

# Fundamentals and Benefits of CI/CD

by: Islam Sabry

- **CI (Continuous Integration):**  
**Practice of merging all developer code to shared repository several times a day.**
- **CD (Continuous Deployment):**  
**Software Engineering approach of automated deployments.**

# What 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**

**WHY CI/CD**

- **Smaller code changes are simpler and have fewer unintended consequences.**
- **Fault isolation is simpler and quicker.**
- **Meantime to resolution (MTTR) is shorter because of the smaller code changes and quicker fault isolation.**
- **Testability improves due to smaller, specific changes.**
- **These smaller changes allow more accurate tests.**
- **Elapsed time to detect and correct production escapes is shorter leading to a faster rate of release.**

## **BENEFITS OF CI-CD**





<b><u>Business Value</u></b>	<b><u>How CI/CD achieves this</u></b>	<b><u>Result:</u></b>
Reduces Cost	<ul style="list-style-type: none"> <li>- Catches Compile Errors After Merge</li> <li>- Automate Infrastructure Cleanup</li> </ul>	<ul style="list-style-type: none"> <li>- Less developer time on issues from new developer code</li> <li>- Less infrastructure costs from unused resources</li> </ul>
Avoids Costs	<ul style="list-style-type: none"> <li>- Catches Unit Test Failures</li> <li>- Detects Security Vulnerabilities</li> <li>- Automates Infrastructure Creation</li> </ul>	<ul style="list-style-type: none"> <li>- Less bugs in production/testing</li> <li>- Prevent embarrassing or costly security holes</li> <li>- Less human error, faster deployments</li> </ul>
Increases Revenue	<ul style="list-style-type: none"> <li>- Faster and More Frequent Production Deployments</li> <li>- Deploy to Production Without Manual Checks</li> </ul>	<ul style="list-style-type: none"> <li>- New value-generating features released more quickly</li> <li>- Less time to market</li> </ul>
Protects Revenue	<ul style="list-style-type: none"> <li>- Automated Smoke Tests</li> <li>- Automated Rollback Triggered by Job Failure</li> </ul>	<ul style="list-style-type: none"> <li>- Reduced downtime from a deploy-related crash or major bug</li> <li>- Quick undo to return production to working state</li> </ul>