# Jenkins

### Description

Jenkins is a very wide spread software building, testing and deployment tool. It enabled CI/CD pipelines and agile development, can utilize such technologies as the public cloud, git and docker and has many plugins making it tunable to many environments.

### Duration
8 hours / 1 days

### Intended Audience

- Devops people who wish to install, configure and control the building and testing of software.
- Developers who wish to build complex pieces of software and to customize the build and test phases.
- Scrum masters who would like to integrate new features into their production pipelines.
- Anyone with some programming experience in the software industry.

### Prerequisites
No programming skills are required but are certainly welcome. A year of experience in the software industry in any technical position is required.

**Objectives**

- Install a Jenkins server
- Describe the theory behind CI/CD pipelines
- Understand the different pipelines in Jenkins
- Learn some groovy syntax
- Write your own pipeline scripts
- Connect Jenkins to github
- Learn how to trouble-shoot Jenkins
- Describe Jenkins best practices.

**Outline**

- How to install jenkins - docker installation.
- Continuous Integration (CI) Concepts
  - Why CI?
  - Why CD?
  - Organizaional issues.

- Basic Jenkins example
- Pulling your code from github using polling or a webhook
- The various pipeline types in Jenkins
  - o Focus on mutli-branch pipeline

- Agents in jenkins
  - What are Agents?
  - Different types of Agents
  - Jenkins in the Cloud using cloud native agents

- Some groovy syntax
  - Variables
  - Loops
  - Conditional statements
  - Basic functions
  - Going beyond the basics

- Examples of pipelines
- Trouble shooting jenkins
  - Logging
  - Printing from within docker processes
  - Getting the docker logs
  - Understanding what causes failure:

  - environment variables

  - user who is running and permission issues
  - current folder
  - files
- Best Practices in CI/CD process with Jenkins
  - Using Jenkinsfile
  - Using Dockers

- Speeding your builds and tests
  - Doing things in Parallel
  - Pre-prepared docker images
  - Pre-installed software
  - Pre-installed wheels for python