Jenkins

Topics

- What is jenkins and CI/CD?
- Lab Setup & Installation
- Jenkins Dashboard Overview
- Some Basic Jenkins Job
- Scheduling The Job
- Working with GIT Repo
- Email Notification
- Job for action on Remote server
- Jenkins + Ansible Playbook
- Project - Website Update on Remote Server
- User Management (Role Based)
- Envirnment Variables
- Jenkins + MAVEN
- CI/CD Project (Jenkins PIPELINE)
- Bonus Tips

Jenkins

What is Jenkins?

Jenkins is an open-source automation server

Automate various parts of software development.

Building

Testing

Deploy

Continuous Integration and Continuous Delivery

As an extensible automation server, Jenkins can be used as a simple CI server or turned into the continuous delivery hub for any project.

Easy installation

Jenkins is a self-contained Java-based program, ready to run out-of-the-box, with packages for Windows, Linux, macOS and other Unix-like operating systems.

Easy configuration

Jenkins can be easily set up and configured via its web interface, which includes on-the-fly error checks and built-in help.

Plugins

With hundreds of plugins in the Update Center, Jenkins integrates with practically every tool in the continuous integration and continuous delivery toolchain.

Extensible

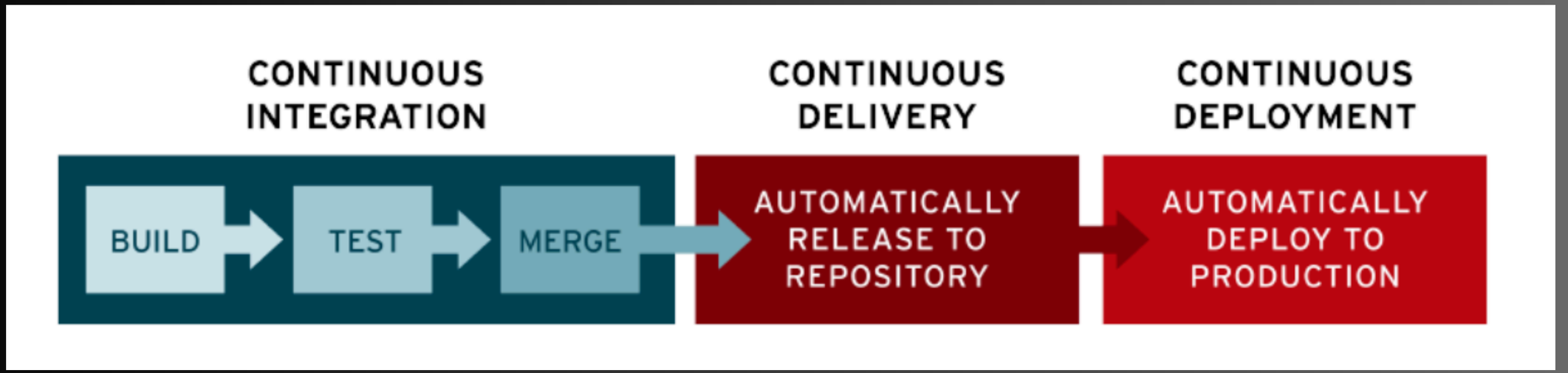
Jenkins can be extended via its plugin architecture, providing nearly infinite possibilities for what Jenkins can do.

Distributed

Jenkins can easily distribute work across multiple machines, helping drive builds, tests and deployments across multiple platforms faster.

What is CI/CD?

CI/CD is a method of frequently delivering apps to customers by introducing automation into the stages of app development.


CONTINUOUS INTEGRATION
CONTINUOUS DELIVERY
CONTINUOUS DEPLOYMENT
BUILD
TEST
MERGE
AUTOMATICALLY RELEASE TO REPOSITORY
AUTOMATICALLY DEPLOY TO PRODUCTION

Lab Setup

Installation

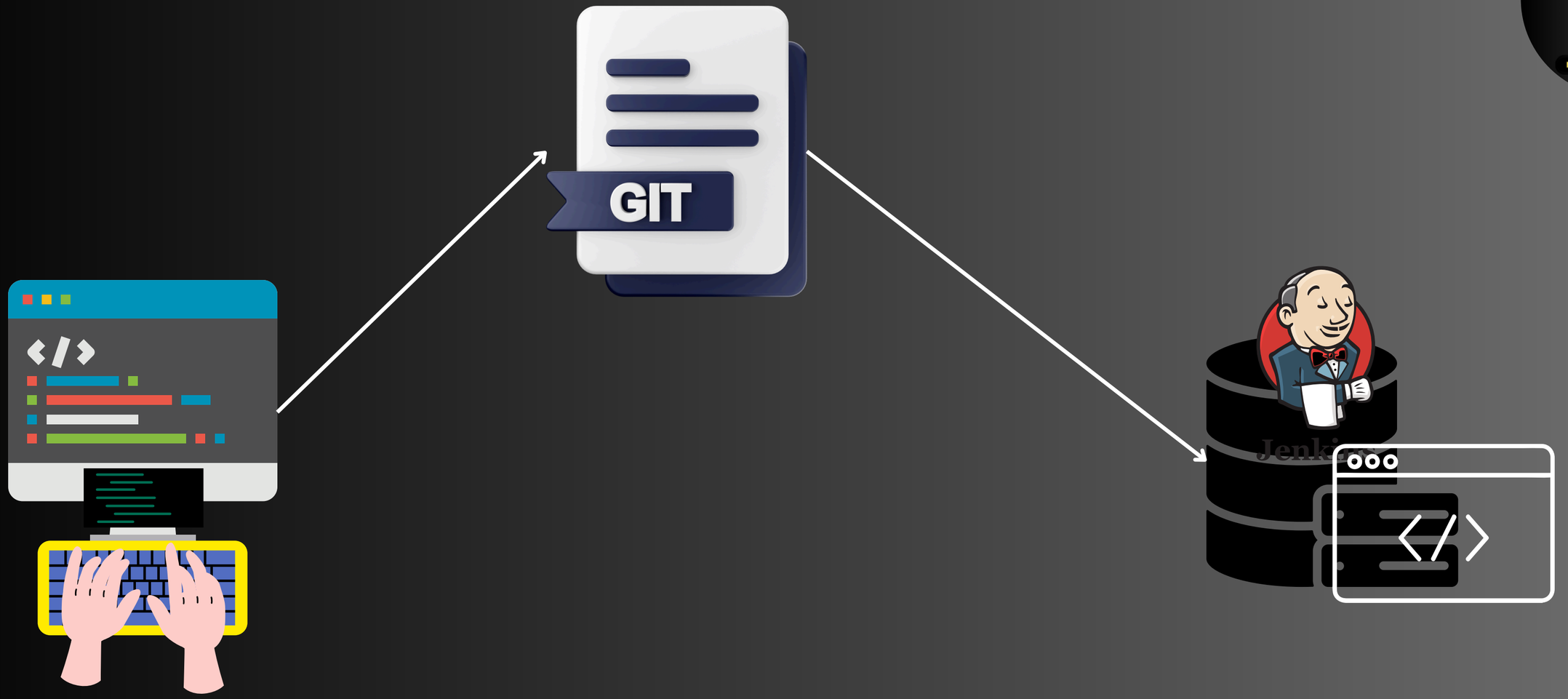
```
sudo dnf upgrade

sudo wget -O /etc/yum.repos.d/jenkins.repo \
      https://pkg.jenkins.io/redhat-stable/jenkins.repo
sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key

sudo yum install jenkins
sudo systemctl start/stop jenkins
```

To start the Jenkins from browser: IP:8080

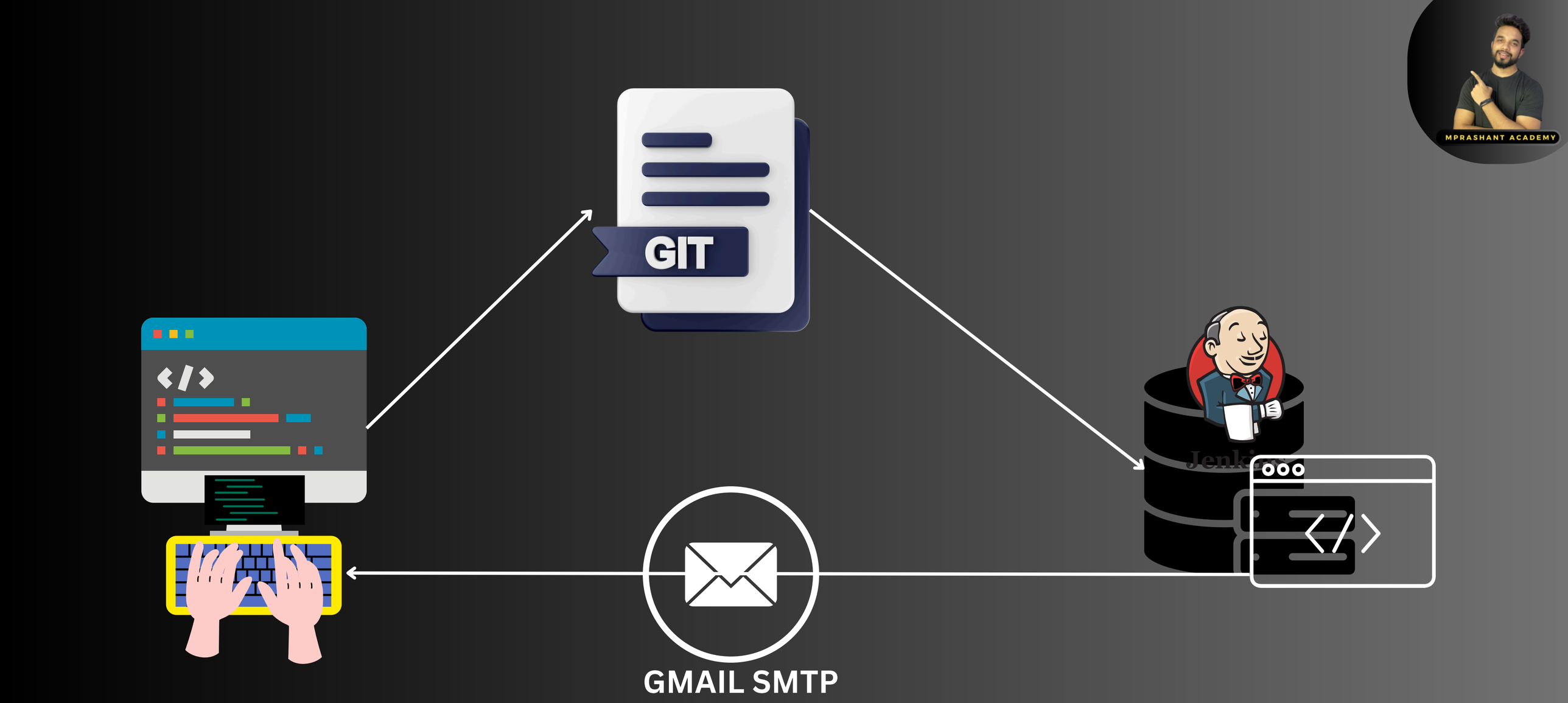
To access it from browser, we need to enable it on firewall

```
sudo firewall-cmd --permanent --zone=public --add-port=8080/tcp
sudo firewall-cmd --reload
```

Overview Of DASHBOARD



Git hub link - https://github.com/paulphilip/pythoncode

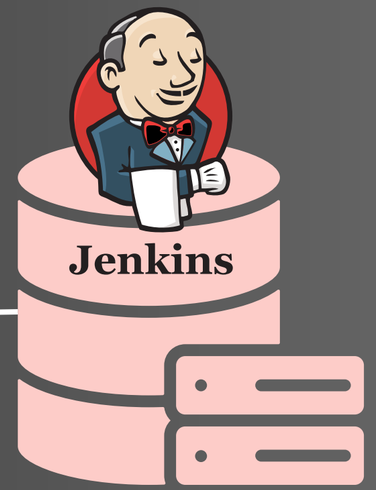


Git hub link - https://github.com/paulphilip/pythoncode

Task like

Transfer file
Execute Commands

SERVER B



SERVER A

ANSIBLE

Jenkins

ServerA

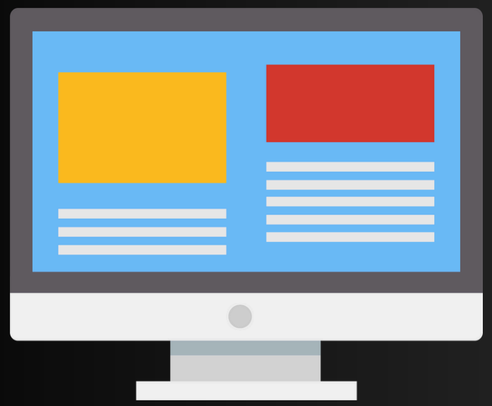
ServerB

ServerC

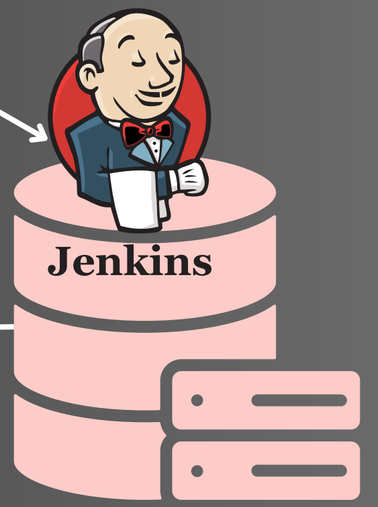
ServerD

Module

Inventory



Apache Webserver



SERVER B

SERVER A

Summary of Jenkins + Ansible Section

- Quick overview of Ansible
- Installing Ansible plugin
- Jenkins job with ‘Invoke Ansible Playbook’
- Perform task on Local vs Remote host
- Ansible job execute as ‘jenkins’ user
- Execute task which required SUDO access
- Basic project of Updating the Webpage of remote server and publish it.

User Management

- Plugin: Role-based Authorization Strategy
- Create a new user

Manage Jenkins:

- Security -> Autorization -> Role-based
- Manage and Assign Roles
  - Add a new read-only role and assign the permission
  - Assign Roles -> Add new user (nick) and assign read-only role

Environment Variables

We can use pre-defined variables by jenkins like
BUILD_NUMBER, WORKSPACE etc

https://wiki.jenkins.io/display/JENKINS/Building+a+software+project#Buildingasoftwareproject-belowJenkinsSetEnvironmentVariables

Maven

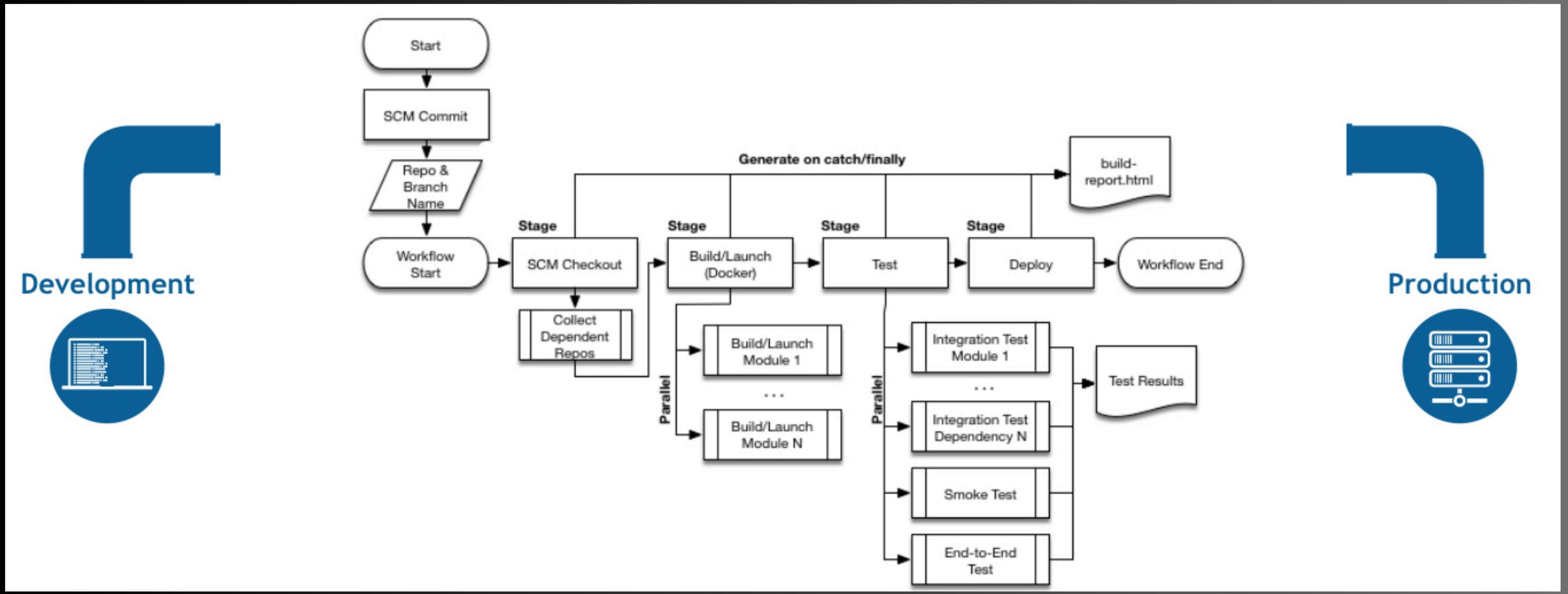
Jenkins

What is maven?

Maven is a build automation tool used primarily for Java projects.

- Working with Git and Maven
- Build jar using Maven
- Testing
- Deploy jar locally
- Graphical representation of results
- Send Email notification

Jenkins Pipeline



https://www.jenkins.io/doc/book/pipeline/