

Course Outline:

Kubernetes in production

- What sort of considerations apply to production-grade clusters?

Bootstrapping Kubernetes

- Kubernetes architecture review
- Sizing Kubernetes clusters
- Kubernetes networking requirements review
- Kubernetes high availability
- Stacked versus external Kubernetes masters
- Core Kubernetes networking components
- Bootstrapping Kubernetes with Kubespray

Image Registries

- Popular Image Registries comparison
- DTR vs Harbor architecture
- Security scanning in image registries
- Mitigating man-in-the-middle attacks with content trust
- Supporting continuous integration with webhooks and image promotion

Application Resilience

- Instrumenting Kubernetes applications with healthchecks
- Constraining CPU and memory consumption
- Imposing podDisruptionBudgets to ensure application HA
- Packaging Kubernetes applications with Helm

Logging and Monitoring Kubernetes

- Selecting logging architectures for Kubernetes
- Deploy and configure the EFK logging stack, and use it to browse container logs

- Create Kube-native application monitoring using the Kube operator pattern
- Deploy and manage Prometheus, Grafana and Alertmanager via the Prometheus operator
- Use PromQL to query and consume Prometheus metrics in alarms and visualizations

Deployment Strategies in Kubernetes

- Implement a gitops deployment pipeline using Flux
- Implement blue / green deployments using native Kubernetes
- Implement canary deployments using Istio

Backups & Disaster Recovery

- Create and schedule Kube backups using Velero
- Form a disaster recovery plan for your Kube cluster
- Perform a cluster upgrade after backing up and preparing for disaster