Kubernetes and the serverless future

Where are my nodes?
Thank you!
About you!
Where we came from

Kubernetes API
Where we are going

Kubernetes API

Azure
Nodes in Kubernetes

Kubernetes API
But what is “serverless”?
But what is “serverless”?
But what is “serverless”?
But what is “serverless”?
Programming Models on Kubernetes

- Functions as a Service (e.g. Azure Functions Runtime)
- Helm Package Manager

Kubernetes API
Serverless Infrastructure

Vs.

Azure
Orchestration vs. Scheduling

Scheduled Job

Service LoadBalancer

Azure
Orchestration vs. Scheduling

Scheduled Job

Service LoadBalancer
Nodeless Kubernetes

Scheduled Job

Service LoadBalancer
Nodeless Kubernetes + Serverless
Nodeless Kubernetes + Serverless

kubectl create -f rs.yml
Nodeless Kubernetes + Serverless

kubectl create -f svc.yml

Service LoadBalancer
Nodeless Kubernetes + Serverless

kubectl logs ...
Nodeless Kubernetes + IoT

kubectl apply
-f ...

Azure
Nodeless Kubernetes + Nodes

kubectl create -f ...
Open Questions

???

Azure
Open Questions
Open Questions: Scheduling
Open Questions: Networking

Kube-Proxy

Azure
The Virtual Kubelet Project

- [https://github.com/virtual-kubelet/virtual-kubelet](https://github.com/virtual-kubelet/virtual-kubelet)
- Apache 2.0 and community led.

- Providers for:
  - Azure Container Instances
  - Alibaba Cloud Elastic Container Instances
  - Hyper.sh
  - Amazon Fargate
  - ...
The Virtual Kubelet Approach
The Virtual Kubelet Approach
The Virtual Kubelet Approach
The Virtual Kubelet Approach
Trying out Nodeless Kubernetes

az aks create ...

az aks install-connector ...

kubectl create -f ...
Speaking of Azure Kubernetes Service

• Azure Kubernetes Service is in 15 regions around the world
Speaking of Azure Kubernetes Service

- Azure Kubernetes Service is in 16 regions around the world
Azure Kubernetes Service in China!
Thank you!

• @brendandburns
• Visit us at the booth!

• [https://aka.ms/LearnAKS](https://aka.ms/LearnAKS)
• [https://helm.sh](https://helm.sh)
• [https://draft.sh](https://draft.sh)
• [https://github.com/Azure/vscode-kubernetes-tools](https://github.com/Azure/vscode-kubernetes-tools)
• [https://github.com/virtual-kubelet/virtual-kubelet](https://github.com/virtual-kubelet/virtual-kubelet)