So you want to be a Kubestronaut?

Paul Yu
Cloud Native Developer Advocate
Microsoft

Agenda

14:00	Kubestronaut overview
14:30	Virtual machine setup
15:00	5 min break
15:05	Kubernetes cluster setup
15:35	KCNA exercises
15:50	5 min break
15:55	KCSA exercises
16:05	CKAD exercises
16:25	CKA exercises
16:45	CKS exercises
17:00	Wrap up

Pre-requisites

Broadcom Support Account - https://support.broadcom.com/

Download VMware Desktop Hypervisor

Download Ubuntu Server 24.02 ISO image

Make sure you have at least 50GB of free hard drive space

Make sure you have at least 6GB of free memory available

What is a Kubestronaut?

Someone who has all five CNCF Kubernetes-related certifications in active status

https://www.cncf.io/blog/2024/03/22/announcing-the-kubestronaut-program

Benefits

The jacket

Credly badge

Access to Kubestronaut Slack channel and mailing list

Five 50% off certification exam coupons a year

Three 20% off CNCF events coupons a year

https://www.cncf.io/training/kubestronaut

Entry level exams

KCNA

Cloud native fundamentals and foundational knowledge of Kubernetes and tools within its ecosystem.

KCSA

Cloud native security fundamentals with emphasis on Kubernetes component security, workload security, and compliance/security frameworks

Intermediate to difficult exams

CKAD

Application developers start here to understand how to deploy, manage, scale, and secure applications on Kubernetes cluster

CKA

Administrator focused with emphasis on managing Kubernetes components for scale, resiliency, and security

CKS

Security focused with additional emphasis on Kubernetes component and workload deployment security and using security tooling within the wider ecosystem

https://www.cncf.io/training/certification/

What to expect

Deeper dive into the Kubernetes exams and tips for success

Kubernetes and Cloud Native

Associate level - multiple choice

Cloud Native architecture

Kubernetes fundamentals

Workload types (i.e., Deployment, ReplicaSet, DaemonSet, StatefulSet, Job, CronJob)

Service types

Ingress

Resiliency (i.e., PodDisruptionBudgets, PodAffinity, PodAntiAffinity)

Kubernetes and Cloud Native Security

Associate level - multiple choice

Kubernetes security fundamentals

Network Policy

Role Based Access Control

Security Frameworks (i.e., NIST, HIPAA, PCI DSS)

CIS Benchmarks

Certified Kubernetes Application Developer

Hands-on tasks

Kubernetes workload types (i.e., Deployment, DaemonSet, StatefulSet, Job, CronJob)

Building YAML from scratch or editing YAML (container command args)

Deploying with Helm and/or Kustomize

Resilient application deployments (i.e., PDB, liveness/readiness probes, affinity)

NetworkPolicy configuration and verification

Different types of ingress (i.e., Ingress-Nginx, Traefik)

Different types of container tools (i.e., Podman, Docker)

Certified Kubernetes Administrator

More hands-on tasks

Kubernetes cluster upgrade

Kubernetes component maintenance (i.e., kube-apiserver, etcd)

Troubleshooting kubelet

Workload deployments

RBAC configuration

Storage configurations

Certified Kubernetes Security Specialist

Security focused hands-on tasks

Control plane component configuration (i.e., kube-apiserver, etcd)

Runtime tools (i.e., falco, gVisor)

NetworkPolicy

ServiceAccount

Container image best practices

Finding and remediating vulnerabilities

TLS configuration for ingress

Tips and tricks

Use **kubectl** with **--dry-run=client -o yaml** flags to generate YAML manifests

Use **kubectl explain** to quickly reference API spec

Use **kubectl** with **--wait=false** flag to delete resources

Alias **kubectl** to **k** (and any other aliases to make life easier)

Quickly save and exit Vim with **Esc -> Shift + z, z** key commands

Delete multiple lines Vim with **X -> d, d** (where X is the number of lines to delete)

Prioritize easy questions, if a question takes too much time, flag it and move on

Practice

To be a Kubestronaut, you need to practice and be able to perform tasks quickly and efficiently

Paved path so that you can... practice

https://bit.ly/kubestronaut

Virtual machine setup

Download VMware software

Create Ubuntu Server 24.04 VM

Clone and configure

Kubernetes cluster setup

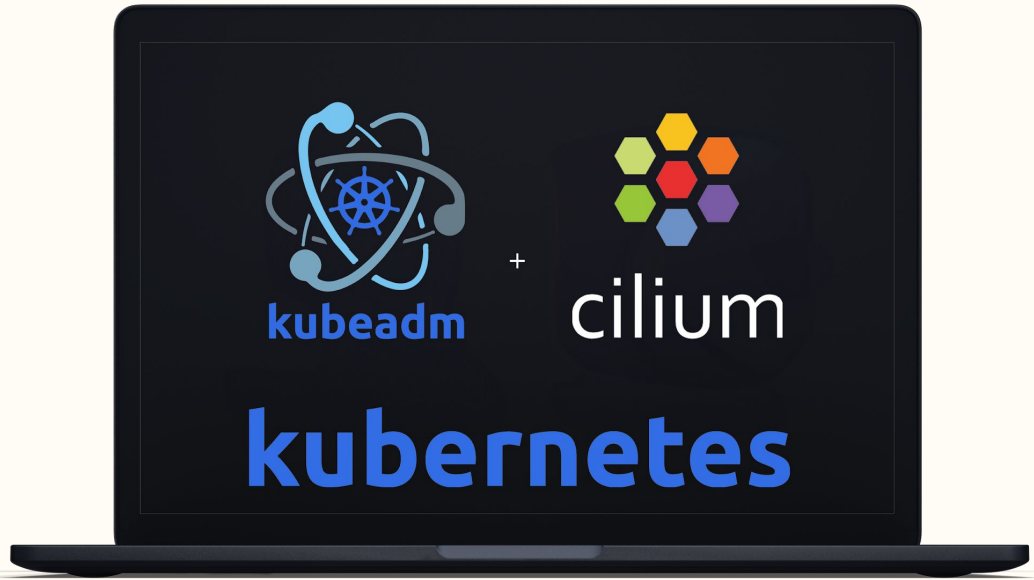
Containerd

Kubeadm

Cilium CNI

Ingress-Nginx

More tools...




PRACTICE!!

Summary

- Path to Kubestronaut is achievable with practice
- Local Kubernetes clusters will allow to practice tasks that aren't available with Minikube, KIND, Docker Desktop, managed cloud providers, etc.
- Be great at Bash and Vim
- Be comfortable within a Linux environment
- Prioritize easy questions, move on to harder ones, don't waste time


Questions?

Contact

Feel free to reach out anytime

/in/yupaul

@paulyu.dev

@pauldotyu

@pauldotyu