

# Fundamentals of Platform Engineering

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**Course Number: WA3237**

**Duration: 1 days**

## Overview

### Course Description

Platform Engineering is an up-and-coming discipline, geared towards building tool-chains and workflows that enable self-service for the purposes of software development. Platform engineers work to create an “Internal Developer’s Platform” that supports the entire software development life cycle.

### Skills Gained

- Review the landscape of software development
- Discuss related terminology such as; SDLC, CI/CD, IaC & GitOps
- Understand the Platform Engineer's role
- Highlight the DevSecOps Platform (DSOP) Initiative
- Introduce Platform One and its components
- Look into the benefits of CI/CD and continuous deployment
- Learn about the role Kubernetes plays

- Differentiate GitOps from DevOps
- Cover Infrastructure as Code (IaC) and related scripting techniques
- Discuss common GitOps tooling

## **Who Can Benefit**

This training course is designed to help software developers and DevOps personnel to better understand the role of the Platform Engineer and for those who may be considering a transition to the role themselves.

## **Prerequisites**

To get the most out of this course a background in software development and information technology is suggested.

## **Audience**

## **Course Details**

## **Course Outline**

### **Chapter 1 - What is Platform Engineering and GitOps?**

- Context
- Information Technology (IT)
- Competitive Advantage
- What's Involved in Building Competitive Advantage?
- Software & Infrastructure Systems
- Developing Systems
- Basic SW System Requirements
- The Software Development Life-Cycle
- DevOps
- Continuous Operations (CI/CD)
- Deploying Infrastructure – On Premises
- Deploying Infrastructure – Cloud

- Infrastructure as Code (IaC)
- Platform Engineering
- What is GitOps?

## **Chapter 2 - Platform One and Big Bang**

- Moving from Waterfall to DevSecOps
- DevSecOps Platform (DSOP) Initiative
- Advantages of DevSecOps Platform for DoD Programs
- What is Platform One
- Related Technology
- Software Factory
- Kubernetes
- Hardened Containers
- ISTIO Microservices Architecture
- Platform One Supported Kubernetes Distributions
- Platform One Supported Environments
- Platform One Product Stack
- Platform One Features
- Platform One Parts
- What is Repo One
- What is Iron Bank?
- What is Big Bang
- BigBang's Value

## **Chapter 3 - CI/CD Fundamentals**

- What is CI/CD?
- Continuous Integration (CI)
- Continuous Delivery (CD)
- Continuous Deployment
- Pipelines
- Running Pipelines
- Pipeline Script Example
- Pipeline Script 'Build' Stage
- Jobs (build, testing, etc.)
- Pipeline Variables
- Artifacts
- Deployment (Docker, VM, Kubernetes)
- Pipeline Security Best Practices

## **Chapter 4 - GitOps Fundamentals**

- What is GitOps?
- GitOps is Related to DevOps
- Continuous Deployment (CD)
- The Road to GitOps
- The Git Source Code Repository
- Git Merge Requests
- Infrastructure as Code (IaC)

- Declarative and Imperative Scripting
- Declarative Scripting
- Imperative Scripting
- GitOps Controller
- Putting it All Together: A GitOps Workflow Example
- Common GitOps Tooling
- Kubernetes
- ArgoCD
- Flux
- GitLab

### **Review Exercises:**

Review01. Jeopardy on Platform Engineering, Platform One & Big Bang

Review02. Jeopardy on AppDev, CI, CD, & GitOps

- Chapter 1 - What is Platform Engineering and GitOps?
- Chapter 2 - Platform One and Big Bang
- Chapter 3 - CI/CD Fundamentals
- Chapter 4 - GitOps Fundamentals
- Review Exercises: