**COURSE: Docker & Kubernetes**

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| About Technology  Docker- The world’s leading software container platform to modernize applications without disruption. Docker is available as Community Edition (CE) and Enterprise Edition (EE), with optimized installers for a variety of infrastructure. The Docker platform and associated toolchain provides the following features as a baseline for both CE and EE.  With Kubernetes, Deploy your applications quickly and predictably. The goal is to foster an ecosystem of components and tools that relieve the burden of running applications in public and private clouds. Kubernetes is Portable: public, private, hybrid, multi-cloud, Extensible: modular, pluggable, hookable, composable, Self-healing: auto-placement, auto-restart, auto-replication, auto-scaling. |

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|  | Course Objective( Setup will be shared before hand and participants are requested to come prepared with the setup. Setup will not be part of the session)   |  | | --- | | • Set up Docker engine, workstation  • Configure Docker engine  • Build and Manage Docker Images  • Bundle applications in Docker images  • Run applications on Kubernetes cluster  Course Outline | | Module 1: Docker concepts and terms  • Terminologies in Docker world  • Containerization vs Virtualization  Module 2: Docker Containers • Our first containers• Running containers• Images and containers• Local development workflow• Docker run• Running containers in background• Connecting containers | | Module3: Provisioning Docker Image  • Introducing the Dockerfile  • Creating a Dockerfile  • Building images manually  • Building images using Continuous Integration tools  • Storing and retrieving Docker Images from Docker Hub  • Inspecting a Dockerfile from DockerHub    Module 4: Working with Registry  • Module Intro  • Creating a Public repo on Docker Hub,  • Using our Public repo on Docker Hub,  Module 5: Diving Deeper into Dockerfile  • Introducing the Dockerfile  • The Build cache  • Dockerfile and Layers  • Building a WebServer Container  • The CMD Instruction  • The ENTRYPOINT Instruction  • The ENV Instruction  • Volumes and the VOLUME Instruction  Module 6: Docker Networking  • The docker0 Bridge  • Virtual Ethernet Interfaces  • Network Configuration Files  • Exposing Ports  • Viewing Exposed Ports  • Linking Containers  Module 7: Troubleshooting  • Module Intro  • Docker Daemon Logging  • Container Logging  • Planning Image Builds  • Intermediate Images  • The docker0 Bridge  • Wrap-Up    Module 9: Kubernetes  • Setting up Kubernetes  • Creating your own Pods  o Ready and liveness checks  o Resource Limits  o Secrets  o Persistent Volumes  • Using Labels  o Replication Controllers  o Manual scaling using kubectl.  o Introduction to Services  o Horizontal Autoscaler  • In Production  o Namespaces  o Node selector  o Limit Ranger  • Services  • Ingress controller  • Rolling update for zero downtime deploys  • Cluster sysadmin  o Network solutions  o Cluster DNS  o ELK  Module 10: Monitoring  • Monitoring Applications deployed in Docker  Module 11:  • Future of Docker | |  | |  | | Environment: | |  |

Participants must use their own desktop or laptop system.   
• Internet connection

• Mac, Linux OS, Windows 7 or later

• A modern web browser

• At least 20% free disk space