WHAT IS DEVOPS

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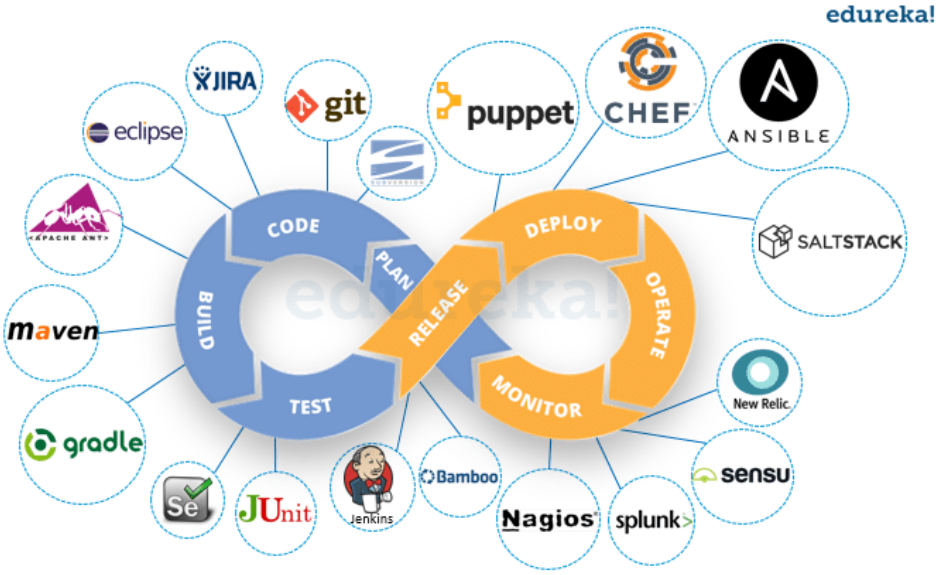


DevOps combines Development and Operations into a practice where a single team manages the entire application lifecycle—development, testing, deployment, and monitoring. Its goal is to shorten the development cycle, deliver frequent updates, and align closely with business objectives.

DevOps enables rapid, reliable, and high-quality software development through stages like continuous development, integration, testing, deployment, and monitoring.

AGILE METHODOLOGY

Agile Methodology is an iterative software development approach with projects divided into 2-8 week sprints, covering phases like Requirements Gathering, Design, Development, Testing, and Maintenance.

Process:

- Release high-priority features.
- Gather user feedback.
- Implement changes and new features.
- Repeat until desired quality is achieved.

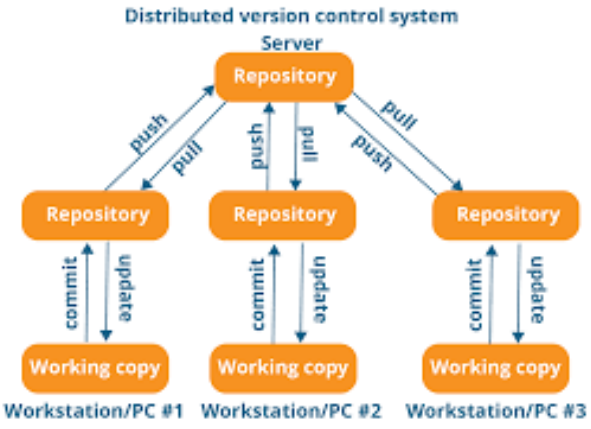
DEVOPS STAGES AND TOOLS

The DevOps lifecycle consists of continuous development, integration, testing, deployment, and monitoring. Let's explore each stage:

STAGE 1: CONTINUOUS DEVELOPMENT

TOOLS: GIT

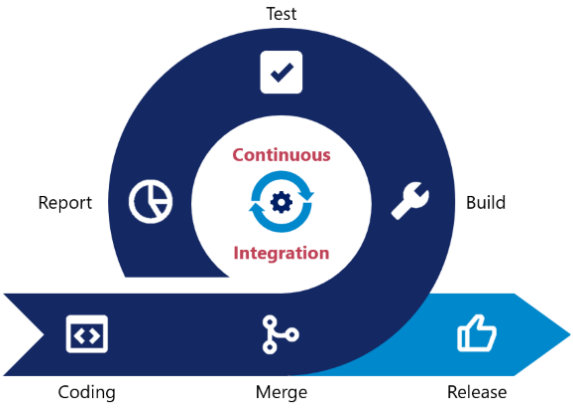
Involves planning and coding. The project vision is set, and developers write the code, which is managed using version control tools. Next, the code moves to continuous integration.



STAGE 2: CONTINUOUS INTEGRATION

TOOLS: JENKINS

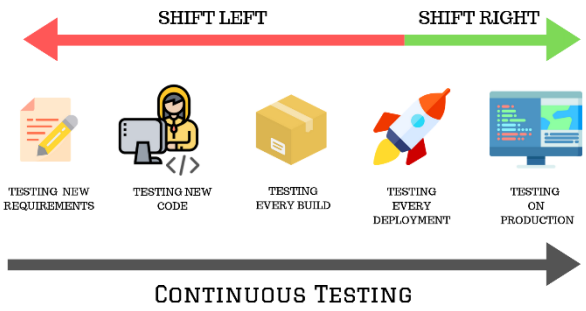
Developers frequently commit changes. Each commit is built and tested to detect issues early. This includes code review, unit testing, integration testing, and packaging.



Stage 3: Continuous Testing

Tools: Jenkins, Selenium, TestNG, JUnit

Automated testing for bugs using tools like Selenium. Jenkins can automate the testing process, ensuring the code is thoroughly tested in parallel environments.



Stage 4: Continuous Deployment

Tools: Chef, Puppet, Ansible (Configuration Management)
Docker, Vagrant (Containerization)

This stage involves deploying code to production servers, ensuring it is correctly deployed across all servers. Let's understand the roles of configuration management and containerization tools in achieving Continuous Deployment (CD):

Configuration Management: This involves maintaining consistency in an application's functional requirements and performance. It includes releasing deployments, scheduling updates on all servers, and ensuring consistent configurations across all servers.

Containerization Tools: These tools ensure consistency across Development, Test, Staging, and Production environments. They also facilitate swift scaling up and down of instances.

Stage 5: Continuous Monitoring

Tools: Splunk, ELK Stack, Nagios, New Relic

This critical DevOps stage involves continuously monitoring application performance. Vital usage data is recorded and processed to ensure proper functionality and resolve system errors like low memory or server issues. The Operations team monitors user activity and system behavior for bugs, using continuous monitoring tools to proactively check the health of the application and servers.

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