zühlke
empowering ideas

Living with Kubernetes clusters

A hands-on journey through Kubernetes cluster ecosystem

Marjan Bugarinovic | May 2025 | ESC Camp 2025

Agenda

Or – what we'll do here?

01

Introduction round

02

Workshop setup and Goals

03

Kubernetes architecture (TL;DR)

04

Hands-on Labs

Scan to join shared Notepad

For link share, general note taking and observations

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01 Introduction round

- Hello, I'm …
- I'm coming from …
- Working as …
- In my spare time I like to …

02

Workshop setup

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YOU'RE ON YOUR OWN, PAL.

#NEWAMSTERDAM

NBC

Open concept

Create cluster

Locally (k3s, k3d, minikube),
on cloud (AKS, EKS, GKE),
online labs (killercoda)

Focus on using K8s Docs

Individual or group

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Tools

- kubectl

- For AKS/EKS/GKE clusters we'll probably need native CLIs (e.g. az cli, aws cli, gcp cli)

- Linux VM to connect to the cluster (optional)

- K9s (optional)

- Join shared notebook

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Goals

What will you learn here?

>> How Kubernetes works

>> How can we deploy stuff there and work with them

>> Do we always need it

>> How to use Kubernetes Docs

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03

Kubernetes architecture (TL;DR)

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Kubernetes components

Control Plane

- Global decisions about the cluster

- Detect and respond to cluster events

- Consists of various components
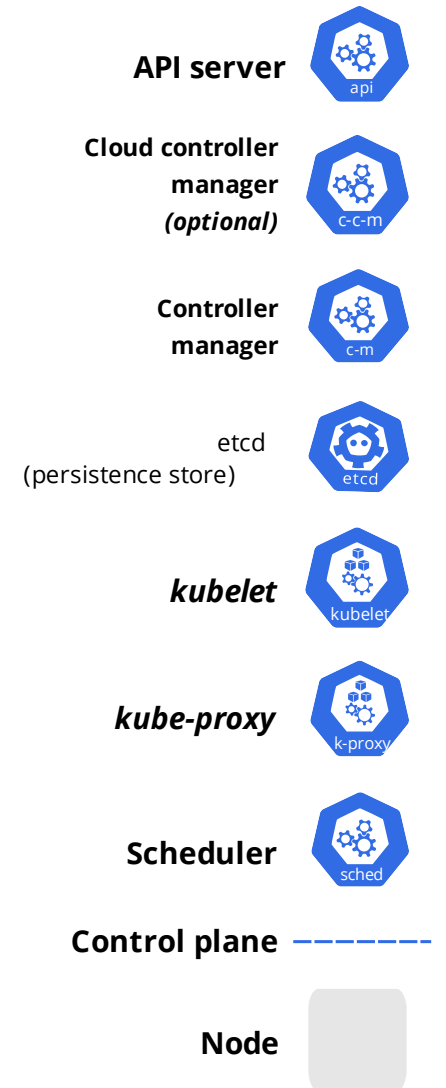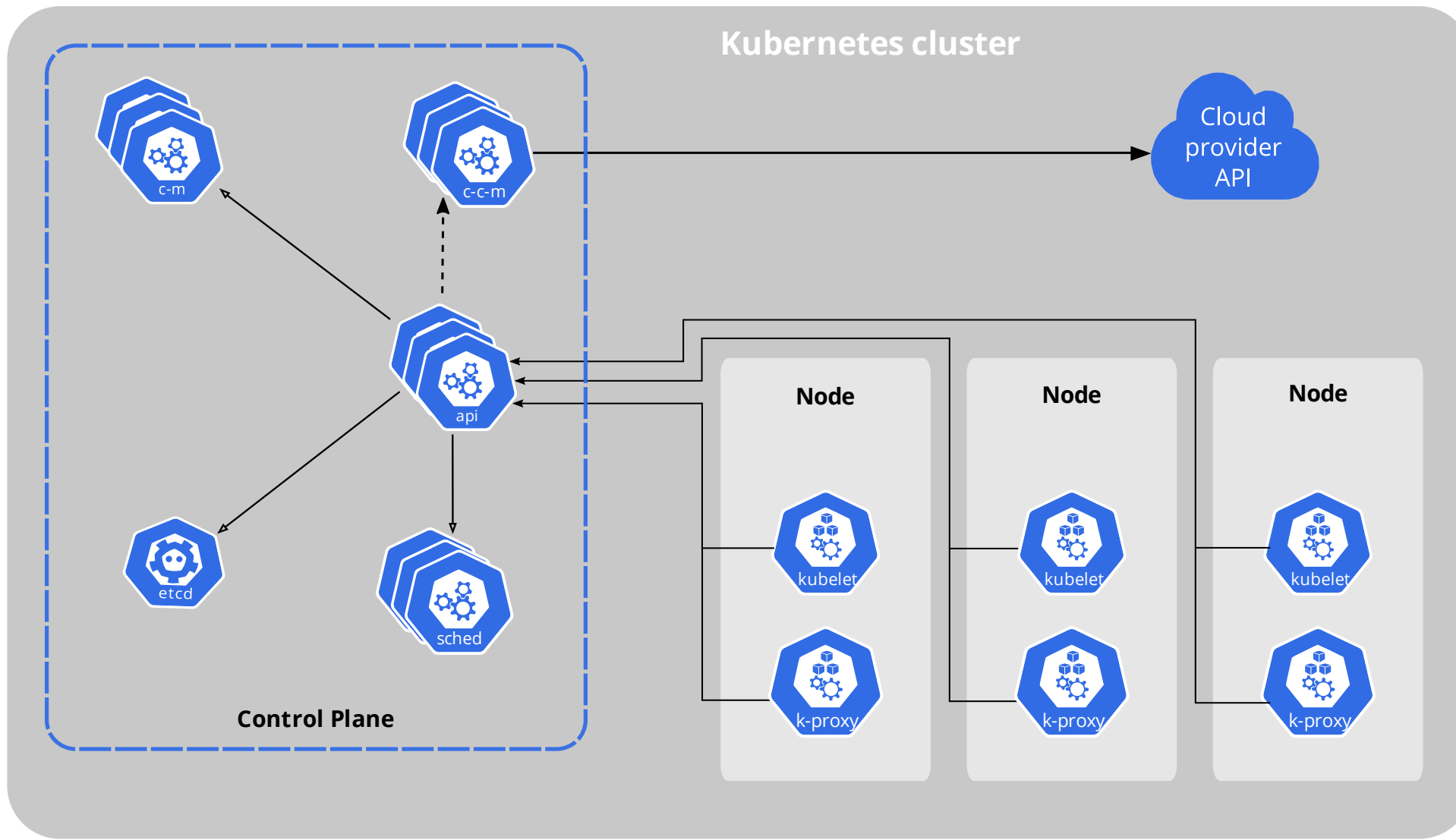
Worker Node

- Where actual work runs

- Running pods

- Provide K8s runtime environment

- Consists of various components

Control Plane components

- API Server

- etcd

- Scheduler

- Controller Manager

- Cloud Controller Manager

Node components

- Run on every node of the cluster

- kubelet

- kube-proxy

- Container runtime

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Kubernetes "implementations"

- **Single node implementations (test, dev, IoT)**

  - minikube, kind, k3s, k3d, mikrok8s

- **Manual cluster installation**

  - Via kubeadm

  - Kubernetes the Hard Way

- **Automated installations**

  - Rancher Kubernetes Engine (RKE), Kubespray, Kubernetes Operations (kops), spinnaker.io, EKS Anywhere…

- **Managed installations**

  - Google Kubernetes Engine (GKE), Azure Kubernetes Service (AKS), AWS Elastic Kubernetes Service (EKS)

04

SCAN ME

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Have fun!