Course Content

Course Description:

Get up and running with Kubernetes: the key to orchestration, cluster management, and microservices in production. This Kubernetes training workshop is a fast-paced engineering overview which sends you back to work ready to begin using Kubernetes in your own environment. Of the limited tools available to manage containers at scale and implement strategies like microservices pragmatically, Kubernetes strikes a delicate balance between powerful capability and ease of use. We focus on getting you up to speed quickly and attaching your use of the tool to the best practices we've seen adopted and proven by top-performing IT teams in the enterprise DevOps community. Led by an expert, you'll get a walkthrough of each major feature and capability Kubernetes offers. Learn how to apply them in your own context and get access to a real-world practitioner who will walk you through demos and answer your questions in class. In two fast-paced days, you'll be up and running with Kubernetes and ready to start making it part of your DevOps toolbox.

At Course Completion:

After competing this course, student will be able to:
- Enable the ability to use the same APIs for all your private and public data centers.
- Use Kubernetes as a tool to offer "container-as-a-service" capabilities to their teams.
- Automate many traditional operational tasks such as Load Balancing, High Availability, Resource utilization, etc.
- Empower both operational and development organizations to synchronize service delivery and common application outcomes.
- Use Kubernetes to support multi-tenancy and a multi-datacenter control place as an alpha feature.
- Leverage the same open-source Kubernetes technology that has been adopted by Walmart, Pokemon Go, eBay, Red Hat's Openshift, and other high profile early adopters.
- Deliver software and IT services as smaller, faster, and more adaptive components of your overall architecture.
- Take major steps towards implementing microservices in a pragmatic, real-world fashion.

Prerequisites:

- Comfortable with command-line operations
- Familiar with software development including Fundamentals of DevOps

Target Student:

This course is designed for Developers and Architects.

Introduction to Kubernetes

Course ID #: 7000-053-ZZ-Z

Hours: 14

Topics:

Kubernetes Foundations
- Containers
- Linux Kernel Features
- Container User Experience
- New Container Capabilities
- Gaps using Containers in Production
- Microservices
- DevOps

Core Concepts of Kubernetes
- Cluster Orchestration
- Looking at K8S Origination at Google
- Open Source
- Benefits
- Design Principles

Navigating Kubernetes Architecture
- Master/Node
- Kubectl
- Replication Controller
- Kubelet
- Kube-Proxy
- Persistent Volumes
- Etcd
- High Availability

Using Kubernetes Features
- Pods
- Labels
- Services
- Namespaces
- Resource Quota

Security and Kubernetes
- Goals
- Roles
- Attribute-Based Access Control
- Policies
- Service Accounts
- Secrets

Networking and Kubernetes
- Docker Networking
- Kubernetes Networking
- Pod to Pod

- Exposing Services
- IP Per Pod
- Inter Pod Communication
- Intra Pod Communication

Cluster Add-ons
- Cluster DNS
- Logging with Elasticsearch and Fluentd
- Container Level Monitoring
- cAdvisor
- InfluxDB
- Prometheus

Practical Kubernetes Examples
- Hello World
- Wordpress
- Guestbook
- 3 Tier App
- Http/Https Load Balancing

Continuous Integration with Kubernetes
- Canary Release
- Blue Green Deployment
- A/B Testing
- Rolling Update
- Jenkins Plugin

Roadmap/Beta
- Ingress
- Deployments
- Autoscaling
- Jobs
- DaemonSets
- Network Plugins
- DNS

Class conclusion – Implementation, Q and A, Next Steps
- Discussion: What can you apply?
- How can Kubernetes help your situation
- Expert Q and A