FUNDAMENTALS AND BENEFITS OF CI/CD

BY / MOHAMED HOSNY

WHAT IS CI/CD ?

Continuous Integration

The practice of merging all developers'working copies to a shared mainline several times a day.

Continuous Deployment

A software engineering approach in which the value is delivered frequently through automated deployments.

WHAT ARE THE KEY CI/CD BENEFITS YOU NEED TO KNOW ABOUT?

- **Reduced time-to-market**

  The ultimate goal of a CI/CD pipeline is to build and deliver software to users at a rapid pace. Moreover, software development has gone beyond introducing new features, writing robust code, and understanding users' needs. A CI/CD pipeline enables you to ship changes not just weekly, but daily, and even hourly.

- **Effective automation testing**

  Understanding your code's performance is vital in a software release; performing it efficiently requires effort and hours. Manual testing is a repetitive process that demands a high concentration level and demands developers to perform the same process with minute variations for the umpteenth time. Therefore, a major aspect of any CI/CD pipeline is to have a set of automated tests that every build must complete.

WHAT ARE THE KEY CI/CD BENEFITS YOU NEED TO KNOW ABOUT? CONT..

- **Improved Mean Time to Resolution (MTTR)**

  With the help of MTTR, development teams can measure the sustainability of repairable features. Also, it establishes the standard time to fix a faulty feature and enables you to determine the time required for failure recovery. CI/CD significantly helps reduce the MTTR, as there are only minor changes in the code and detecting fault isolations is less complicated.

- **Efficient infrastructure**

  A CI/CD pipeline is largely built on automation that aims to make the release process repeatable and reliable. While building an infrastructure with CI/CD, your initial goal will be to write and run automated tests. After building a strong foundation, your next goal involves automating deployments of your builds to test and staging environments..

WHAT ARE THE KEY CI/CD BENEFITS YOU NEED TO KNOW ABOUT? CONT..

- **Accurate progress monitoring**

  A majority of the CI/CD tools can be used for instrumenting the process and provide a set of metrics that include building, test coverage, failure rates, test fix times, and more. This data can help you recognize areas causing your pipeline to perform slowly and make improvements as and when required.

- **Maximum consumer demand satisfaction**

  CI/CD helps you adopt and incorporate a customer-first approach. When you release a product, it carefully monitors the initial actions of the customers and maintains a record of the results. As a result, you can study the kind of impression your product creates on the customers.

WHAT ARE THE KEY CI/CD BENEFITS YOU NEED TO KNOW ABOUT? CONT..

- **Rapid feedback cycle**

  Timely feedback is an essential part of the DevOps approach, and it begins with automated build and test stages to track the immediate faults. It enables you to work more efficiently over a lengthy feedback cycle. Also, shipping updates provide rapid feedback on the build than waiting for a big release every few months.

- **Cloud-based development**

  A major share of CI/CD's popularity can be attributed to the rise in cloud development since traditional development techniques often prove inefficient with cloud-based applications.

Technical benefits of CI/CD

- **Make Revenue**
  - Faster and More Frequent Production Deployments ensures more quicker releases. Removal of manual checks before deployment means less time to market.
- **Protect Revenue**
  - Automated smoke test reduces downtime due to deploy related crash or a major bug. Automated rollback due to a job failure means a fast undo from production to working state.
- **Avoid Cost**
  - Automation of infrastructure creation hence faster deployment and less human error. Catch unit test failure ensures less bugs in production environment and less time testing. Detecting security vulnerabilities avoids future embarrassment from security attacks.

Technical benefits of CI/CD cont..

- **Reduce Cost**
  - Automation of infrastructure cleanup prevents unwanted cost on unused resources.
    Catching compile errors after merging reduces

    time spent on issues from new developer code.
- **Reduction of non-critical defects in backlog**
  - By now it's clear CI/CD is a time and money saver, so much so that it gives developers time to work on things they wouldn't normally be able to, such as going back to fix older code and make it cleaner and more efficient. The idea that developers cannot only tackle the backlog (it's called a backlog for a reason after all – who has time for this?), but also work on non-critical defects, is a game -changer brought to teams by DevOps and CI/CD.
- **Fail Fast**
  - The faster we detect the errors, the faster we act and fix the issues even before it occurs on production, and that would save a lot of time debugging and testing also will save money.

THANK YOU