# Kubernetes Göteborg

# minikube

Run Kubernetes locally

# Minikube

Minikube is a tool that makes it easy to run Kubernetes locally.

*"Minikube runs a single-node Kubernetes cluster inside a Virtual Machine (VM)
on your laptop for users looking to try out Kubernetes or develop with it day-to-day"*

```
$ minikube start
```

- Linux
- macOS
- Windows

## https://github.com/kubernetes/minikube

Part of Kubernetes Cluster Lifecycle SIG

https://kubernetes.io/blog/2019/03/28/running-kubernetes-locally-on-linux-with-minikube-now-with-kubernetes-1.14-support/

# Building blocks

- **Linux (operating system)**

- **VirtualBox (hypervisor)**

- **Docker (container runtime)**

- **Kubeadm (bootstrapper)**

*Optional client components:*

- **Docker (i.e. docker client)**

- **Kubectl (kubernetes client)**

# Machine

## Docker Machine lets you easily create Docker hosts

*"Machine lets you create Docker hosts on your computer [...] It creates servers, installs Docker on them, then configures the Docker client to talk to them."*

```
$ docker-machine create default
```



**https://docs.docker.com/machine**

# Demo - Machine

# Kubeadm

## Easily bootstrap a secure Kubernetes cluster

*"performs the actions necessary to get a minimum viable cluster up and running. By design, it cares only about bootstrapping, not about provisioning machines."*

```
$ kubeadm init
```

### kubeadm config images list

```
k8s.gcr.io/kube-apiserver:v1.16.3
k8s.gcr.io/kube-controller-manager:v1.16.3
k8s.gcr.io/kube-scheduler:v1.16.3
k8s.gcr.io/kube-proxy:v1.16.3
k8s.gcr.io/pause:3.1
k8s.gcr.io/etcd:3.3.15-0
k8s.gcr.io/coredns:1.6.2
```

https://kubernetes.io/blog/2016/09/how-we-made-kubernetes-easy-to-install/

# Linux Distributions
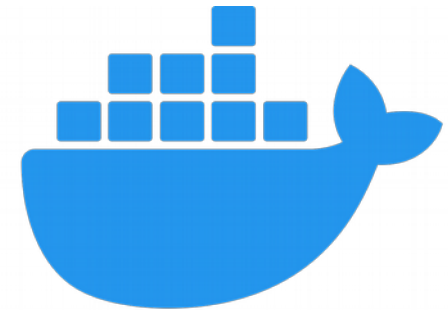
- ~~Boot2Docker~~

- **Buildroot**
  - 2018.05
  - 2019.02

- **Ubuntu**
  - 16.04 LTS
  - 18.04 LTS

- **CentOS**
  - 7 (≈ fc18)
  - 8 (≈ fc28)

# Packages

- **Docker (CE)**
  - `docker-ce`
  - `docker-ce-cli`
  - `containerd.io`
- **Kubernetes**
  - `kubeadm`
  - `kubelet`
  - `kubectl`

# Alternatives

- **Alternative hypervisors**

  – Libvirt/KVM(Linux)

  – HyperKit (macOS)

  – Hyper-V (Windows)

- **Alternative runtimes**

  – containerd <https://containerd.io/>

  – CRI-O <https://cri-o.io/>

  – gVisor <https://gvisor.dev/>

# Demo - Minikube

# History



- **Since 2016**

- **Boot2Docker**

  - Memory-based tiny core linux

  - Replaced with custom .iso image

- **Localkube**

  - All-in-one kubernetes binary

  - Replaced with standard installer

https://kubernetes.io/blog/2016/07/minikube-easily-run-kubernetes-locally/

# Future

- **Cross-platform improvements**
  - Linux "kubernetes in container"
  - macOS
  - Windows
- **Optional Multi-node (init / join)**
  - Master *or "control-plane node"*
  - Minion(s) *or "worker node"(#1111)*
  - Registry

# Contributors

- Become a Kubernetes contributor!

- Inclusive and community-driven

- Kubernetes Slack (#minikube)

- SIG Cluster Lifecycle

  - Kubeadm

  - Minikube

https://github.com/kubernetes/community/tree/master/contributors/guide

# Questions?

Anders F Björklund

github.com/afbjorklund

For more info on minikube:

https://minikube.sigs.k8s.io/