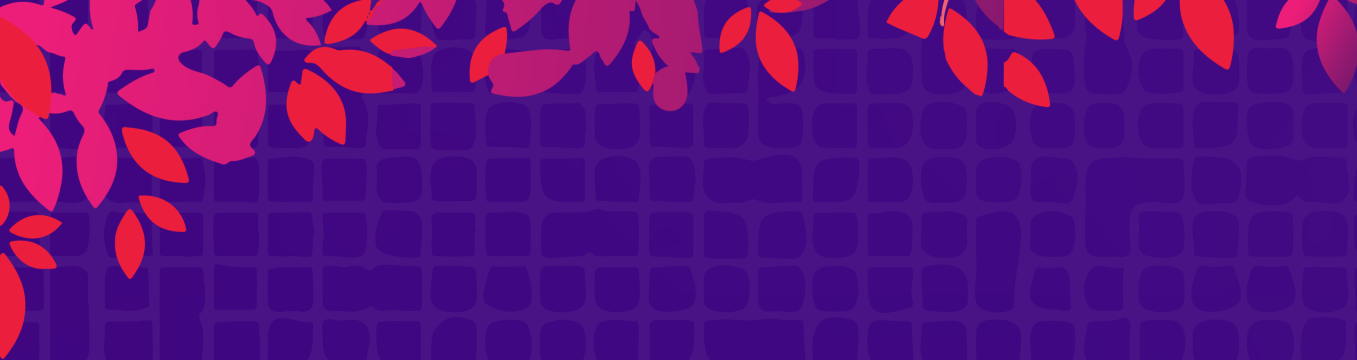


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Why this cluster is suitable? only for stylish?





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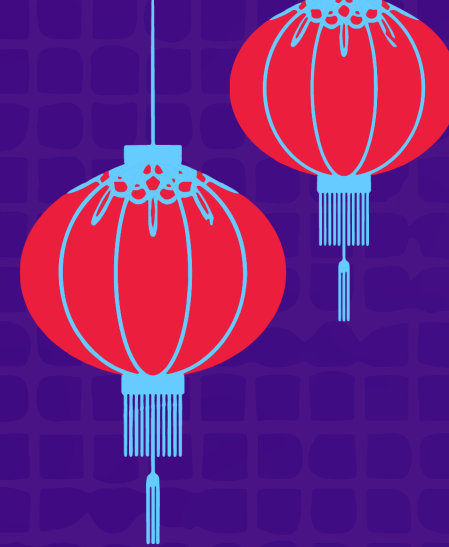
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I'd like to...

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





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I'd like to...

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



Create cluster [hardware]



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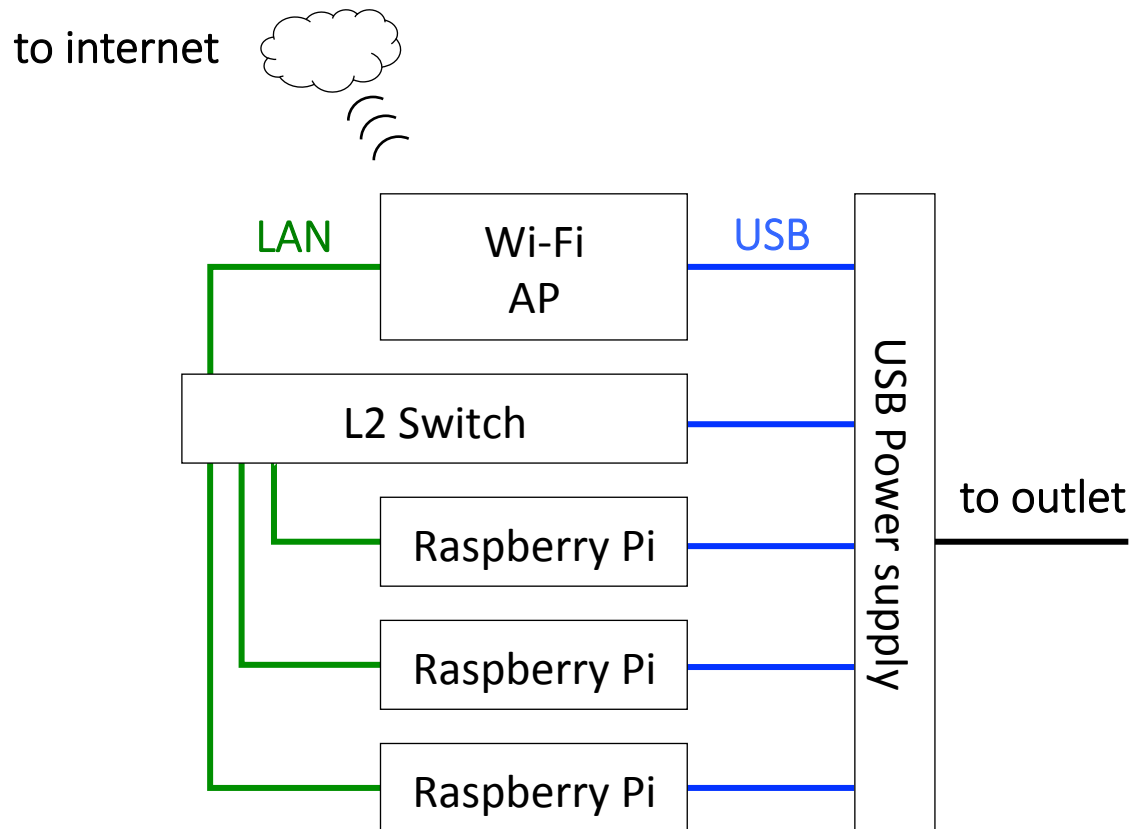
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- Palm-sized is important
- Sophisticated architecture for single electrical outlet



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

Create cluster [hardware]



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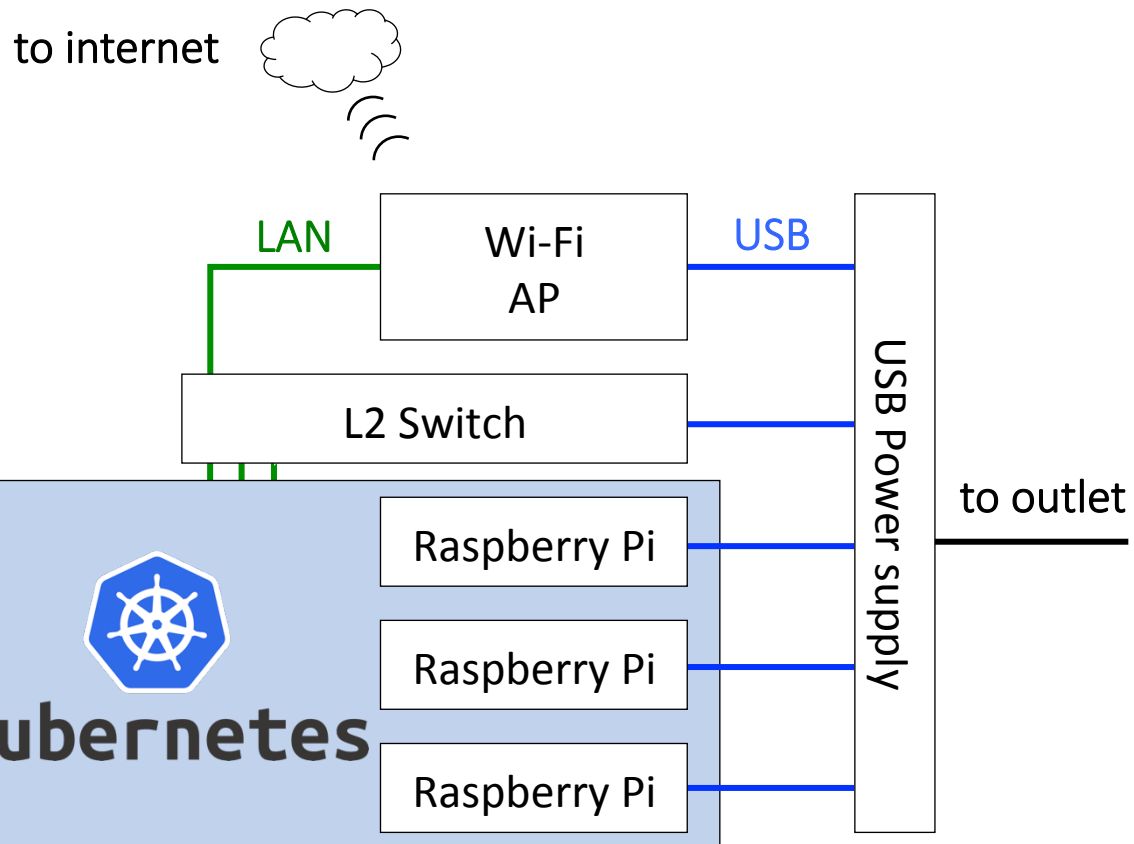
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- Palm-sized is important
- Sophisticated architecture for single electrical outlet



- USB power is supplying to
 - Raspberry Pi * 3
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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



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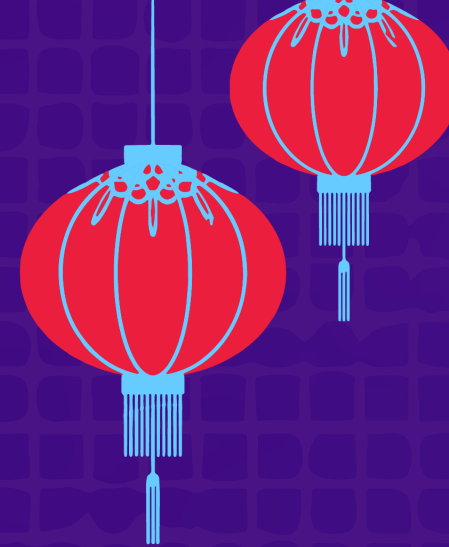
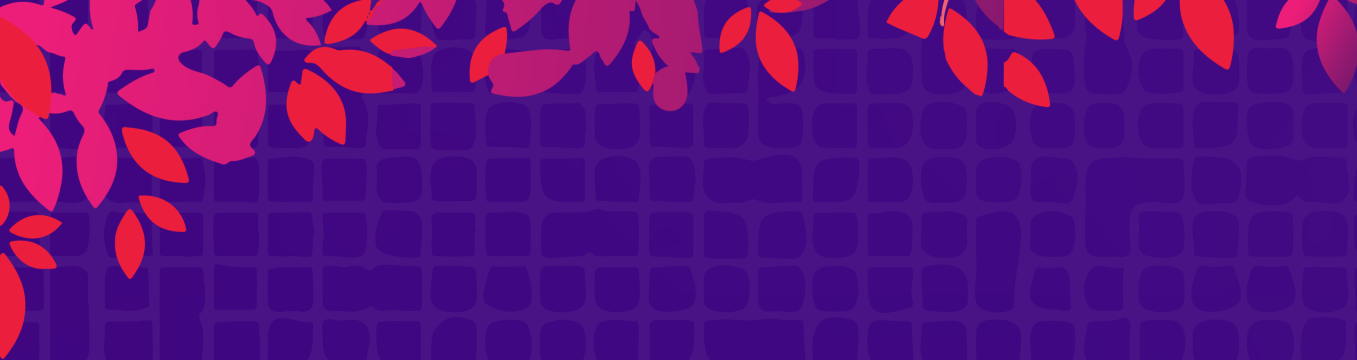
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- we can try some components easily
 - MetalLB (<https://metallb.universe.tf/>)
 - L2 ARP load balancing has little risk
- You can do any testing for both infrastructure and your application



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But, it's just boring



Cluster of Cluster



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



Future work



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

!!!NOTE!!!



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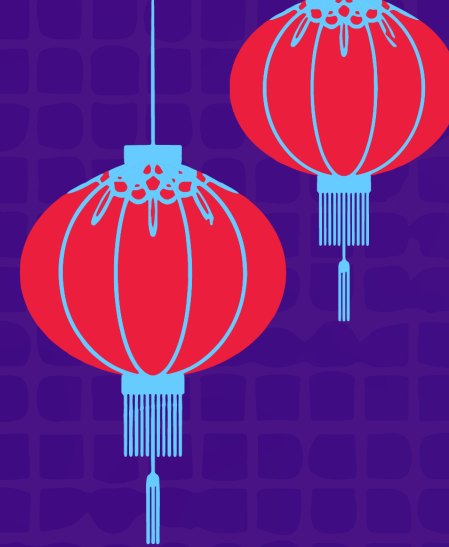
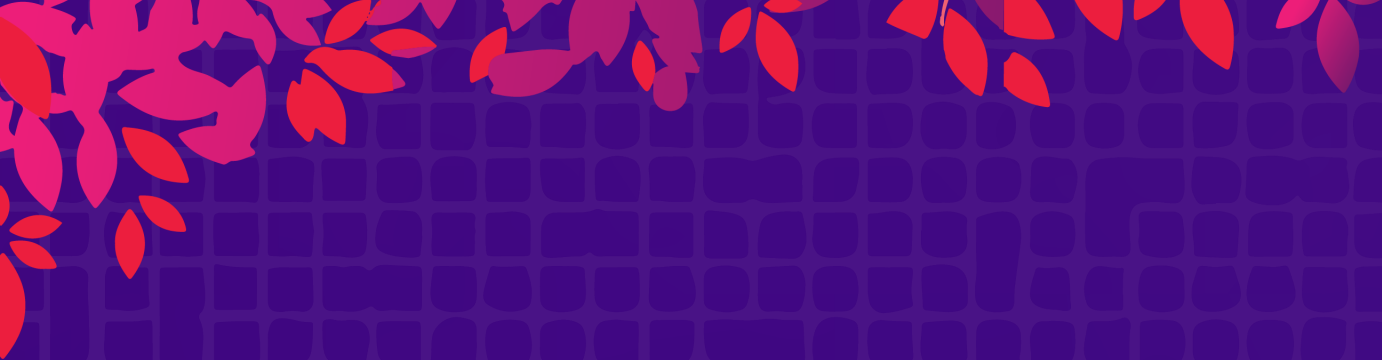


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Of course, we use a good cluster at work.

this is like hobby and for students :)



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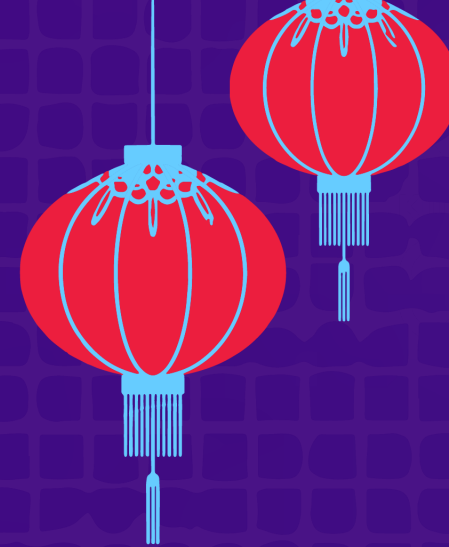
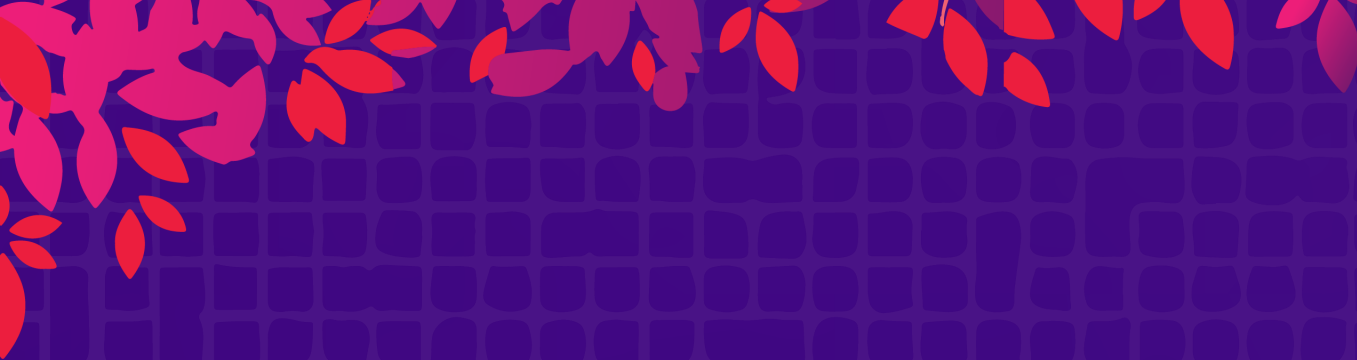


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**We like Kubernetes?
Get your palm-sized
personal kubernetes cluster :)**





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Thank you for your attention

Twitter: @amsy810

