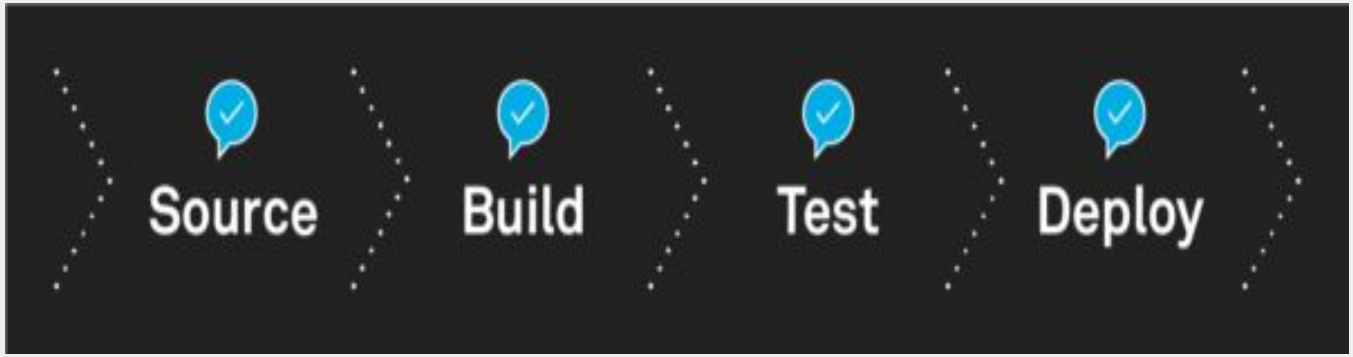
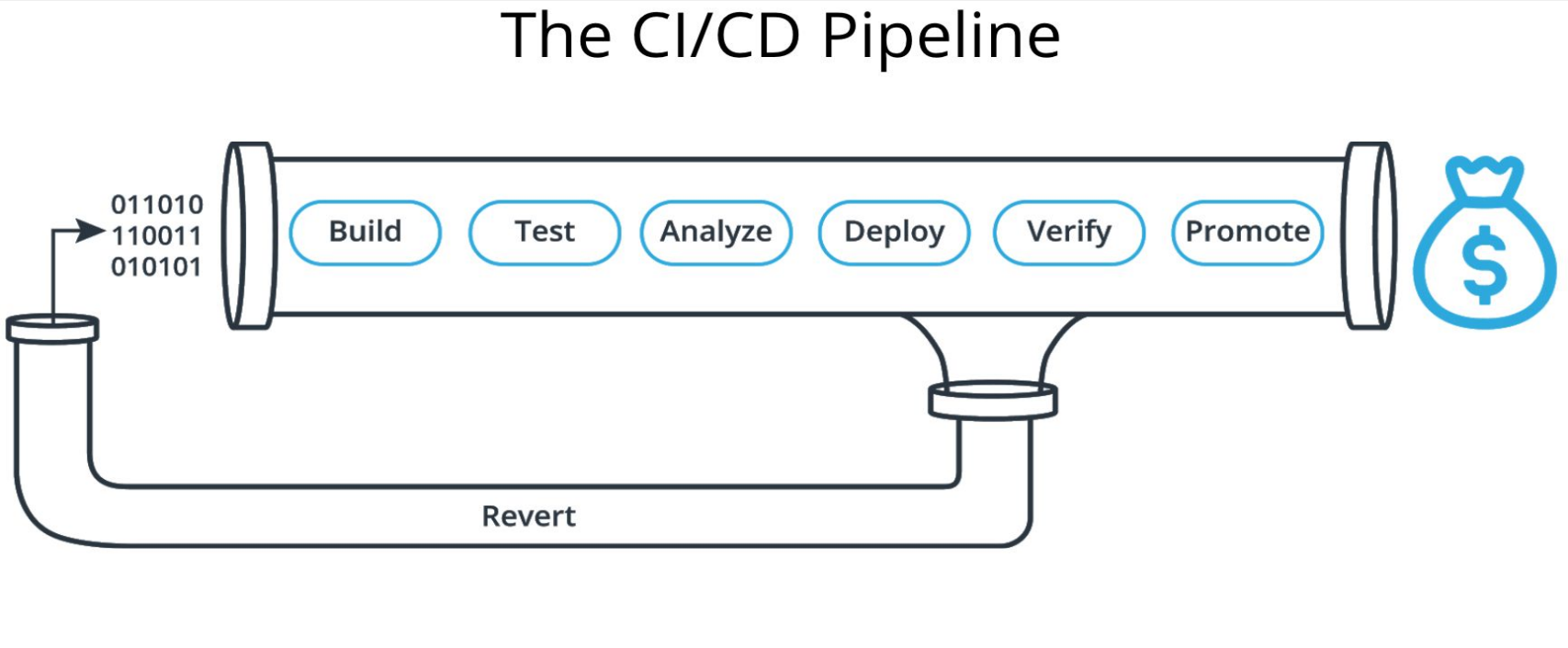


Fundamentals and Benefits of CI/CD For Udapeople Product.

Basil Ihuoma

UDACITY

CI/CD Implementation Architecture

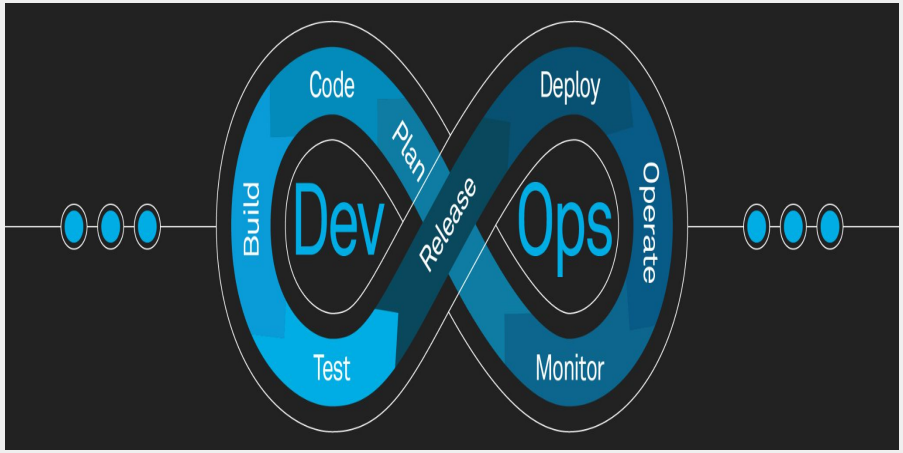


DevOps Practices

DevOps is a set of practices and tools designed to increase an organization's ability to deliver applications and services faster than traditional software development processes. The increased speed of DevOps helps an organization serve its customers more successfully and be more competitive in the market.

- **Continuous Integration (CI);** The concepts of continuous integration fits beautifully inside of the continuous delivery paradigm. This is the merging of all developers working copies to a shared main line several times a day. This is a practice that involves developers making small changes and checks to their code.
- **Continuous Delivery(CD);** is an engineering paradigm, in which teams produce and release value in short cycles. CD is the automated delivery of completed code to environments like testing and development. CD provides an automated and consistent way for code to be delivered to these environments.
- **Continuous Deployment;** this also fits nicely in the continuous delivery paradigm, since it is a software engineering approach in which value is delivered frequently through automated deployments.

Concept of CI/CD



- **CI/CD** is the combined practice of **continuous integration (CI)** and either **continuous delivery** or **continuous deployment (CD)**. The idea behind it is that we should create jobs that perform certain operations like building, testing, deploying, and so on.
- Modern day **DevOps** practices involve continuous development, continuous testing, continuous integration, continuous deployment and continuous monitoring of software applications throughout its development life cycle.The CI/CD practice, or CI/CD pipeline, forms the backbone of modern day DevOps operations. CI/CD allows organizations to ship software quickly and efficiently.

Core Benefits of CI/CD

Continuous Integration (CI)

- Compilation
- Unit testing
- Static Analysis
- Dependency Vulnerability testing
- Store artifact

Continuous Development (CD)

- Compilation
- Unit testing
- Static Analysis
- Dependency Vulnerability testing
- Store artifact

Core Benefits of CI/CD

Continuous Deployment

- This is an engineering approach in which the final stage in the pipeline that refers to the automatic releasing of any developer changes from the repository to the production. Continuous Deployment ensures that any change that passes through the stages of production is released to the end-users.

Benefits

Detailed benefits from the technical and Business point of view:

Technical	Benefit	Business
Unit test failure	Less cost	Avoidance of cost of Security holes.
Automate infrastructure creation	Less cost	Less cost of unused hardware.
Automatic rollback	Save revenue	Faster recovery from failure.
Automatic smoke test	Save revenue	Reduce downtime
Faster production code release	Increase revenue	New feature release more quickly.
Security Vulnerability	Less cost	Less human error
Compile error	Reduce cost	Less developer time on making code

Summary

CI/CD ensures that the development team releases new codes rapidly and effectively by;

- Less Backlog
- Improve transparency
- Increare test cycle
- Faster release cycle
- Reduced change time
- Ensure code quality
- Improve mean time to resolution
- Increase monitoring metrics
- Raise customer satisfaction level
- Fault Detection and Recovery