**Kubernetes Training Agenda**

**Training Objectives:**

* To upskill close to 15 employees of the organization Kickdrum so that they can efficiently work in client projects and deliver work on mentioned technologies below:
* Kubernetes Developer - CKAD Certification Curriculum
* Kubernetes Advanced Developer – CKA Certification Curriculum
* Kubernetes Security – CKS Certification Curriculum
* Objective of the training is not certification but to learn the curriculum of certification for client delivery.
* Employees are 2+ years of experience with advance level of docker and basics of Kubernetes and cloud native concepts.

**Daily Training Schedule**

Training will start at 9:30 AM IST to 6:30 PM IST.

Breaks: 11:30 AM to 11:40 Team Break

Lunch Break: 1 PM IST to 1:40 PM IST

Tea Break: 4 PM IST to 4:10 PM IST

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| **Day** | **Time Schedule** | **Topics Covered** |
| 1 | 9:30 Am – 11:30 Am | 1. Kubernetes Platform Introduction 2. Kubernetes platform architecture |
|  | 11:30 Am – 11:40 am | Tea Break |
|  | 11:40 am – 1pm | 1. Create your k8s cluster |
|  | 1pm – 1:40 pm | Lunch break |
|  | 1:40 pm – 4:00 pm | 1. Create your k8s cluster continues 2. Foundation Container in the hood 3. Cluster setup network policy 4. Cluster setup GUI element |
|  | 4:00 pm – 4:10 pm | Tea Break |
|  | 4:10 pm – 6:30 pm | 1. Kubernetes setup & validation 2. Working with Pod |
|  |  |  |
| 2 |  |  |

**Day 1:**

1. **Kubernetes Platform    - 1 hour**

* Comparison with Docker Swarm
* Orchestration and Various Tools
* History of Kubernetes
* Features of Kubernetes
* What Kubernetes is not!
* Kubernetes Versions

1. **Kubernetes Architecture**

* Kubernetes Terminology
* Kubernetes Components
* Kubernetes Cluster Architecture
* Understanding Kubernetes Master Components
* Kube-apiserver
* ETCD
* Kube-scheduler
* Kube-controller
* Kube-DNS
* Understanding Kubernetes Node Components
* Kube-proxy
* Kubelet
* Container Runtime
* Kubernetes Secure Architecture
* Intro
* Practice - Find various K8s certificates

**3. Create your k8s cluster**

* Practice - Create AWS Account
* Practice - Configure " aws ecs create-cluster --cluster-name MyCluster" command
* Practice - Create Kubeadm Cluster
* Practice - Firewall rules for NodePorts
* Notice: Always stop your instances
* Containerd Course Upgrade

**4. Foundation Container in the hood**

* Container Tools Introduction
* Practice - The PID Namespace
* TEST - Docker Container Namespaces
* TEST - Podman Container Namespaces

**5. Cluster Setup Network Policy**

* Cluster Reset
* Practice - Backend to Database traffic
* TEST - Default-Deny Network Policy
* TEST - NetworkPolicy Namespace Communication

**6. Cluster Setup Gui Element**

* Introduction
* Practice - Install Dashboard
* Practice - Outside Insecure Access
* Practice - RBAC for the Dashboard

**7. Kubernetes Setup and Validation**

* Understanding different tools for deploying Kubernetes Cluster
* Release Binaries, Provisioning and Types of Clusters
* Building the Kubernetes Cluster using kubeadm
* Installing Kubernetes Master and Nodes
* Configuring Secure Cluster Communications
* Testing the Cluster

**Lab:** Deploying Kubernetes Cluster using EKS

**Lab:** Adding Nodes to Kubernetes Cluster

**Lab:** Deploying and Accessing Kubernetes Dashboard Service

**8. Working with Pod**

* Pod Overview
* Understanding Pod Lifecycle
* Multi-container Pod
* Static Pod
* Init Containers
* Labels, Selectors & Annotations

**Lab:** Imperative Commands and Formatting Output with kubectl

**Lab:** Working with Single Container Pods

**Lab:** Creating multi container Pod

**Lab:** Creating init container Pod

**Lab:** Working with Static Pod