SECTION1: VIRTUALIZATION

- What is Hypervisor?
- Hypervisor types
- What is Virtualization?
- Benefits of Virtualization
- What is a VM?
- Virtual Machine Properties
- What is an Instance?
- What is a Container?
- What is Traditional Infrastructure?

SECTION2: DOCKER INTRODUCTION

- What is a Docker?
- Why Docker & Containers?
- Virtual Machines Vs Containers
- Docker Architecture
- Components of Docker
- Docker Objects

SECTION3: DOCKER INTRODUCTION

- Docker Installation?
- Docker setup overview
- Docker Desktop
- Docker setup on MacOS
- Docker setup on Linux
- Installing and Configuring IDE

SECTION4: DOCKER IMAGES

- What is Docker Image?
- Images are read-only
- Understanding Image Layers
- Search & pull the images
- Deleting Images

SECTION5: MANAGING CONTAINERS

- What is a Container?
- Manipulating Containers
- Container Lifecycle
- Stopping & Starting containers
- Running containers in background
- Entering Interactive Mode
- Inspecting images and containers
- Naming and tagging images and containers
- Copying files into & from a container

- Executing commands on container
- Docker Host system
- Container stats and logs
- Update container memory and cpu
- Port Forwarding
- Deleting Containers

SECTION6: MANAGING DOCKERFILE

- What is a Docker file?
- Instructions and arguments
- Building images using Docker file
- What is a Docker hub?
- Docker Repositories
- Docker Hub vs Subscription
- Building own images
- Pushing images to Docker hub
- Pulling and sharing shared images

SECTION7: MANAGING NETWORK

- Network Drivers?
- How docker resole IP-Address
- Bridge Network
- Default network overview
- Container to container communication
- Host Network
- Containers on Custom network
- Cross containers communication
- Container to local host machine communication
- None network

SECTION8: MANAGING VOLUMES

- What is a Docker Storage?
- Managing Data in Docker
- Mounting Types
- Tmpfs mounts
- Volumes
- Bind mounts
- Volumes vs Bind mounts
- Named Pipes
- Combining & merging different volumes
- Look at Read-only Volumes
- Copy vs Bind mounts
- Build Arguments (ARG)
- Multi container applications

SECTION9: DOCKER COMPOSE

- What is a Docker Compose?
- Why docker compose
- Installing Compose
- Creating compose file
- Compose file configuration
- Docker compose up and down
- Working with multiple containers
- Scaling containers

SECTION10: DOCKER SWARM

- What is a Docker swarm?
- Why docker swarm?
- Container Orchestration
- Creating Swarm
- What is a cluster
- How to create 3 node cluster
- Swarm App Lifecycle
- Docker in Production

SECTION11: KUBERNETES INTRODUCTION

- What is a Kubernetes?
- Traditional Vs Virtualization Vs Containers
- Kubernetes Architecture & Components
- Kubernetes Cluster
- Control plane Components
- Node Components
- Nodes and Pods

SECTION12: KUBERNETES SETUP

- What is a Minikube?
- Minikube architecture
- Minikube Installation
- Kubeadm
- Kubeadm pre-requisites
- Kubeadm multi node setup

SECTION13: MANAGING PODS

- What is a pod?
- POD Lifecycle
- PODS (YAML Walk through)
- Pod creation
- Replicaset
- Namespaces
- Example of PODS

SECTION14: LABELS & SELECTORS

- What is a label?
- Label for pods
- Annotations
- Label Selectors
- Equality and Set based
- Namespaces
- Managing Namespaces

SECTION15: KUBERNETES DEPLOYMENTS

- What is a Deployment?
- Why needs deployments
- Replicasets
- Rolling Updates
- Pausing and resuming Rollouts
- Scaling Deployments

SECTION16: KUBERNETES NEWORKING

- IP-Address Resolve
- Networking problems
- Container to Container communication
- Pod to Pod communication
- Service
- Deployment Vs service
- Service Types
- ClusterIP, NodePort, Loadbalancer
- Service Ports
- Kube Proxy
- DNS in Kubernetes
- Service Discovery
- Endpoint
- Ingress

SECTION17: KUBERNETES STORAGE

- Storage Overview
- Volumes
- Volume Types
- Hostpath volume
- Persistent storage
- Pv and Pvc
- Access Modes
- Volume Modes
- Reclaim Policies
- Storage classes

SECTION18: CONFIGMAPS and SECRETS

- ConfigMaps Overview
- kubectl
- Creating configmaps
- Secrets
- Managing secrets
- Secrets witk Kubectl
- Secrets with Configuration files

SECTION19: TROUBLESHOOTING

- Monitoring
- Monitoring metrics
- Logging Pipeline
- Troubleshooting application failure
- Worker node failure
- Cluster failure
- Logging – Application Logs

SECTION20: ROLES & RESPONSIBILITES

TRAINER DETAILS:

Mr. R N RAJU

(Senior Cloud Consultant)

(Red Hat & Cloud Certified)