TOC (1) Microservices Patterns

- Introduction to Microservices

- **Microservices** Patterns

  – Data management

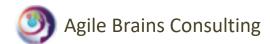 – Communication

  – Deployment

  – Reliability

TOC (2) Kubernetes Architecture & Installation

- Advantage and need of an orchestration tool

- 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