

Fundamentals and Benefits of CI/CD to Achieve, Build, and Deploy Automation for Cloud-Based Software Products

Continuous Integration/Continuous Delivery is a software development practice that combines development and operations teams and their day-to-day tasks. It applies automation to developing, testing, and delivering applications.

Continuous Delivery is an overarching paradigm or mindset that informs and enhances the practices of Continuous Integration and Continuous Delivery. An engineering practice in which teams produce and release value in short cycles.

$$\begin{array}{ccccc} \text{Continuous} & & \text{Continuous} & & \text{Continuous} \\ \text{Integration} & + & \text{Deployment} & = & \text{Delivery} \end{array}$$

Business Benefits of CI/CD

- **Helps bring product to market faster**

Effectively implemented CI/CD helps bring new quality products and features to market faster and immediately start generating revenue from the these feature rather than waiting for the entire app to be completed (and checked manually) before they can launch.

Back to back releases are less time consuming and easier due to automation (Deployment, Testing etc).

This is important as it helps reduce shelf life of product and also helps the organization respond to market changes better.

- **Real-Time Visibility of the Development Process**

CI/CD helps bring real-time visibility into the development cycle.

Reviewing test results helps the team identify the project status and immediately understand which code changes caused problems or improved on previous problems.

This enables Stakeholders to easily see where a project stands at any given moment—spot bottlenecks, inefficiencies, etc., and use those insights to optimize the process and create project timelines.

- **Improves productivity**

Pipelines help improve productivity by handling repetitive tasks and heavy-lifting instead of humans. This tends to let the team focus on vision while pipeline focuses on the execution.

Teams investigate issues reported by their pipelines and once they commit the fix, pipelines run again to validate whether the problem was fixed and if new problems were inadvertently introduced.

- **Increases Sustainability, Reduce Costs and Boost Profits**

Automated pipelines reduce manual labour and lead to eventual savings since personnel is more expensive than tools. The steep upfront investment can cause concern to inexperienced leadership, however, well-designed pipelines position organizations to innovate better and faster to meet their customers' needs.

CI/CD enables teams to systematically test every change made to the source code. This process stands to reduce the likelihood that any bugs or errors slip through the cracks and cause problems down the line. This tends to lower development costs by eliminating many of the costs incurred while building and testing code changes.

This allows the team spend less time on testing and bug fixes, meaning organizations spend less money on tasks that don't provide any value to the business or its customers.

As a result, Customers stick around longer and will most likely recommend your products to others in their network.

