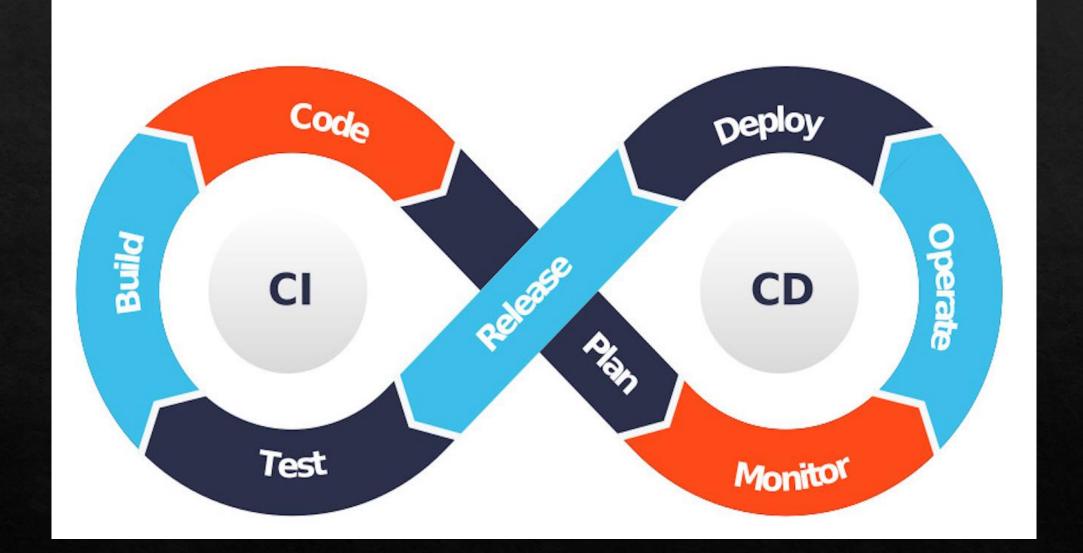# CI/CD

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What is CI/CD

◈ **Continuous Integration** (or CI) is a process in devops where changes are merged into a central repository after which the code is automated and tested. The continuous integration process is a practice in software engineering used to merge developers' working copies several times a day into a shared mainline.

◈ **Continuous Deployment** is a software development strategy where a new code or a change is deployed directly to the production environment after going through a set of rigorous, automated tests.

◈ **Continuous Delivery** is a software engineering approach in which teams produce software in short cycles, ensuring that the software can be reliably released at any time and, following a pipeline through a "production-like environment", without doing so manually.

Current Challenges

◈ **Manual and Time-consuming Processes:** Manual Processes are error prone and time consuming, leading to delays in delivering to customers.

◈ **Inconsistent Code Quality:** Code quality is non consistent due to lack of automated testing and validation.

◈ **High Maintenance costs:** Delay in bug identification and fix, leads to higher maintenance cost.

◈ **Slower time-to-market:** Manual testing and deployment processes slow down the time to bring new features or updates to the market.

◈ **Difficulty scaling infrastructure:** Organizations fail to scale their infrastructure efficiently, resulting in high cost due to over provisioning or poor performance due to under provisioning.

◈ **Risk of falling behind:** With competitors adopting CI/CD, organizations might be left behind in terms of technology adoption, agility, and market responsiveness.

Advantages of CI/CD

◈ **Automated Process:** Implementing CI/CD eliminates the need for manual, time-consuming processes resulting in cost savings

◈ **Rapid Time-to-Market:** CI/CD significantly reduces the time it takes to bring new features to market, by automating testing and deployment phases.

◈ **Enhanced Quality Assurance**: Automated testing in CI/CD ensures consistent code quality, minimizing the risk of introducing errors into the software.

◈ **Streamlined Development Process:** The integrated automated testing and deployment pipelines, results in faster identification and resolution of bugs.

◈ **Frequent Production Deployment:** The acceleration of software releases enabled by CI/CD allows us to deliver new features and improvements more frequently.

◈ **Customer Satisfaction**: Continuous deployment allows us to address customer feedback and implement improvements promptly.

Business Benefits

Advantages	Business Benefits
Automated Process	Reduce Cost
Rapid Time-to-Market	Increase Revenue
Enhanced Quality Assurance	Avoid Cost
Streamlined Development Process	Reduce Cost
Frequent Production Deployment	Protect Revenue
Customer Satisfaction	Increase Revenue

Conclusion

In order to deliver high quality software efficiently, respond to market demands swiftly and maintain a competitive edge, a mindset of continuous improvement and deployment/delivery needs to be fostered within the organization.