JENKINS

* Jenkins is a automation tool.
* Jenkin is a tool which collaborates the development team and operation team.
* Before going to know about the Jenkins let us know about two important definitions.
* 1. Continuous integration:
* Integration is nothing but adding or collaborating.
* In this we will send the code to the tester for n times so here the code which was send by developers was taken into subparts and combine to build using Jenkins.
* It is a process where you integrate set of tools git, maven, docker, tomcat or set of processes that you follow before delivery the application of client.
* Code 🡪build🡪integration🡪continuous integration🡪continuous deployment.
* CI is a software development practice where developers frequently integrate their code changes into a shared repository.
* The main goal of CI is to detect and address integration issues as early as possible which helps in maintaining code equality and reducing the time needed to deliver new feature or bug files.

1. A developer writes code and commit it into the shared repository.
2. The CI server detects the commit and triggers an automated build.
3. The code is compiled and automated test are run.
4. If the build and test pass the code is integrated into the main branch if not the developer is notified of the issue.
5. The process repeats with every new code commit.

* 2. Continuous deployment:
* Continuous deployment is a process where you deploy or deliver your application to your end user.
* Code🡪build🡪integration🡪continuous integration🡪continuous deployment.

Continuous delivery and continuous deployment

Continuous delivery:

* Developers writes the code and it will process continuous integration here comes manual interpretation like if we click a button only it will be send to the server.

Continuous deployment:

* Here without any manual interpretation it complete the continuous integration it is directly deployed into server.

CI/CD:

* It is an approach to software development that combines the pratices of CI/CD to make developing applications faster, safer & efficient.

Need for CI/CD

* It will overcome the drawbacks of waterfall and agile model.
* We will integrate all the devops tools with Jenkins and deploy the applications onto the web server(tomcat).
* We will integrate tools for deployment and use another separate instance for server tomcat.

Jenkins:

* Jenkins is a open source project written in java that runs on windows , linux, macos.
* It was developed by sun microsystem.
* Whenever developers write code we integrate all the code of all developers at any point of time and we build test and delivery deploy to client this is called CI/CD.
* Jenkins use to help the sdlc phases automatically.
* Jenkins port number is 8080
* In Jenkins CI/CD we need to create jobs/projects frist.
* Running the jobs/projects is known as build.
* Build or deployment both are same.
* In Jenkins we have two types of jobs
* 1. Free style job: by clicks in dashboard of Jenkins.
* 2. Pipeline job: Jenkins dashboard🡪groovy scripts🡪github🡪jenkins dashboard🡪executing then.
* Jenkins we will create a parameterized jobs.
* We have both sequential (upstream and downstream) and parallel jobs.
* Jenkins have **master/slave architecture.**
* **Master/node architecture.**
* Master will be one where it is only install tomcat
* Nodes/slaves will be many can install in all integrated tools.
* In Jenkins we get the backup which acts as a hub of central version of whole process.
* Jenkins provide high security without authentication we cannot access.
* We can upgrade in Jenkins.
* Jenkins will be automated with the help of created jobs/projects.

History:

* 2004: kohsuke Kawaguchi developed Hudson as open source ci tool while working at sun microsystems.
* The project started as an internal tool but quickly gained popularity due to its flexibility and ease of use.
* 2010: A dispute between the Hudson open source community and oracle which acquired at sun micro systems in 2010 led to fork of the Hudson project .
* The forked version was renamed a Jenkins while oracle retained the Hudson name , the Jenkins community grew rapidly making Jenkins the dominant project.
* 2011: the Jenkins project officially became independent and governed by the Jenkins community whoever can participate in development under the umbrella of Jenkins project.

Challenges:

* Before it jenkin came the whole process is depend upon manual which leads to error.

Solution:

* To get the building or testing any process fastly here comes the Jenkins which is an automation process.

Automated deployment automated CI/CD pipelines

JENKINS

Automated tests automated builds

Jenkins important configuration files:

1. Jenkins home directory: /var/lib/Jenkins.
2. Jenkins installed plugins: /var/lib/Jenkins/plugins.
3. Created jobs list: /var/lib/Jenkins/workspace.

Here workspace is used to see the saved jobs list.

1. Node info: /var/lib/Jenkins/nodes.
2. Jenkins log info: /var/lib/Jenkins/log.
3. List of jobs: /var/lib/Jenkins/jobs.

Here we can see how many jobs are present .

1. Created users list: /var/lib/Jenkins/users .

Real time environments:

* 1. Development: develop code🡪github🡪success
* 2. QA: quality assurance 🡪success.
* 3. UAT: user acceptance testing 🡪success
* 4. Production: complete software or application will be tested🡪handover to client🡪once production got success it means that the product/project is handling over to the client.

Need for environments:

* To ensure an error free application.
* Productivity needs to be improved.
* Customer satisfaction.
* To deliver the application in time.

Jenkins installation steps:

1. Take an ec2 instance.
2. Install java
3. Install git
4. Install maven
5. Install Jenkins
6. Start the service of Jenkins
7. Copy the publicip of Jenkins and paste it the url with :8080 extension.