TOC (1) Kubernetes Foundations

- Advantage of Containers
- Need of an Orchestration Tool
- Introduction to Microservices
- **Microservices** Patterns
  - Data management
  - Communication
  - Deployment
  - Reliability

TOC (2) Kubernetes Architecture & Installation

- Kubernetes Architecture
  - Master node components and role
  - Worker node components and role
- Installation of kubeadm in a single node cluster
- Kubectl
- Managing multiple Kubernetes cluster
- Cloud Controller Manager

TOC (3) API and Resources

- Pod
- Controllers – ReplicaSet, ReplicationController, Deployment
- Services
- Storage and Volumes
- StorageClass
- Labels
- Namespaces
- Secret
- ConfigMap
- DaemonSet
- Job and CronJob
- Pod Priority and Pre-emption
- Node Role and Taints
- Resource Quotas
- Authorization and Authentication

TOC (4) Best Practices

- Best Practices
- Options and Alternatives
- Demo of 1million request /second by k8s team

TOC (4) OpenShift

- Benefits and features of OpenShift
- Interaction using Web, CLI, Rest
- Additional concepts
  - Project, Application
  - BuildConfig, ImageStream, Source to Image
  - Routes
  - Triggers
- Deploy application using image and source to image
- Application templates
- Deploy application using webhooks

TOC (5) Continuous Integration

- Scaling and autoscaling
- Deployment Strategies
  - Rolling update
  - Recreate
  - Blue Green
  - Canary
- Service Discovery
- GITOps integration

TOC (6) Monitoring and Healthchecks

- Monitoring
  - Metrics to monitor
  - Monitoring tools
  - Lab on K8s dashboard
  - Lab on cAdvisor+Prometheus
  - Lab on cAdvisor+Prometheus+Grafana
- Logging
  - Cluster level logging
  - Lab on EFK setup for logging
- Helm Charts
- Custom Healthchecks
  - Liveness probes
  - Readiness probes