

Welcome to DevOps Course 3

Lesson 1: CI/CD



UDACITY

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Continuous Integration and Continuous Deployment: Jenkins Intro

Set up Jenkins environment and learn the fundamentals of pipelines

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Teacher Intro

Olin Wread, Senior DevOps Engineer @
Figure Eight

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Course Overview

What you need to know

Course Overview Skills Check

- Completed DevOps NanoDegree Courses 1 & 2

Course Overview

Lesson 1: CI/CD Intro to Jenkins and Pipelines

Lesson 2: CI/CD Deployment Strategies

Lesson 3: Ansible

Lesson 4: Monitoring and Logging



Intro to Lesson with Jenkins

A brief history

Jenkins Intro

- Introduced in 2011
- Replaced Hudson



Original Logo

Jenkins Logos



JCasC
(Jenkins Configuration as code)



Ice Cream Jenkins



Willie Jenkins



General Jenkins

Jenkins-X

- Jenkins for Docker and microservices
- Integrates with Kubernetes
- Released, but still under development



Jenkins X

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AWS Setup

Cloud Computing

AWS History

Amazon Web Services was introduced in 2006

In 2018 AWS represented 42% of the profit of Amazon

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AWS Setup Resource

Users and Permissions with IAM

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AWS Setup EC2

Create Jenkins Instance

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AWS Stopping & Imaging EC2

Reduce Cloud Costs



Login to EC2 Instance

Connect into the Matrix

AWS Setup Quiz

Q1: What is the most expensive cost in AWS?

- a) S3 storage
- b) EC2 instances
- c) ELB load balancers
- d) Network ingress and egress

Q2: What does IAM stand for?

- a) Intranet Always Managed
- b) Identity and Access Management
- c) I Am Manny
- d) Integrated AWS Management

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Installing Jenkins

*Continuously integrating our development
environment*

Installing Jenkins Overview

```
sudo apt-get update
sudo apt install -y default-jdk
wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo
apt-key add -
sudo sh -c 'echo deb https://pkg.jenkins.io/debian-stable
binary/ > /etc/apt/sources.list.d/jenkins.list'
sudo apt-get update
sudo apt-get install -y jenkins
```



Installing Jenkins Demo

To infinity and beyond



Jenkins GUI Login

Knock, knock, let me in

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Configure Jenkins Settings

Continuous Configuration and Management

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Installing Jenkins Blueocean

Down the rabbit hole we go...

Installing Jenkins Recap

What we learned

- Must add Jenkins Apt repo to install Jenkins
- Learned how to manage permissions within Jenkins
- Added the Blueocean plugin

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Continuous Integration & Continuous Deployment

Now, what you've all been waiting for

CI/CD What we will learn:

- What came before CI/CD
- What is CI/CD?
- Components of CI/CD

Blueocean:

Jenkins

Pipelines

Administration



Logout

Pipelines

New Pipeline

Favorites

	building-a-multibranch-pipeline-project	development	#2ec7747	a minute ago	
	simple-node-js-react-npm-app	master	#be4ffd6	31 minutes ago	
	simple-java-maven-app	master	#e51db83	24 minutes ago	
	building-a-multibranch-pipeline-project	master	#87393ab	a few seconds ago	
	building-a-multibranch-pipeline-project	production	#e85d115	7 minutes ago	

NAME	HEALTH	BRANCHES	PR	
building-a-multibranch-pipeline-project		1 failing	-	
simple-java-maven-app		-	-	
simple-node-js-react-npm-app		-	-	
simple-python-pyinstaller-app		1 passing	-	

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A Land Before CI/CD

From whence we came

CI/CD Definitions

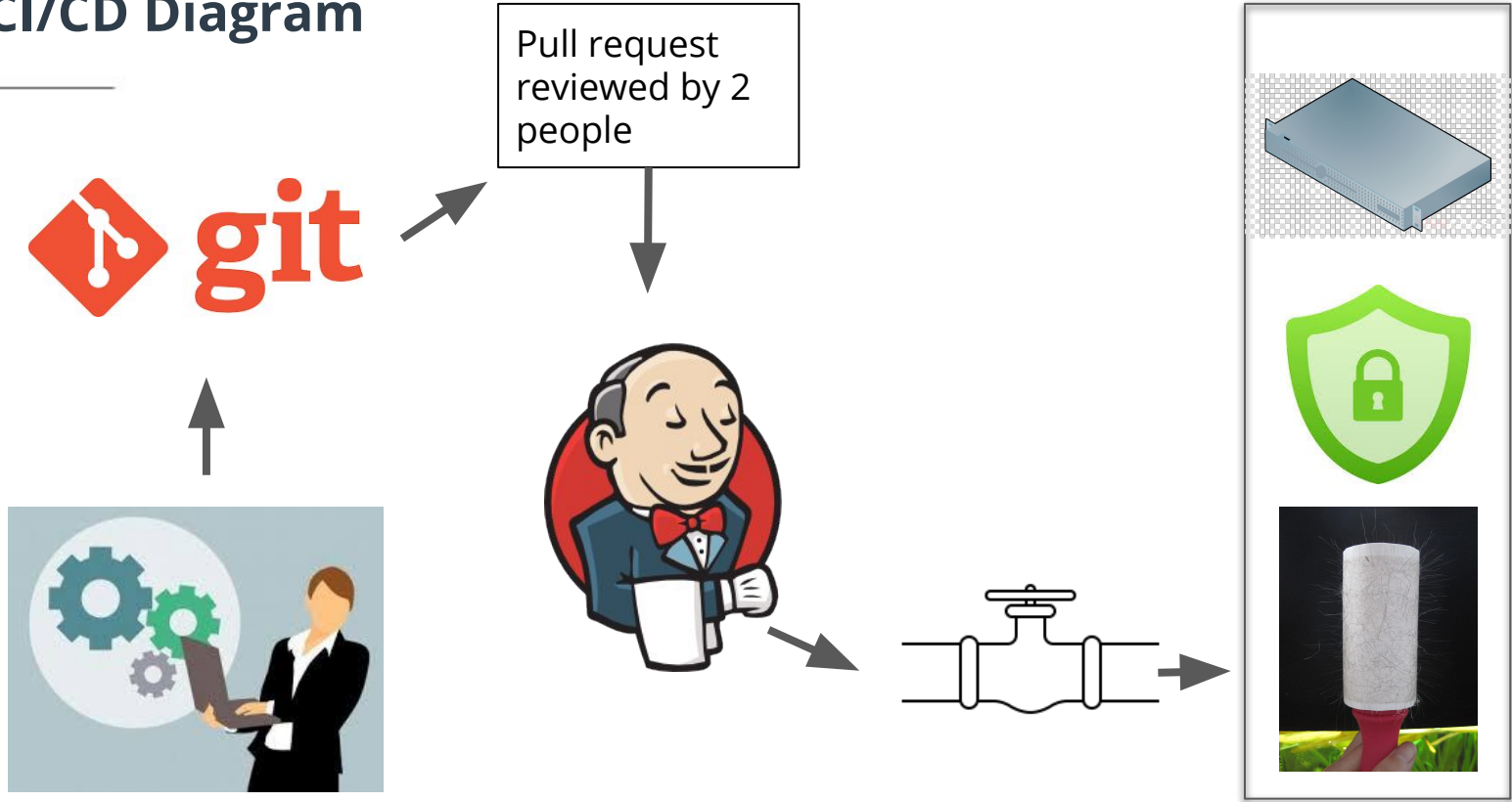
Continuous Integration (CI) is a development practice where developers integrate code into a shared repository frequently, preferably several times a day. Each integration can then be verified by an automated build and automated tests.

Source: <https://codeship.com/continuous-integration-essentials>

Continuous deployment (CD) is a strategy for software releases wherein any code commit that passes the automated testing phase is automatically released into the production environment, making changes that are visible to the software's users

<https://searchitoperations.techtarget.com/definition/continuous-deployment>

CI/CD Diagram



CI/CD Quiz

Q1: What is the primary purpose of CI/CD?

- a) To create repeatable actions
- b) To test software
- c) Automate AWS actions
- d) To deploy software

Q2: Which of these actions is performed in continuous integration?

- a) Linting
- b) Security Testing
- c) Deployment
- d) Authentication



Pipeline

Making Jenkins Infrastructure as Code

Pipeline Explained

- Store configuration in Git repo
- Discrete steps
- Logical controls to proceed or interrupt pipeline
- Highly extendable

Review of Material Covered in Lesson 1

- Set up IAM user, role, group & policy
- Launched EC2 instance
- Installed Jenkins
- Enabled BlueOcean
- Showed the components of CI/CD
- Described a pipeline