



Fundamentals and Benefits of CI/CD

WHY CI/CD



AN INTEGRAL PART OF DEVOPS IS ADOPTING THE CULTURE OF
CONTINUOUS INTEGRATION AND
CONTINUOUS DELIVERY/DEPLOYMENT (CI/CD), WHERE A COMMIT OR
CHANGE TO CODE PASSES
THROUGH VARIOUS AUTOMATED STAGE GATES, ALL THE WAY FROM
BUILDING AND TESTING TO DEPLOYING
APPLICATIONS, FROM DEVELOPMENT TO PRODUCTION ENVIRONMENTS

What is CI



CONTINUOUS INTEGRATION (CI) IS A SOFTWARE DEVELOPMENT STRATEGY THAT INCREASES THE SPEED OF DEVELOPMENT WHILE ENSURING THE QUALITY OF THE CODE THAT TEAMS DEPLOY. DEVELOPERS CONTINUALLY COMMIT CODE IN SMALL INCREMENTS (AT LEAST DAILY, OR EVEN SEVERAL TIMES A DAY), WHICH IS THEN AUTOMATICALLY BUILT AND TESTED BEFORE IT IS MERGED WITH THE SHARED REPOSITORY.

What is CD

CONTINUOUS DEPLOYMENT(CD) REFERS TO AUTOMATICALLY RELEASING A DEVELOPER'S

**CHANGES FROM THE REPOSITORY TO PRODUCTION,
WHERE IT IS USABLE BY CUSTOMERS.**

**IT ADDRESSES THE PROBLEM OF OVERLOADING OPERATIONS TEAMS
WITH MANUAL PROCESSES THAT SLOW DOWN APP DELIVERY.**

**IT BUILDS ON THE BENEFITS OF CONTINUOUS DELIVERY
BY AUTOMATING THE NEXT STAGE IN THE PIPELINE.**



BENEFITS OF CI/CD TO OUR BUSINESS



- IT IS MUCH EASIER FOR MORE THAN ONE TEAM MEMBER TO WORK ON THE SAME FEATURE.
- THE COST OF MERGING SMALL CHANGES IS MUCH LOWER THAN LARGE CHANGES.
- TEAM MEMBERS CAN EVALUATE THEIR PEER'S CHANGES IN A SYSTEM THAT HAS PASSED, AUTOMATED TESTING RATHER THAN THE MOVING TARGET OF A FEATURE BRANCH.

Benefits of CI/CD in terms of revenue and cost



Automation in the CI/CD pipeline reduces the number of errors that can take place in the many repetitive steps of CI and CD.

Doing so also frees up developer time that could be spent on product development as there aren't as many code changes to fix down the road if the error is caught quickly. Another thing to keep in mind: increasing code quality with automation also increases your ROI.

Technical Language	Value	Translation
Catch Compile Errors After Merge	Reduce Cost	Less developer time on issues from new developer code
Catch Unit Test Failures	Avoid Cost	Less bugs in production and less time in testing
Detect Security Vulnerabilities	Avoid Cost	Prevent embarrassing or costly security holes
Automate Infrastructure Creation	Avoid Cost	Less human error, Faster deployments
Automate Infrastructure Cleanup	Reduce Cost	Less infrastructure costs from unused resources
Faster and More Frequent Production Deployments	Increase Revenue	New value-generating features released more quickly
Deploy to Production Without Manual Checks	Increase Revenue	Less time to market
Automated Smoke Tests	Protect Revenue	Reduced downtime from a deploy-related crash or major bug
Automated Rollback Triggered by Job Failure	Protect Revenue	Quick undo to return production to working state