

Software Development

Deployment and CI/CD

Module 20



Welcome



What is **deployment**?





Live on the Internet vs. **Production-Ready**



Live on the Internet vs. Production-Ready

1

Deployment encompasses the entire process of getting an application to be "production-ready," ensuring it runs reliably and securely, and maintaining it over time.

2

For example, a production-ready application will include the following:

- Environment configuration
- Automated testing
- Version control
- Security
- Monitoring and logging
- Documentation



What is **DevOps**?





DevOps is **NOT** a:

1

Specific tool

2

Technology

3

Job title

4

Standalone practice



DevOps IS:

1

Philosophy:

DevOps is a mindset devoted to collaboration, communication, and integration between developers and operations teams.

2

Problem-Solving:

Whether the solution involves a shift in team culture or implementing new technology, DevOps focuses on solving problems.

3

Personal:

- Before you can harness the power of DevOps for your team, you first need to figure out what it means to you.
- Companies will use DevOps as marketing, but not every solution is right for you.
 - "Does this solution solve **my/our** problem? Is this the tool **we** need?"



What are the goals
of **DevOps**?





The Goals of DevOps are:

1

To foster collaboration and experimentation among teams.

2

To improve the speed and reliability of projects by automating parts of the development and deployment process.



The Three **Ws** of Strategy





How Do We Solve Problems?

There are many problem-solving solutions and critical thinking philosophies available. This strategy focuses on asking the following questions:

1

Why? Focus on the reasons and motivations behind a strategy.

2

What? These are the goals and objectives the strategy intends to achieve.

3

Who? These are the people who benefit from the solutions.



Standards vs. Rules



Standards vs. Rules

Standards

Standards are established norms or guidelines agreed upon as best practices in an industry or company. They are designed to promote efficiency, consistency, and quality.

- Standards are more flexible and often change to reflect a team's project or situation.

Rules

Rules are strict, non-negotiable requirements. They generally don't involve collaboration as they often involve legal concerns, security, or safety.

- Examples include password and secret-key policies, access control rules, and workplace compliance.

Standards vs. Rules

Examples

- Automation: Don't do anything twice
- Planning:
 - Work with Project Managers and plan for changes
 - Agile strategies
- Quality:
 - Version control
 - Config management
 - Testing
 - Auditing
- Communication: Open communication and collaboration
- Improvement: Metrics





What is **CI/CD**?





What is CI/CD?

1

Continuous Integration and Continuous Delivery/Continuous Deployment (CI/CD) is a set of practices and tools that automate the process of software development, testing, and deployment.

2

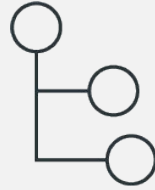
CI/CD shortens the software development lifecycle for making the product available to customers.

3

CI/CD bridges the gap between software development and the provisioning and maintenance of the IT infrastructure.

4

By enforcing automation in the building, testing, and deployment of applications, CI/CD shortens the time needed for deployment, increases productivity, and results in fewer bugs in the product.



CI/CD Pipeline





CI/CD Pipeline

1

The CI/CD pipeline consists of continuous integration, delivery, and deployment phases. Each phase has a particular task or process to perform.

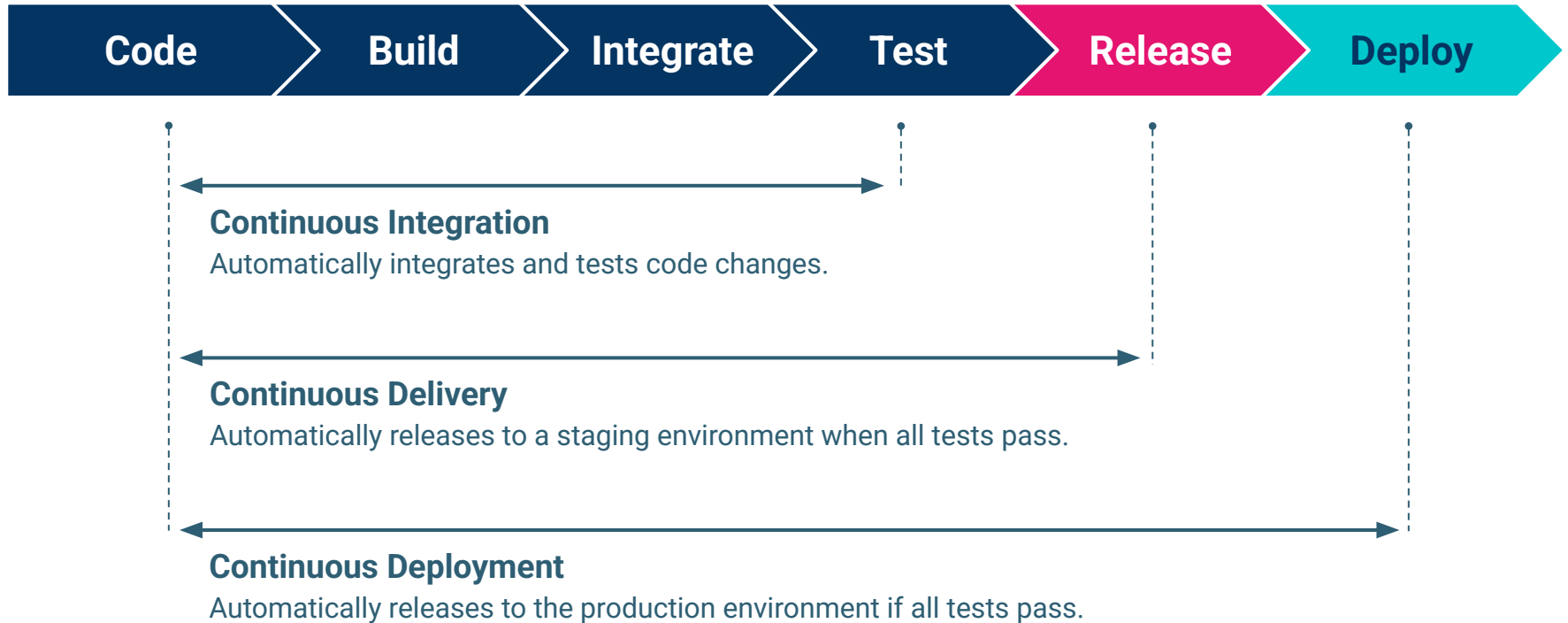
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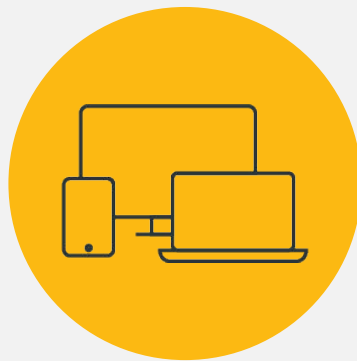
Each phase consists of sequential **stages**.

3

Companies can define these stages, which make up their workflows.

CI/CD Pipeline: Stages of Development





Instructor **Demonstration**

Mini-Project



Questions?





The End