

# THE STATE OF KUBERNETES ON-PREM IN 2024

**Hardware is hard, Kubernetes makes it harder**

# MY FIRST ON-PREM KUBERNETES CLUSTER

- Maui
- Pua
- Tui
- Tepo
- Heihei
- Dumbo

# MY HOME LAB CLUSTER

- Never
- Gonna
- Give-you
- Up



WHY?

# BECAUSE...

- You have to
- You want to
- You need to understand how it works
- You care about performance
- Artificial limits shouldn't be core infrastructure
- You have too much free time
- You need a challenge
- You would need something to attach your identity to

# WHERE ARE YOU RUNNING KUBERNETES?

## DATA CENTER

- Existing resources
- Non-k8s workloads
- Company politics

## EDGE

- Limited capacity
- Network connectivity
- Security
- Cooling

## HOME

- Your family
- Pets
- Electricity
- Noise
- Bandwidth
- On-call rotation

# WHAT ARE YOU RUNNING KUBERNETES ON?

## HARDWARE

- Inventory
- Provisioning
- Storage
- Networking
- OS

## VM

- ~~Inventory~~
- ~~Provisioning~~
- ~~Storage~~
- ~~Networking~~
- OS

## HOME

- How many raspberry pis do you need?
- What are you doing with that old laptop?

# PROVISIONING OPTIONS

- Foreman/Cobbler (RHEL)
- MaaS/juju (Ubuntu)
- Omni (Talos)
- Typhoon/Matchbox (Flatcar)
- Tinkerbell
- Metal3
- Ironic
- Digital Rebar



# WHAT ARE YOUR PRODUCT OPTIONS?

- Rancher
- kubespray
- OpenShift/OKD
- Omni
- microk8s
- Tanzu
- EKS Anywhere
- Anthos (GKE Enterprise)
- Nutanix Kubernetes Engine (Karbon)

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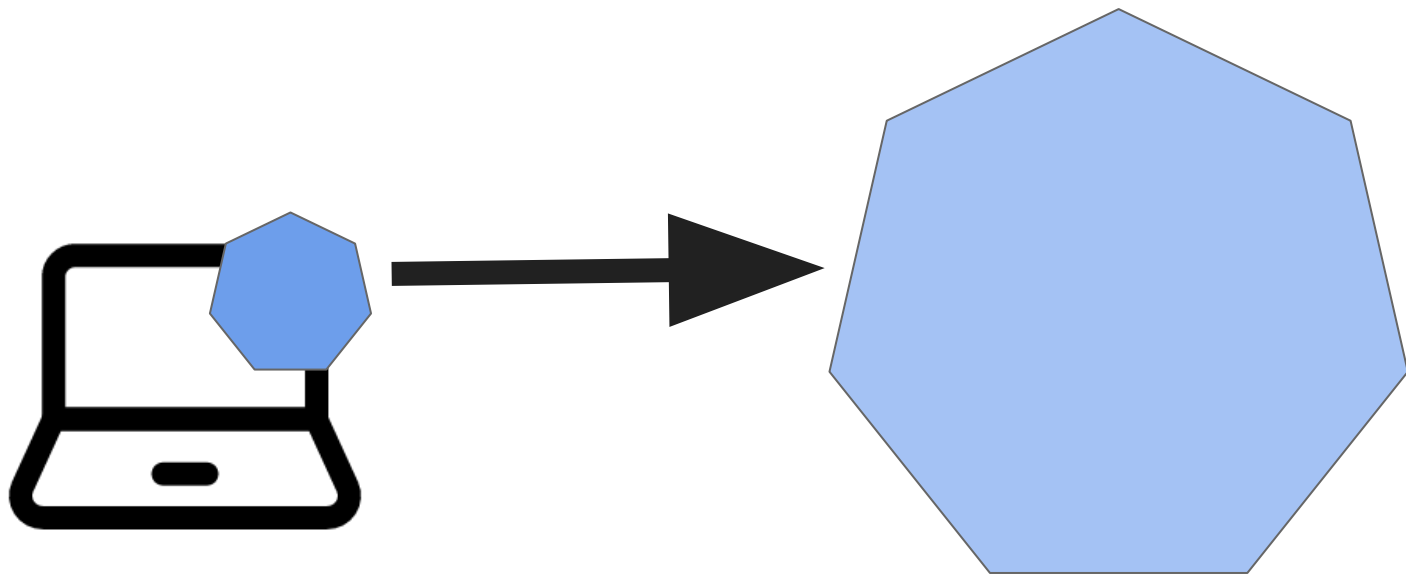
# WHAT ARE YOUR TECHNOLOGY OPTIONS?

- kubeadm
- cloud-init/ignition
- Packer
- API
- Cluster API (CAPI)

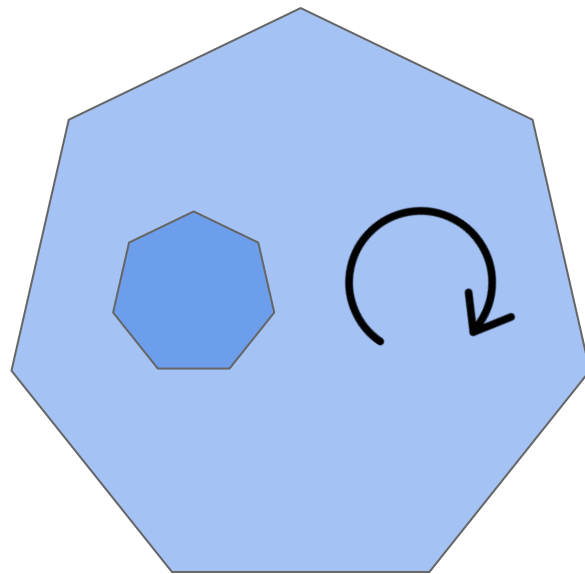
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- API
- ~~Cluster API (CAPI)~~ kubeadm via ssh

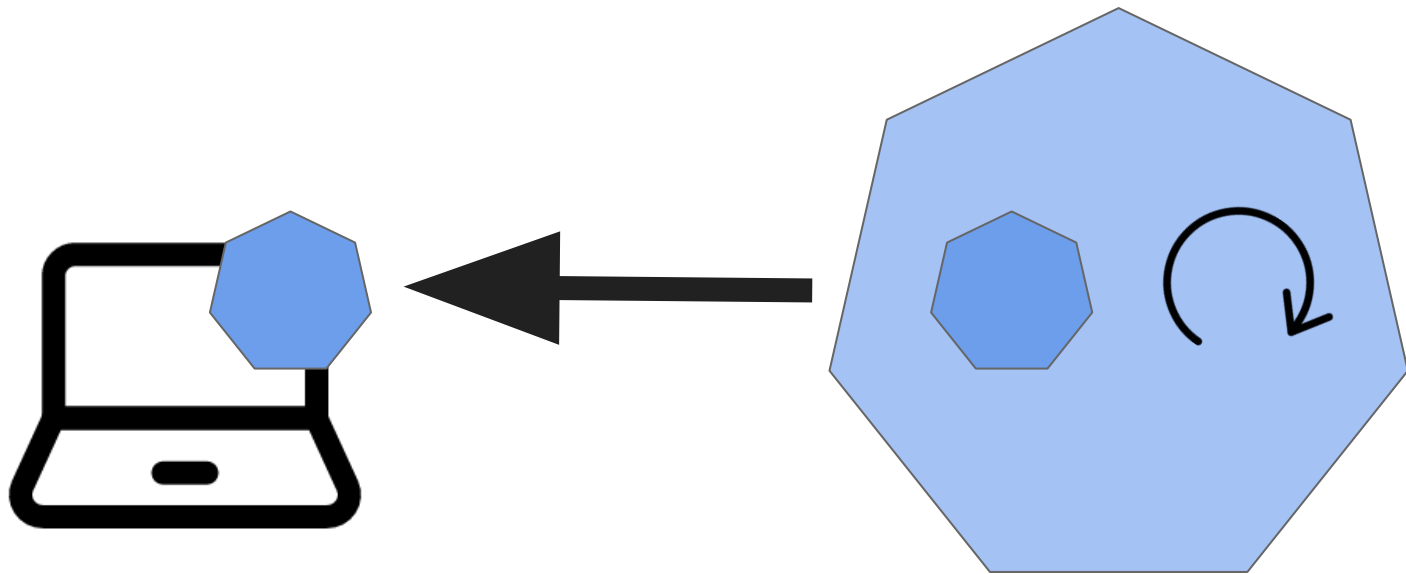
CAPI



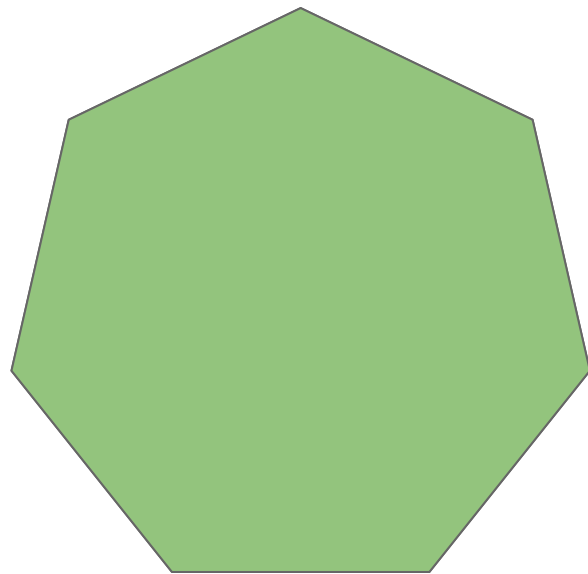
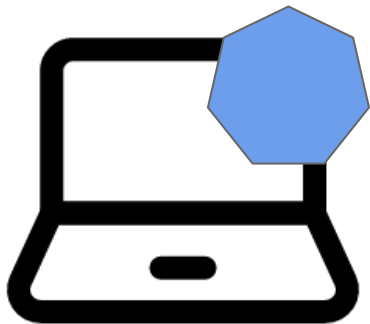
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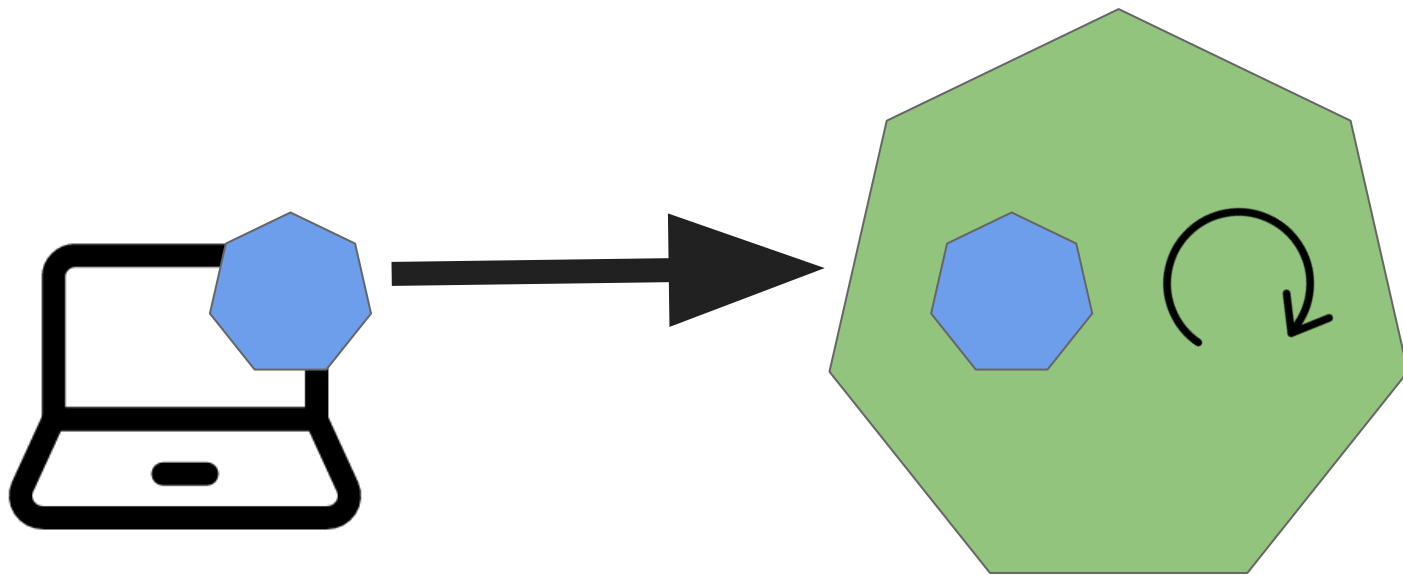


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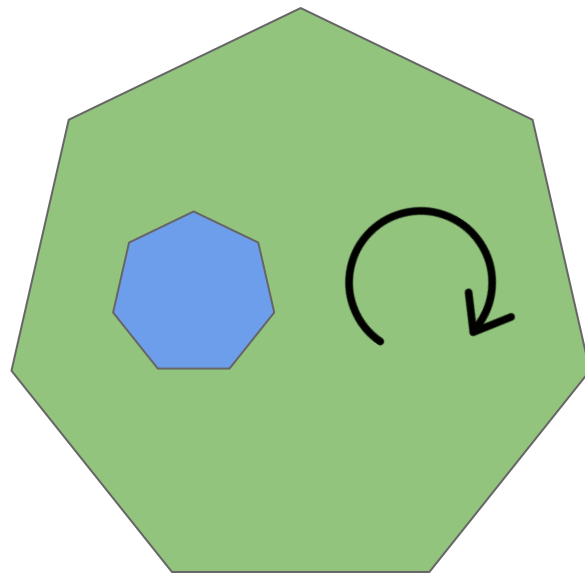




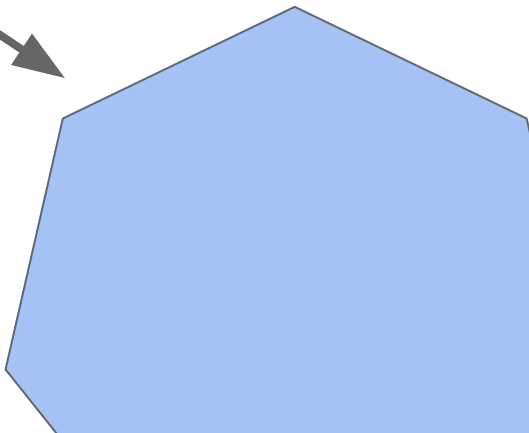
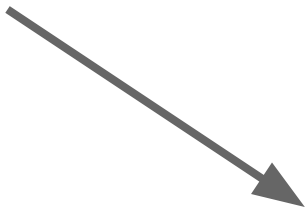
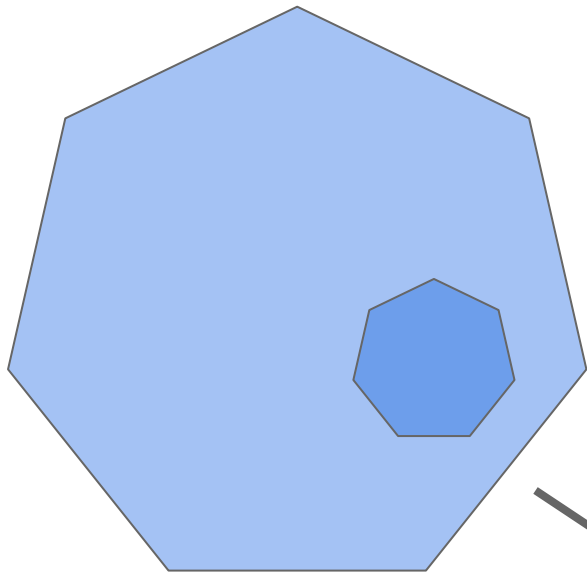
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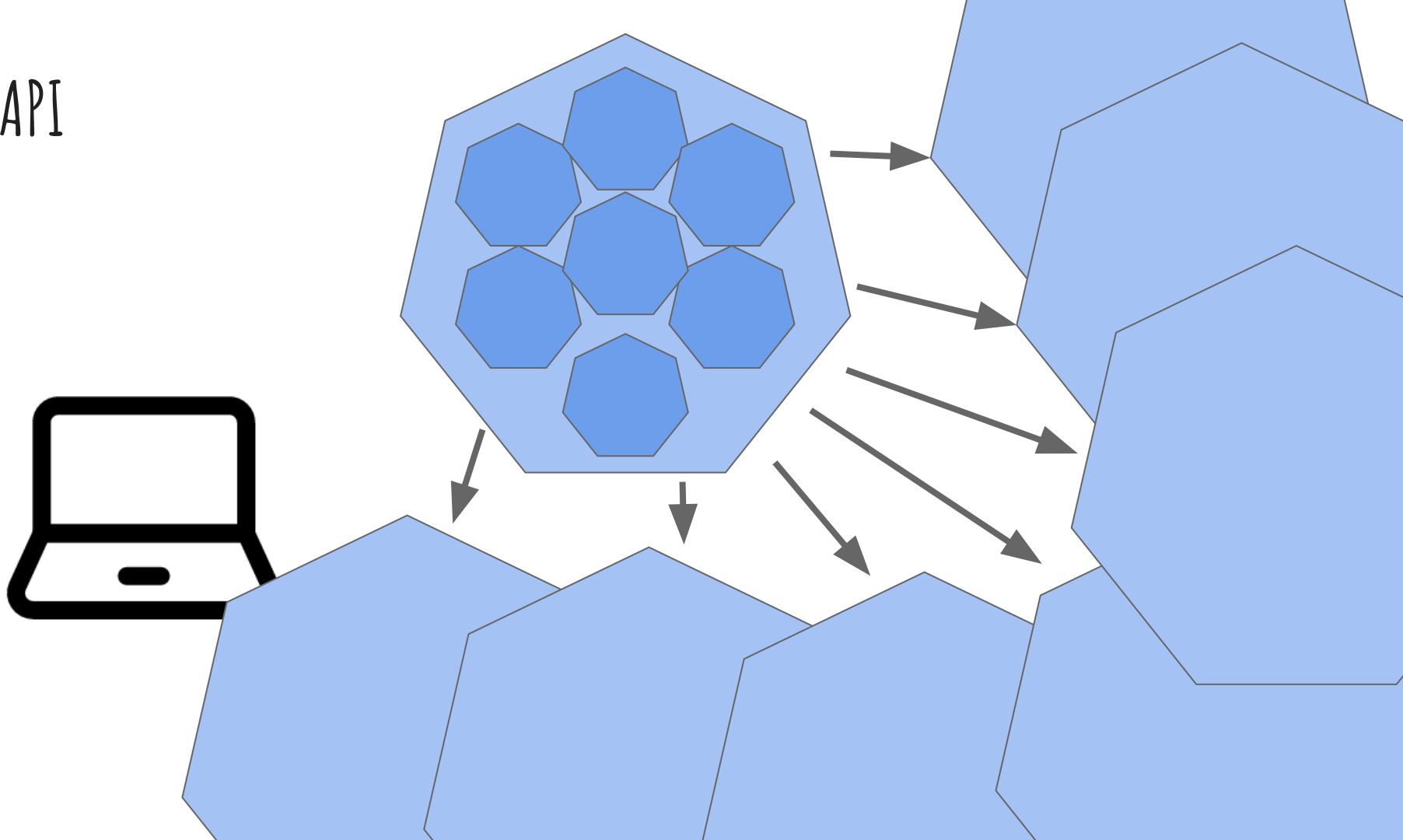
CAPI



CAPI



CAPI



# KUBESPRAY

- Ansible (ssh)
  - Kubeadm
  - Multiple OS support
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# RANCHER/RKE2

- Lots of features
  - K3s based
  - Cloud provisioning
  - CAPI based
  - Elemental OS (openSUSE)
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# OPENSIFT/OKD

- Lots of opinions
  - Fedora/RHEL CoreOS
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# EKS ANYWHERE

- CAPI based
  - Tinkerbell provisioning
  - Ubuntu
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# OMNI

- APIs all the way down
  - Hosted option
  - Talos Linux
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