



TSU en Tecnologías de la Información Área Desarrollo de Software Multiplataforma

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Software Development Process Management

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Introduction to DevOps

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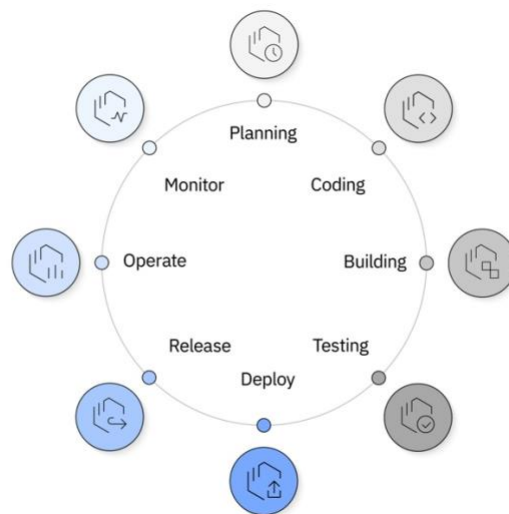
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DevOps

DevOps is a software development methodology that accelerates the delivery of higher-quality applications and services by combining and automating the work of software development and IT operations teams.

The DevOps lifecycle

The cycle is basically a series of iterative, automated development processes, or workflows, run within a larger, automated and iterative development lifecycle, designed to optimize the rapid delivery of high-quality software. Workflow names and the number of workflows differ depending on whom you ask, but they often include the following 8 steps:



1.- Planning

In this workflow, teams scope out new features and functions for the next release, drawing from prioritized user feedback and case studies, as well as inputs from all internal stakeholders. The goal of the planning stage is to maximize the business value of the product by producing a backlog of features that enhance product value.

2.- Coding

This is the programming step, where developers code and build new and enhanced features based on user stories and work items in the backlog. A combination of practices

such as test-driven development (TDD), pair programming and peer code reviews are common.

3.- Building continuous integration and continuous delivery

The new code is integrated into the existing code base, then tested and packaged for release and deployment. Common automation activities include merging code changes into a master copy, checking that code from a source code repository, and automating the compile, unit test and packaging into an executable file.

4.- Testing

Testing is done to assure that the application meets standards and requirements. DevOps has advanced such that certain elements of testing can occur in planning, development, integration, deployment, operations and learning.

Continuous testing is a powerful form of risk and vulnerability identification and provides an opportunity for IT to accept, mitigate or remediate risks. In addition, shift-left testing is an approach in software development that emphasizes moving testing activities earlier in the development process.

5.- Release

The first of the operations stages, the release stage is the last before the users access the application. In this workflow the runtime build output is deployed to a runtime environment. If errors or defects are found, developers have a chance to intercept and remediate any problems before any users see them.

6.- Deploy

Deployment is when the project moves to a production environment where users can access the changes to the application. Infrastructure is set up and configured (often by using infrastructure as code) and application code is deployed. A good practice for deployment to a production environment is to deploy first to a subset of end users, and then eventually to all users once stability is established.

7.- Operate

In this stage, teams check that features are running smoothly and that there are no interruptions in service, making sure the network, storage, platform, compute and security postures are all healthy. If issues occur, operations teams identify the incident, alert the proper personnel, troubleshoot problems and apply fixes.

8.- Monitor

This is the gathering of feedback from users and customers on features, functions, performance and business value to take back to planning for enhancements and features in the next release. This also includes any learning and backlog items from the operations activities that can help developers proactively prevent known incidents from reoccurring.

There are two other important continuous workflows in the lifecycle:

Security

DevOps incorporates security from the start (the planning phase), when security issues are easiest and least expensive to address, and run continuously throughout the rest of the development cycle.

Compliance

It is also best to address regulatory governance, risk and compliance (GRC) early and throughout the development lifecycle. Regulated industries are often mandated to provide a certain level of observability, traceability and access to how features are delivered and managed in their runtime operational environment.

Benefits of DevOps

- **Faster Delivery:** DevOps enables organizations to release new products and updates faster and more frequently, which can lead to a competitive advantage.
- **Improved Collaboration:** DevOps promotes collaboration between development and operations teams, resulting in better communication, increased efficiency, and reduced friction.

- **Improved Quality:** DevOps emphasizes automated testing and continuous integration, which helps to catch bugs early in the development process and improve the overall quality of software.
- **Increased Automation:** DevOps enables organizations to automate many manual processes, freeing up time for more strategic work and reducing the risk of human error.
- **Better Scalability:** DevOps enables organizations to quickly and efficiently scale their infrastructure to meet changing demands, improving the ability to respond to business needs.
- **Increased Customer Satisfaction:** DevOps helps organizations to deliver new features and updates more quickly, which can result in increased customer satisfaction and loyalty.
- **Improved Security:** DevOps promotes security best practices, such as continuous testing and monitoring, which can help to reduce the risk of security breaches and improve the overall security of an organization's systems.
- **Better Resource Utilization:** DevOps enables organizations to optimize their use of resources, including hardware, software, and personnel, which can result in cost savings and improved efficiency.

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