Deep Dive into Virtual Kubelet

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why are we here?

what is Virtual Kubelet?

What is a Kubelet?

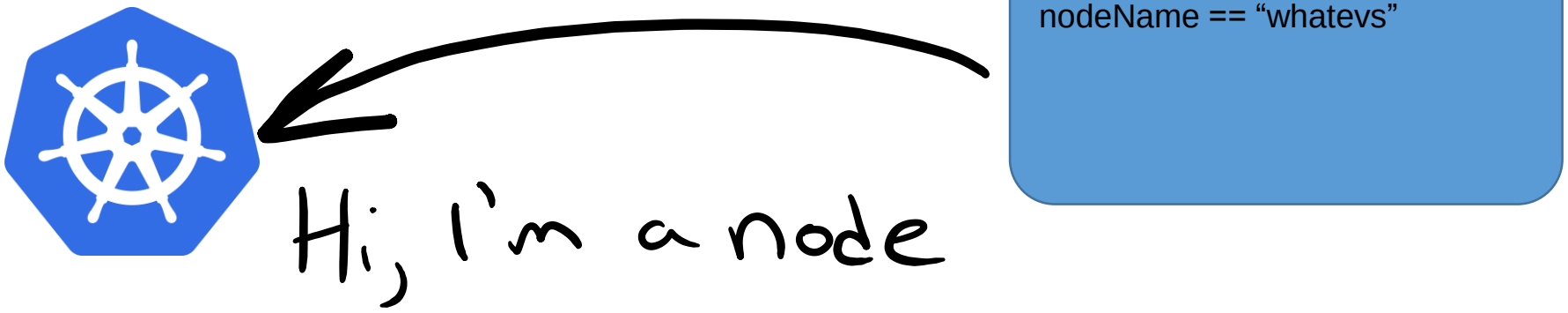
kubelet

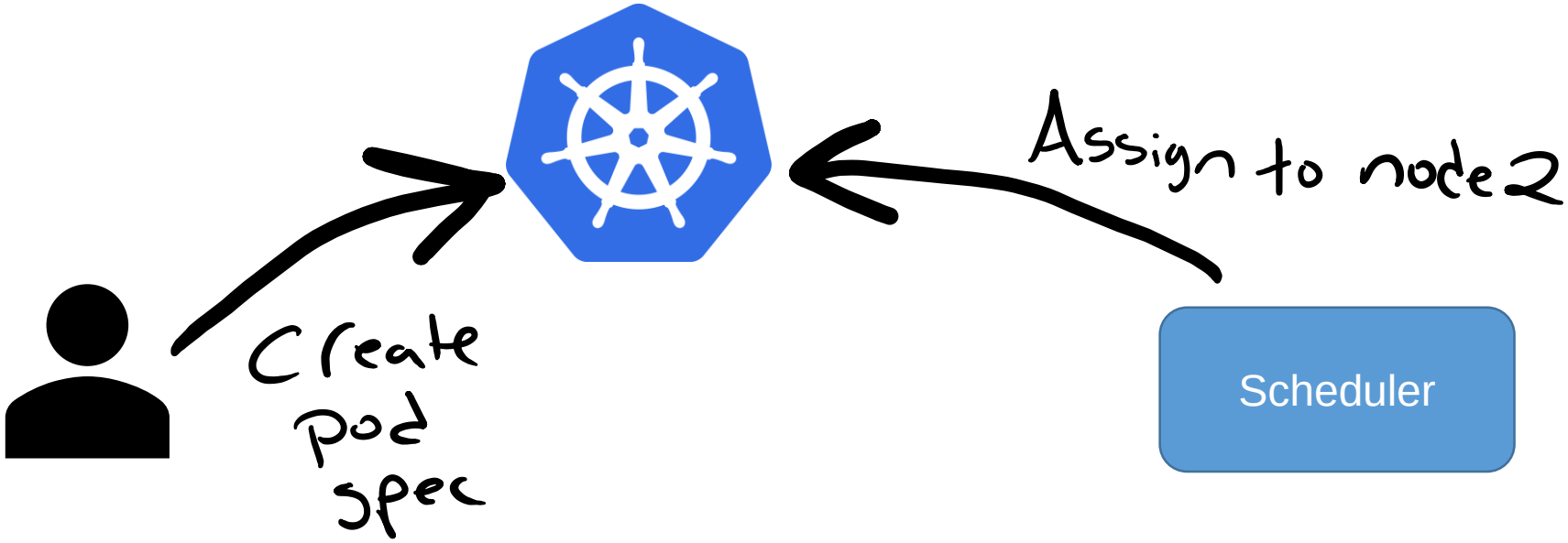
kube•let

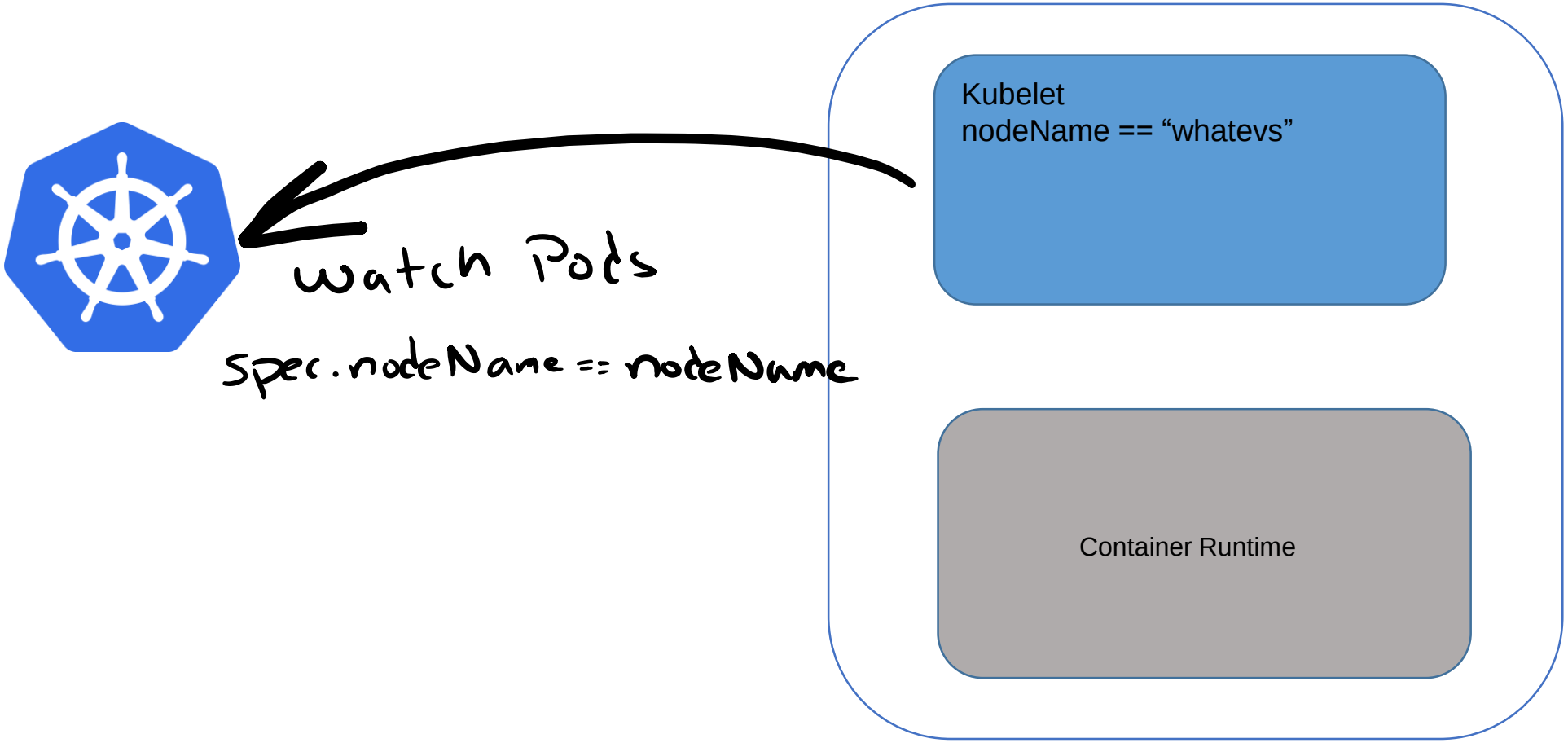
noun

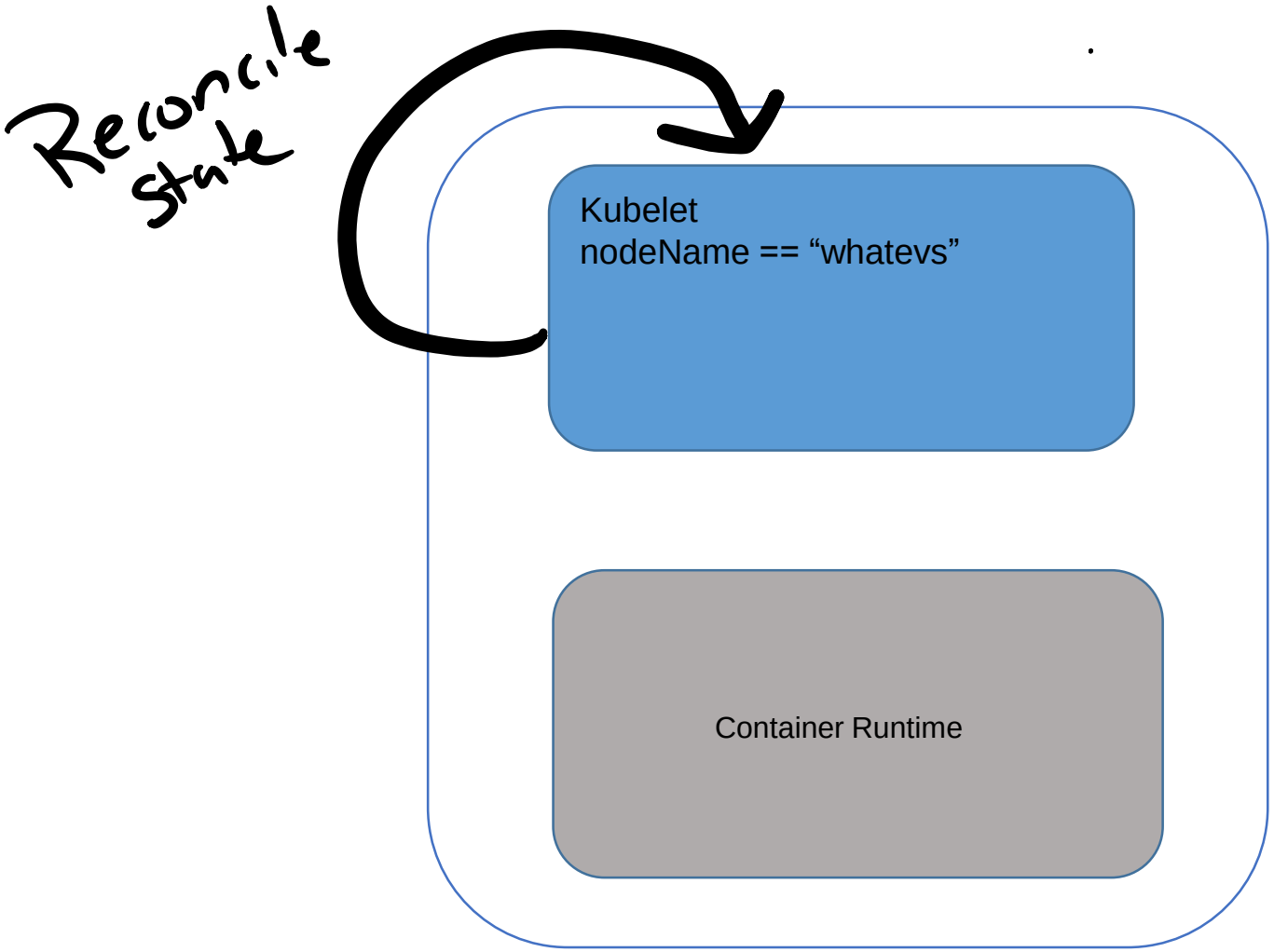
An agent that runs on **each node** in the cluster. It makes sure that **containers are running** in a pod.

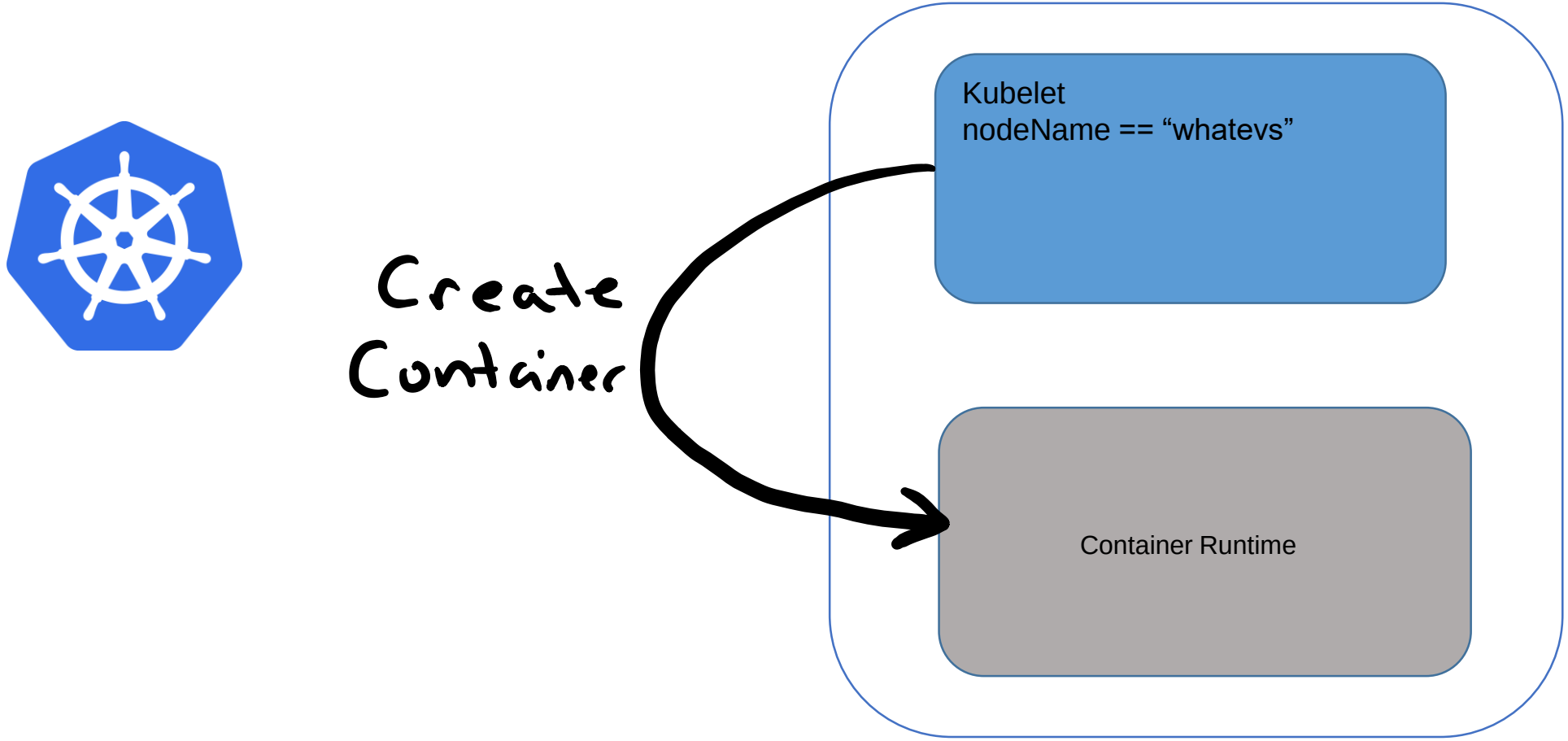
How it actually works….



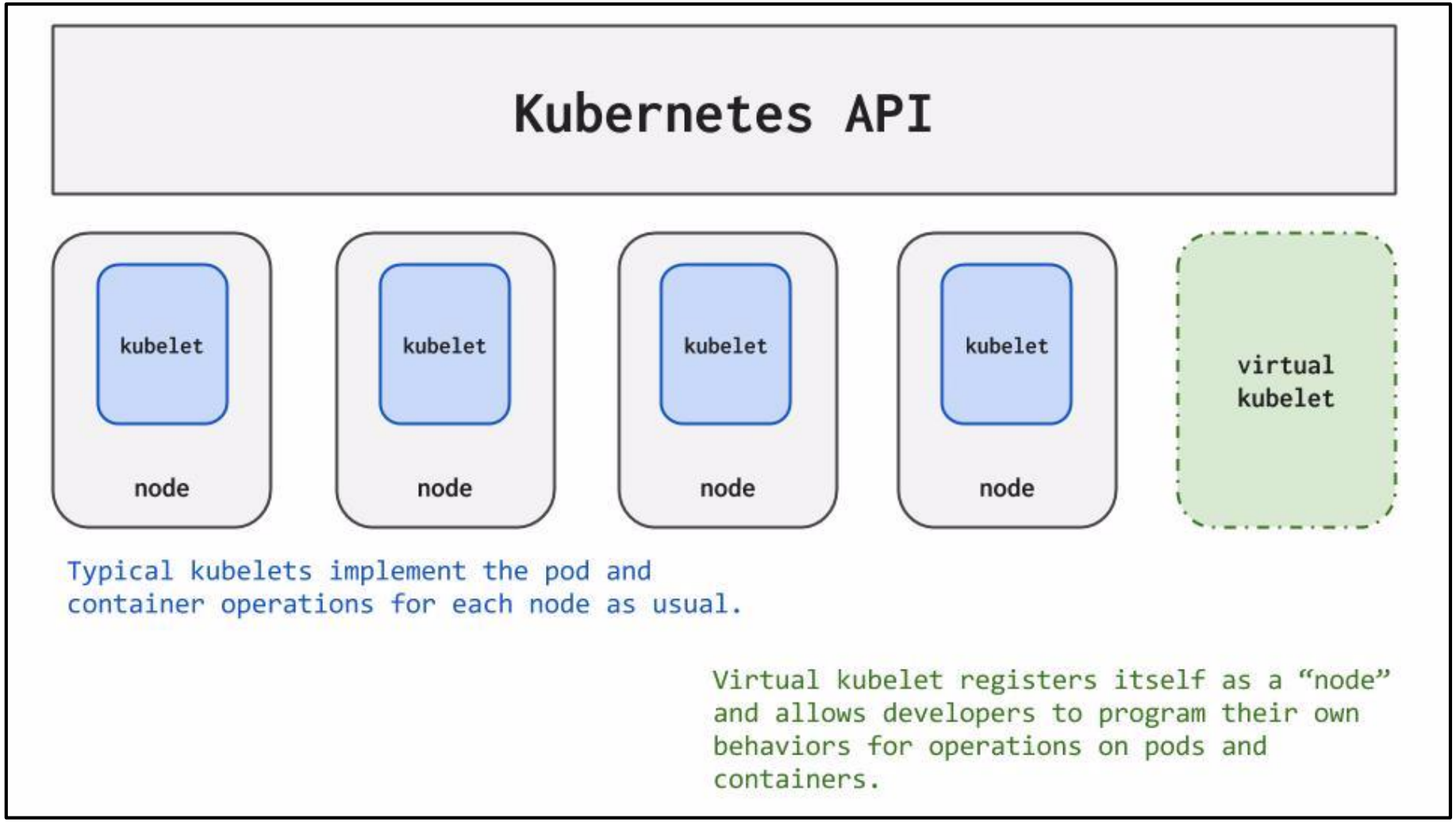

Assign to node2
Create
Pod
Spec
Scheduler


Kubelet
nodeName == “whatevs”
watch Pods
spec.nodeName == nodeName
Container Runtime


Reconcile state
Kubelet
nodeName == “whatevs”
Container Runtime


Create
Container
Kubelet
nodeName == “whatevs”
Container Runtime

What is Virtual Kubelet?



When would you use VK?

If you are working with a host/VM, use the Kubelet

Integrate at the CRI level

Otherwise

Send Kubernetes workloads to any service you like

- Burst to cloud Container as a Service or other serverless platforms
- Bridge to another orchestrator
- Schedule to IoT control planes
- Order pizza

How it works...

How it works...

How it actually works...

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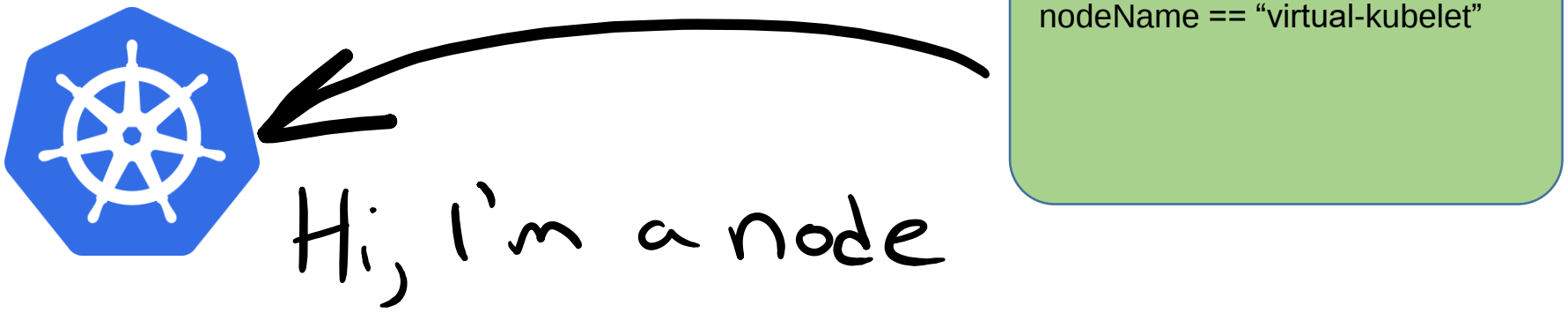
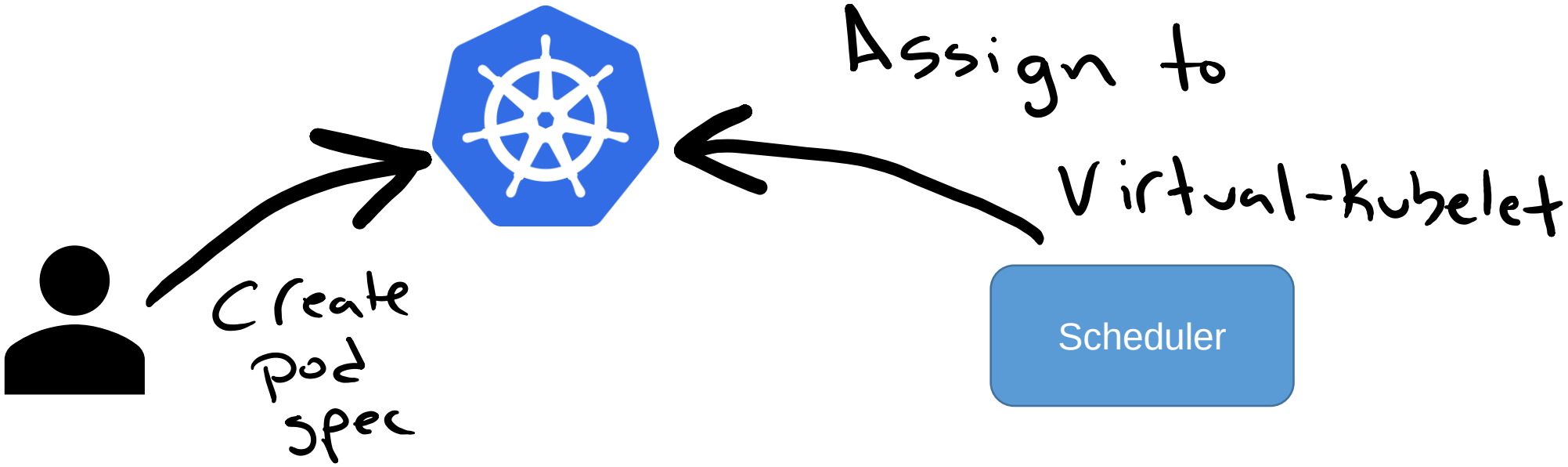


How it actually works...

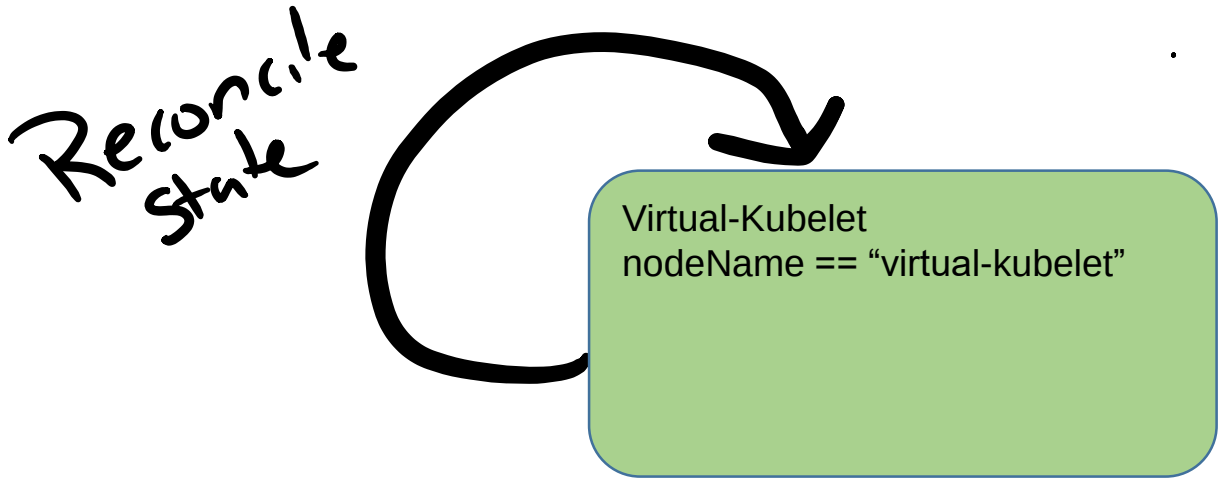


How it actually works...

Virtual-Kubelet
nodeName == “virtual-kubelet”

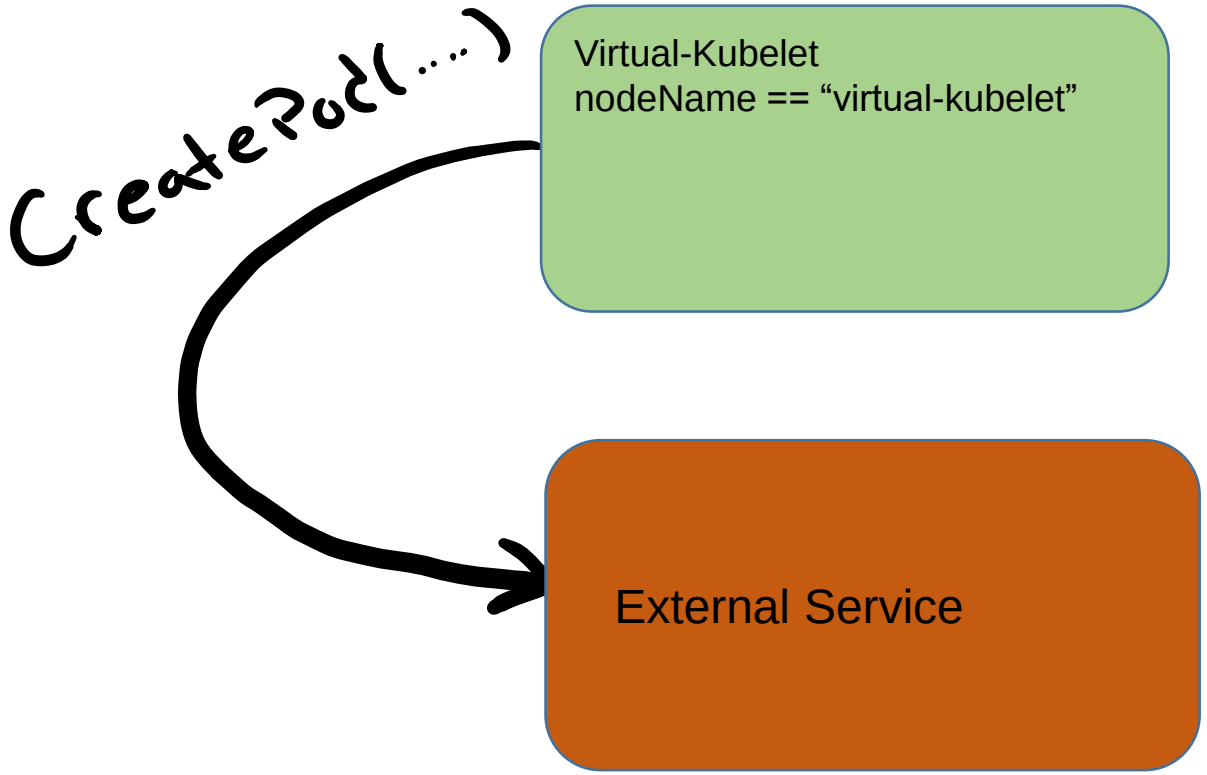
External Service

How it actually works...

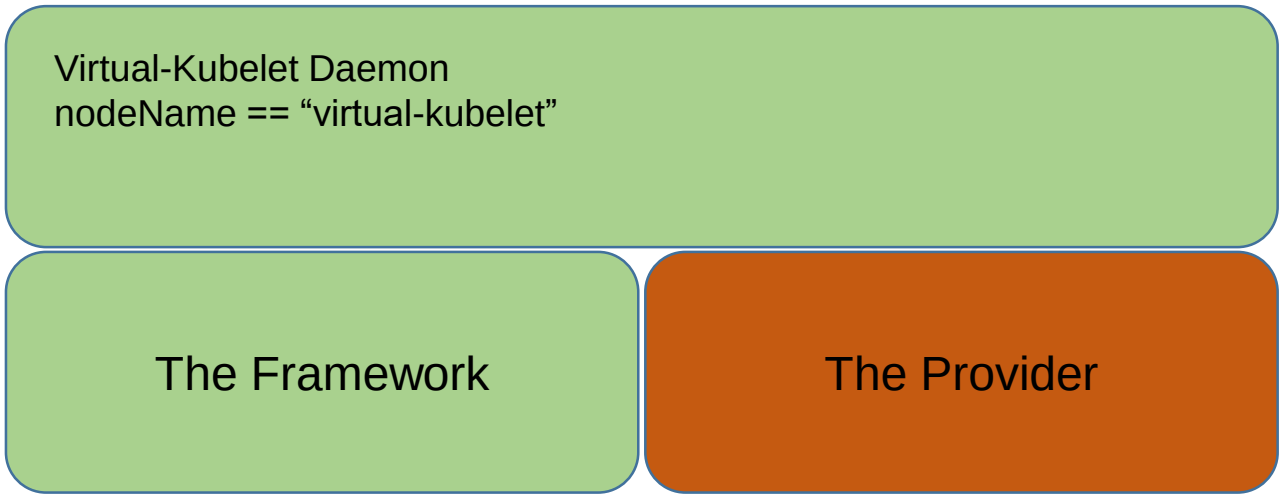


External Service

How it actually works...



Anatomy of a Virtual Kubelet



Provider definition

- Provide the back-end plumbing necessary to support the lifecycle management of pods, containers and supporting resources in the context of Kubernetes.
- Conform to the current API provided by Virtual Kubelet.
- No direct access to Kubernetes API

Current Providers

- Azure - ACI
- AWS
- Alibaba
- Huawei
- VMWare
- Azure - IoT Edge

Provider Interface

Code example!

VK Framework

- Works from shared informer cache
- State Reconciliation
- HTTP Server
- Tracing
- Logging

VK Framework

Code example!

The Road Ahead

- Port forwarding
- Metrics for VK itself
- External volumes
- Split VK Core from daemon setup/config
- Support pod updates

See issues tagged with vk1.0 label

Things we need help with

- Shore up provider interface
- More e2e tests
- Pass K8s conformance tests (where it makes sense)
- VK as a framework
- ...
- Bugs, missing features...

JAMES MONTGOMERY FLAGG
I WANT YOU
FOR
Virtual Kubelet
github.com/virtual-kubelet

Join Us

http://github.com/virtual-kubelet/virtual-kubelet

Slack channel in Kubernetes #virtual-kubelet

VK Community meetings every other week on Tuesday's at 11am PST

Virtual Kubelet is a CNCF Sandbox project!

Q&A

KubeCon
CloudNativeCon
North America 2018