Achieving Continuous DevOps – CI/CD

NAGP – Batch’20

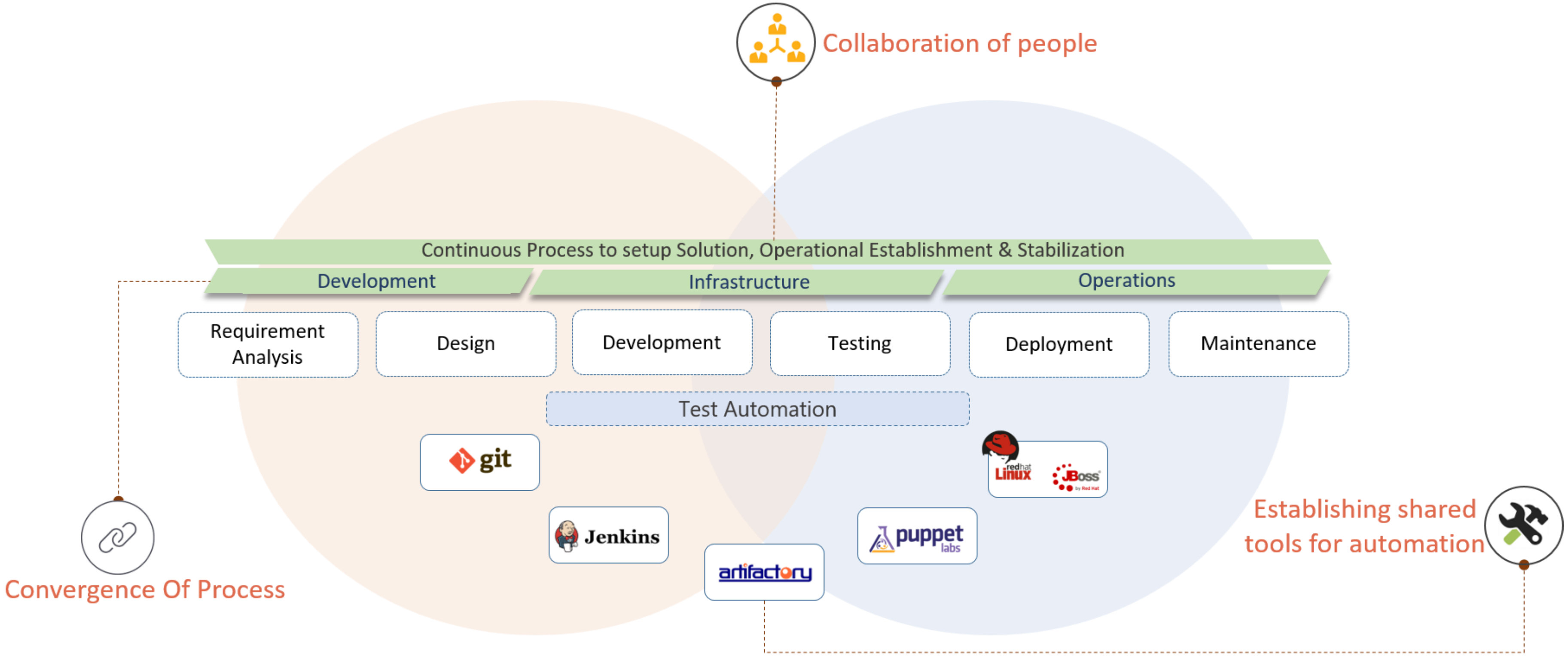
nagarro

THINKING
BREAKTHROUGHS

DevOps Introduction

Bridging the gap between Development and Operations

DevOps is a culture and set of practices that emphasize close collaboration between software Development and IT Operations staff through all phases of software delivery process to enhance productivity and quality of the overall system



Collaboration of people

Continuous Process to setup Solution, Operational Establishment & Stabilization

Development

Infrastructure

Operations

Requirement Analysis

Design

Development

Testing

Deployment

Maintenance

Test Automation

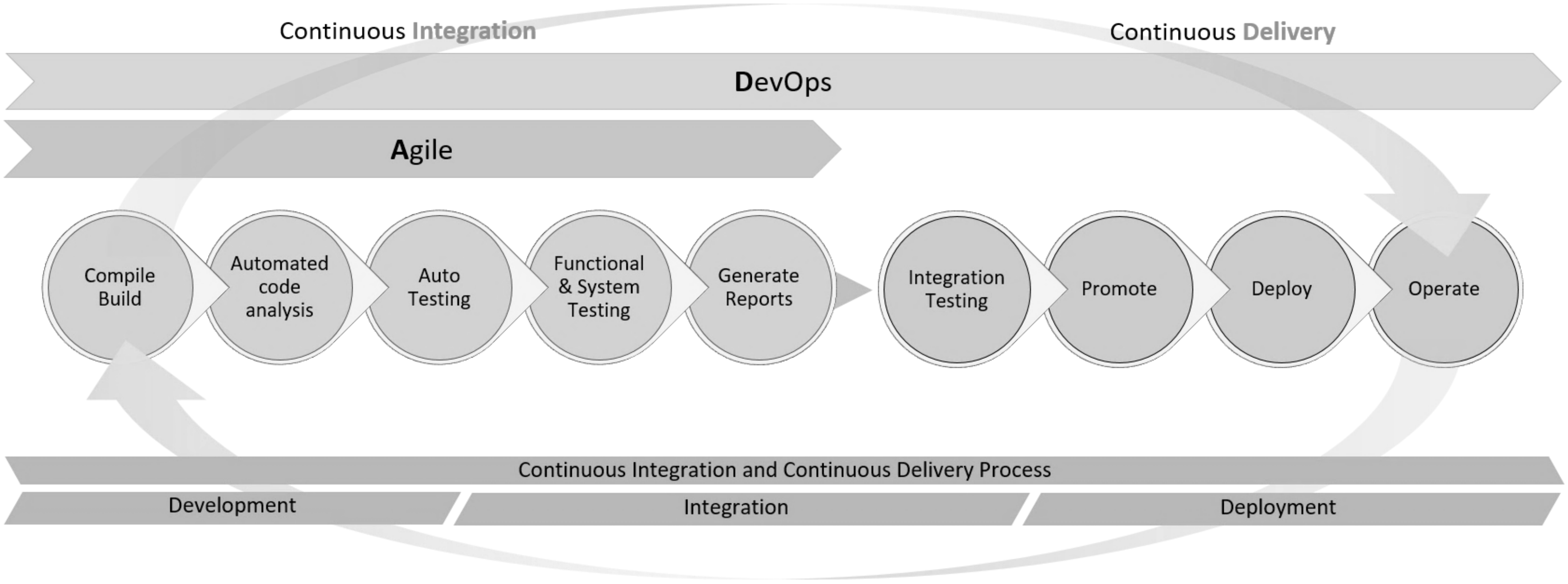
Convergence Of Process

Establishing shared tools for automation

Understanding Agile with DevOps

It’s an extension to agile development methodology.

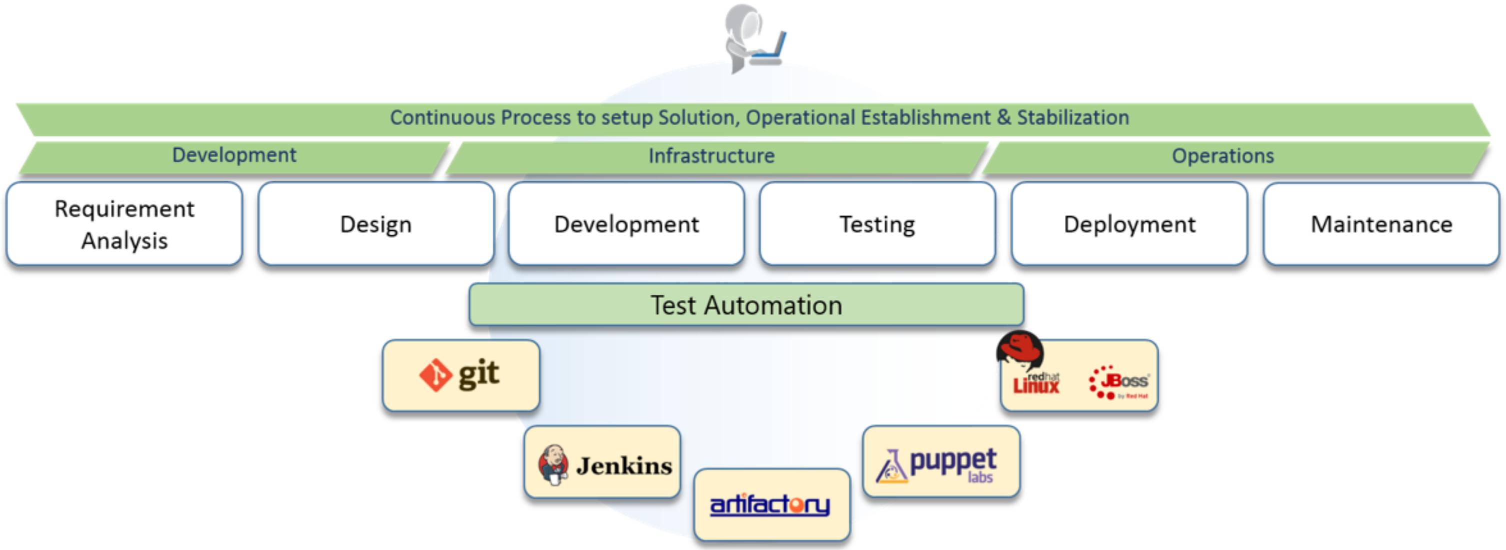
Agile software development methodology describes a set of principles that focuses on the development of software with *business* and *development* team, but DevOps on the other hand is responsible for **development** as well as **deployment** of the software via bringing *development*, *business* and *operations* team together.



How to achieve DevOps

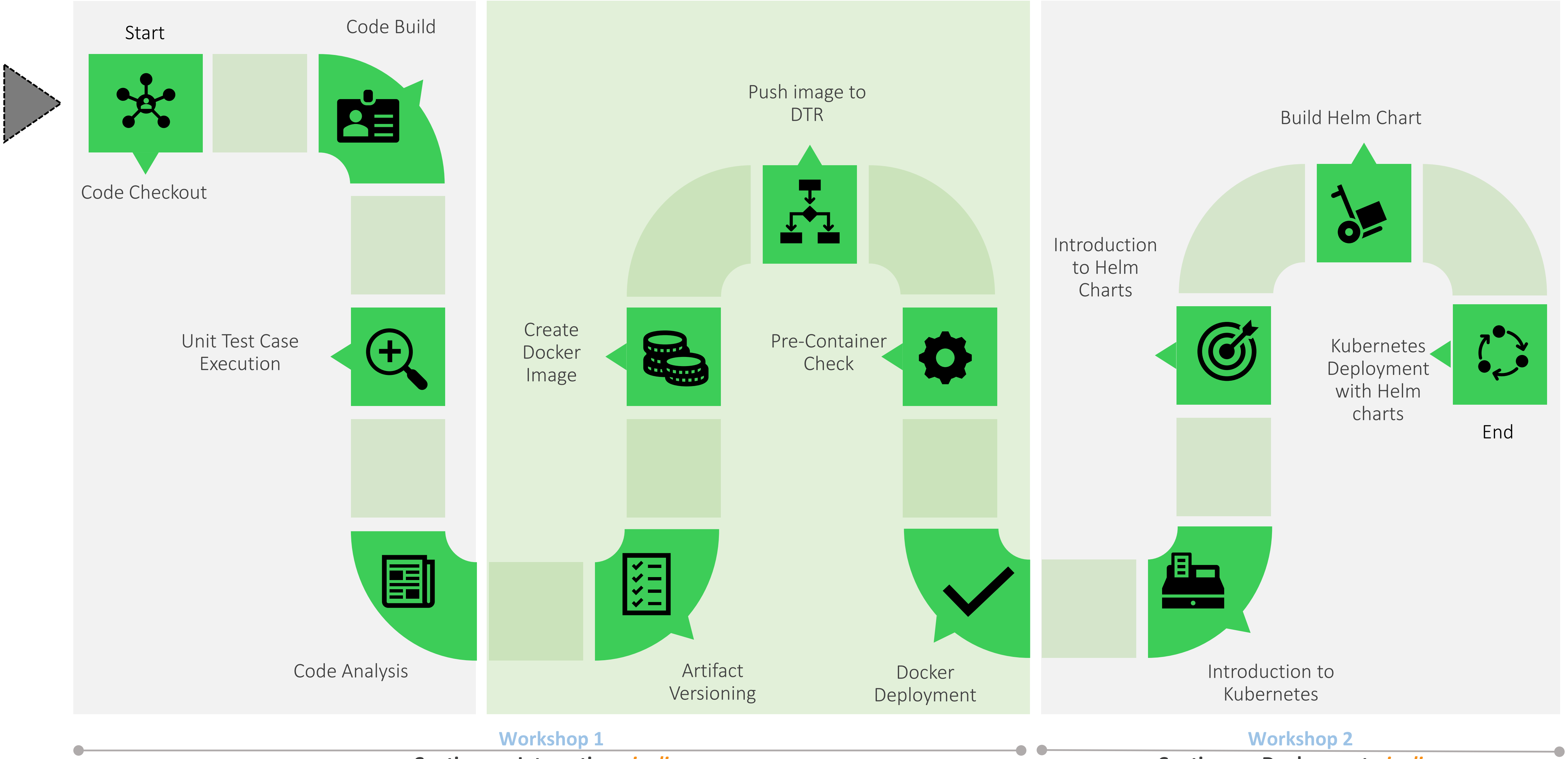
DevOps as process

1. Version control management
2. Continuous build
3. Continuous integration
4. Continuous delivery
5. Continuous deployment
6. Automating entire chain – tool chain



Achieving Continuous DevOps

Agenda

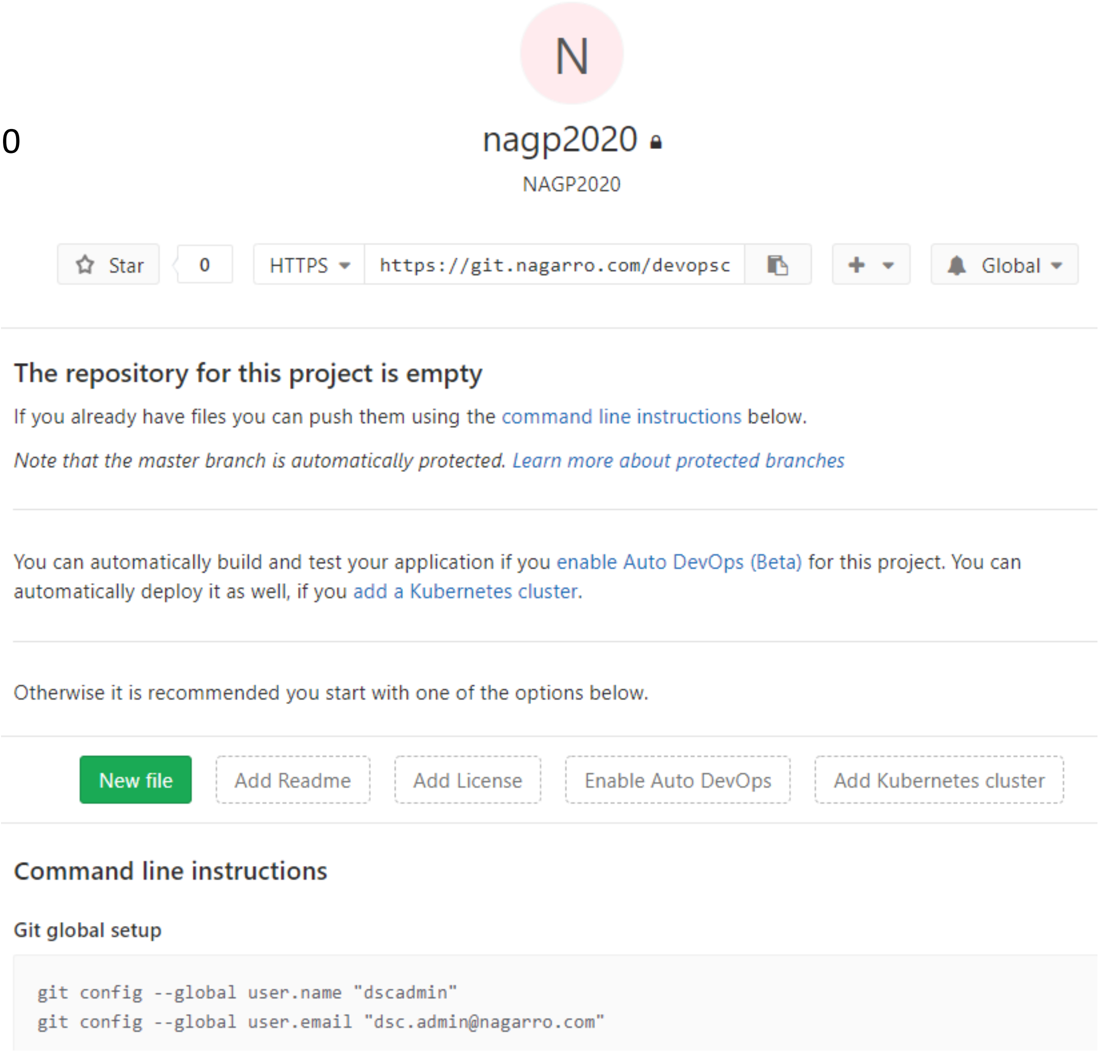


Git Repository

Validate if it exist or not

Navigation steps:

1. Navigate to git.nagarro.com
2. Look for devopscoe/nagp2020



nagp2020

NAGP2020

The repository for this project is empty

If you already have files you can push them using the command line instructions below.

Note that the master branch is automatically protected. Learn more about protected branches

You can automatically build and test your application if you enable Auto DevOps (Beta) for this project. You can automatically deploy it as well, if you add a Kubernetes cluster.

Otherwise it is recommended you start with one of the options below.

Command line instructions

Git global setup

```
git config --global user.name "dscadmin"
git config --global user.email "dsc.admin@nagarro.com"
```

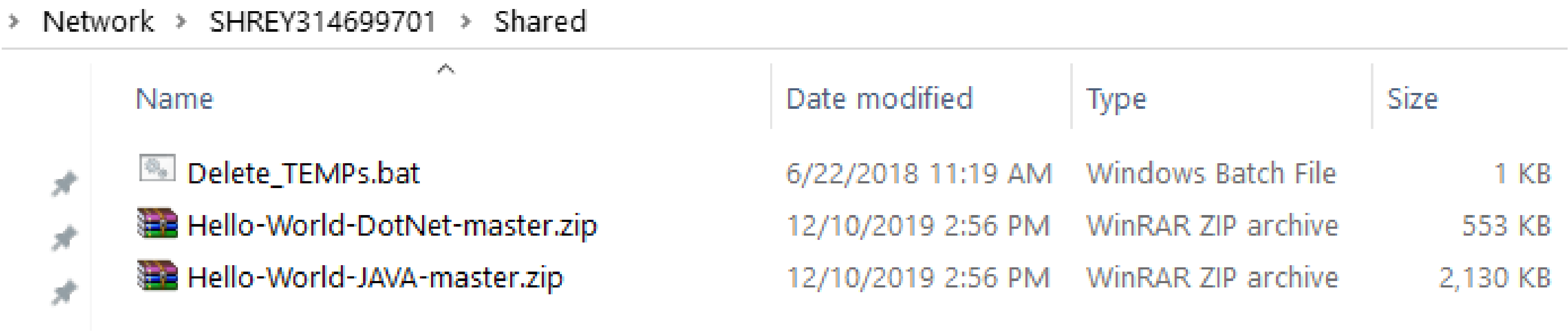
Make sure, it’s a blank repository

Sample Code

Available here – Java/Dotnet

Navigation steps:

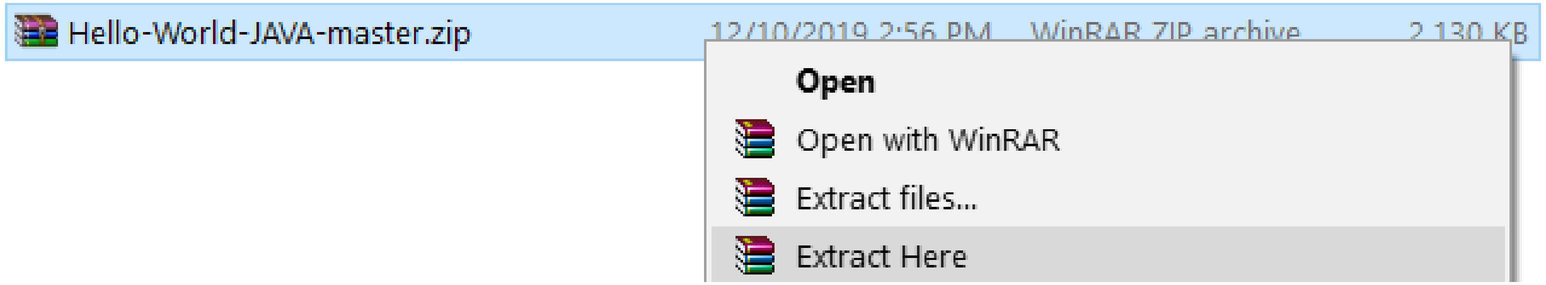
- On your laptops, press Window+R, and navigate to \\SHREY314699701\Shared



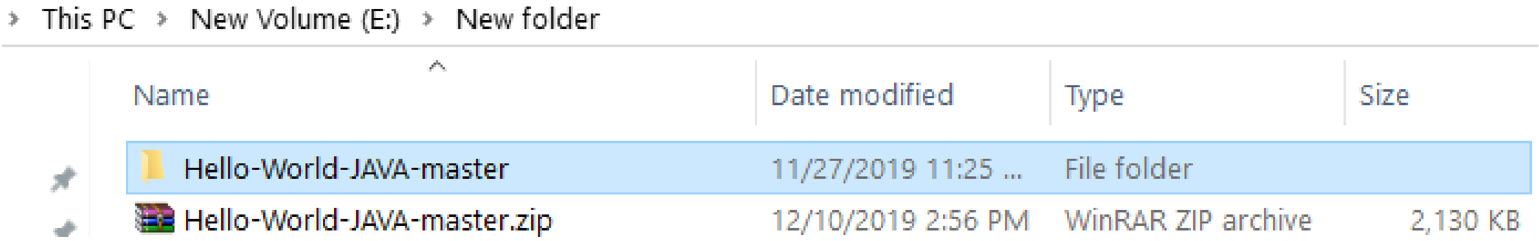
› Network › SHREY314699701 › Shared

Name	Date modified	Type	Size
Delete_TEMPs.bat	6/22/2018 11:19 AM	Windows Batch File	1 KB
Hello-World-DotNet-master.zip	12/10/2019 2:56 PM	WinRAR ZIP archive	553 KB
Hello-World-JAVA-master.zip	12/10/2019 2:56 PM	WinRAR ZIP archive	2,130 KB

- Attendees with *DotNet background*, copy Hello-World-DotNet-master.zip on your laptop, right click on it and click extract here
- Attendees with *Java background*, copy Hello-World-Java-master.zip on your laptop, right click on it and click extract here; eg:



Hello-World-JAVA-master.zip	12/10/2019 2:56 PM	WinRAR ZIP archive	2,130 KB



› This PC › New Volume (E:) › New folder

Name	Date modified	Type	Size
Hello-World-JAVA-master	11/27/2019 11:25 ...	File folder	
Hello-World-JAVA-master.zip	12/10/2019 2:56 PM	WinRAR ZIP archive	2,130 KB

Git Repository

Push extracted code to version control system

Steps to be followed for pushing a sample code (Java/DotNet) to Git:

- Open command prompt, and navigate to directory, having extracted sample code and navigate to source code directory
- Since the code already exist, do init, to initialize it as git repository
- Since the repository is already present, add remote to the local repository
- Add the files in your new local repository, this stages them for the first commit; git add .
- Commit the files, that are staged in local repository, with a message; eg: Initial commit
- Push the code to Git repository

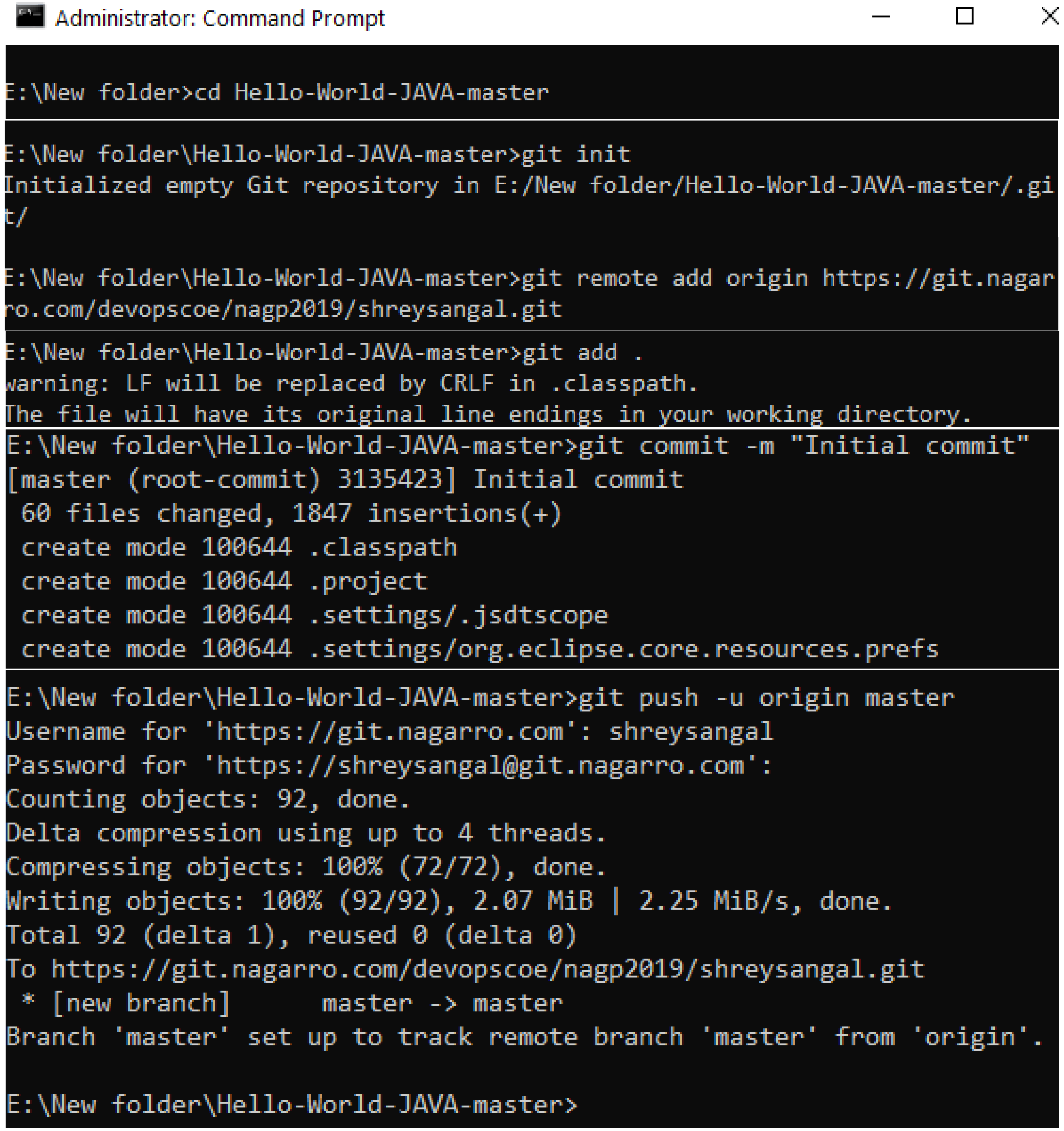
FAQ:

- Problem encountered while pushing code:

```
E:\New folder\Hello-World-JAVA-master>git push -u origin master
remote: HTTP Basic: Access denied
fatal: Authentication failed for
'https://git.nagarro.com/devopscoe/training/shreysangal.git/’
```

Below solution will help and try pushing again

```
git config --system --unset credential.helper
```



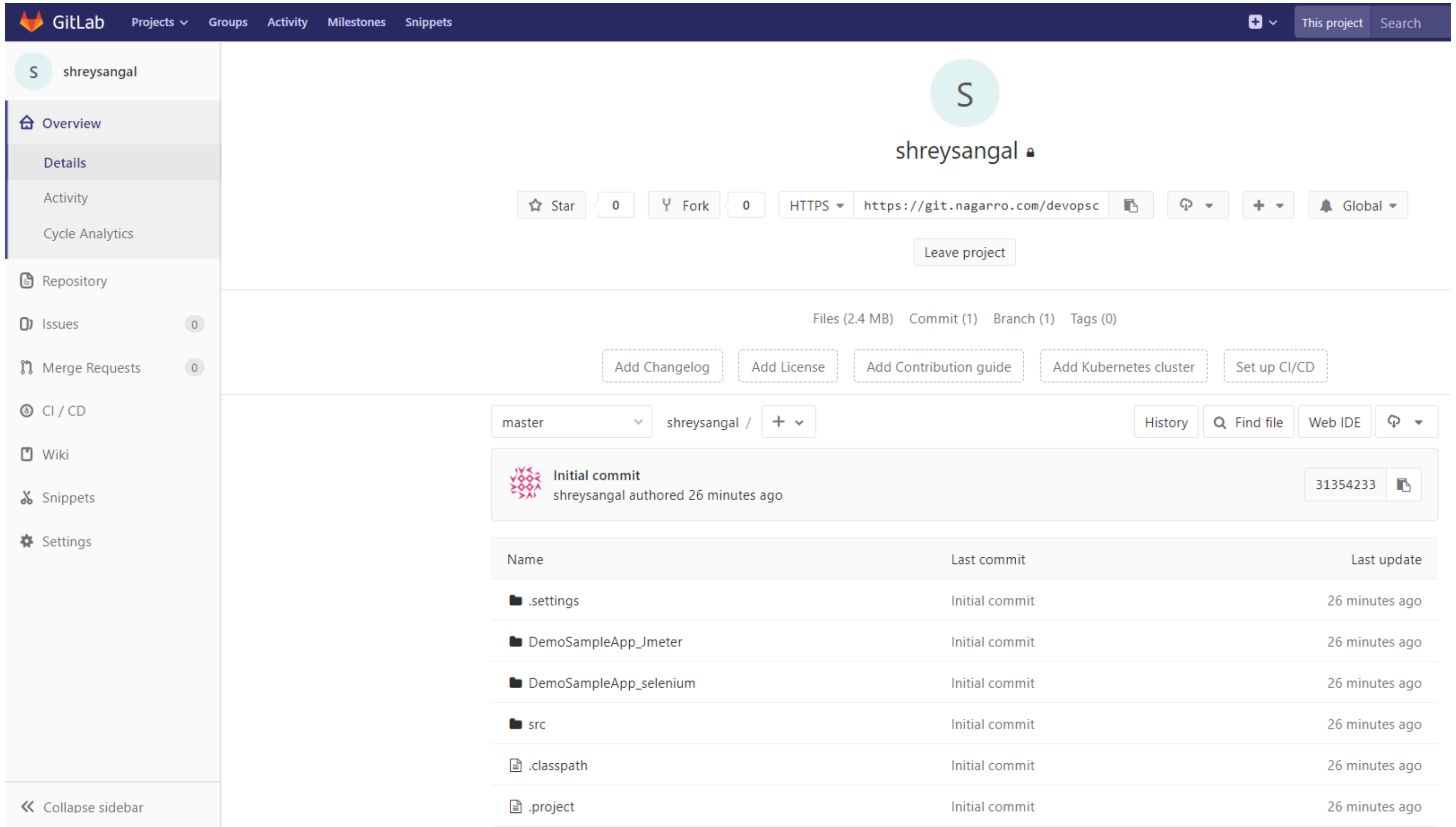
```
E:\New folder>cd Hello-World-JAVA-master

E:\New folder\Hello-World-JAVA-master>git init
Initialized empty Git repository in E:/New folder/Hello-World-JAVA-master/.gi
t/

E:\New folder\Hello-World-JAVA-master>git remote add origin https://git.nagar
ro.com/devopscoe/nagp2019/shreysangal.git
E:\New folder\Hello-World-JAVA-master>git add .
warning: LF will be replaced by CRLF in .classpath.
The file will have its original line endings in your working directory.
E:\New folder\Hello-World-JAVA-master>git commit -m "Initial commit"
[master (root-commit) 3135423] Initial commit
 60 files changed, 1847 insertions(+)
 create mode 100644 .classpath
 create mode 100644 .project
 create mode 100644 .settings/.jsdtscope
 create mode 100644 .settings/org.eclipse.core.resources.prefs
E:\New folder\Hello-World-JAVA-master>git push -u origin master
Username for 'https://git.nagarro.com': shreysangal
Password for 'https://shreysangal@git.nagarro.com':
Counting objects: 92, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (72/72), done.
Writing objects: 100% (92/92), 2.07 MiB | 2.25 MiB/s, done.
Total 92 (delta 1), reused 0 (delta 0)
To https://git.nagarro.com/devopscoe/nagp2019/shreysangal.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.

E:\New folder\Hello-World-JAVA-master>
```

Git Repository (Java)

Verify if the pushed code exist

Navigation steps:

1. Navigate to git.nagarro.com
2. Look for devopscoe/nagp2020



Initial commit
shreysangal authored 26 minutes ago
31354233

Name	Last commit	Last update
.settings	Initial commit	26 minutes ago
DemoSampleApp_Jmeter	Initial commit	26 minutes ago
DemoSampleApp_selenium	Initial commit	26 minutes ago
src	Initial commit	26 minutes ago
.classpath	Initial commit	26 minutes ago
.project	Initial commit	26 minutes ago

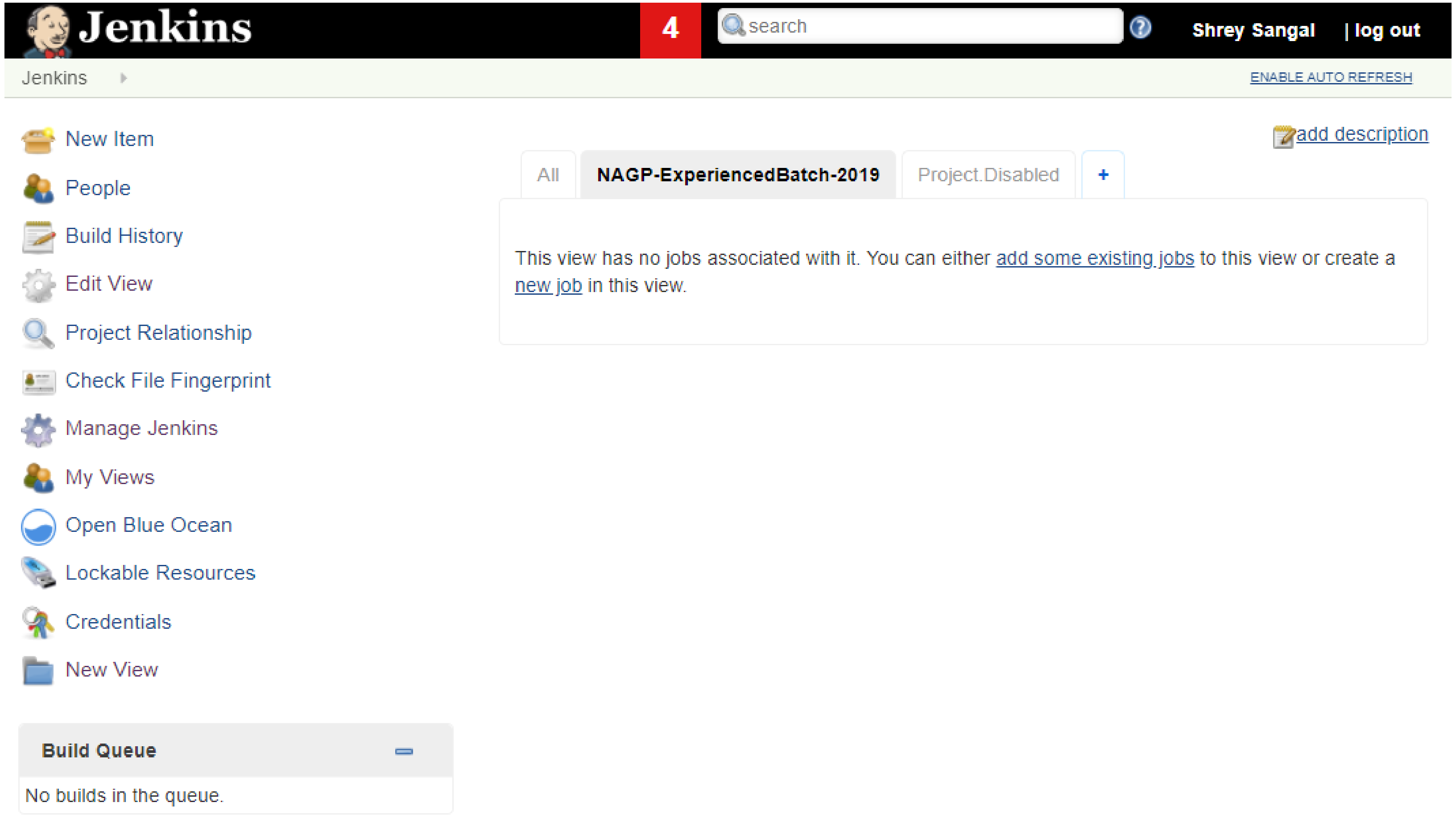
Make sure, it is not a blank repository

Continuous Integration (Jenkins)

Open source Continuous Integration server capable of orchestrating a chain of actions in an automated fashion

Navigation steps:

1. Navigate to http://10.127.129.114:8080/
2. Login using your AD credentials
3. NAGP-ExperiencedBatch-2020 view should be visible



No builds in the queue.

This view has no jobs associated with it. You can either add some existing jobs to this view or create a new job in this view.

Jenkins and its integrations

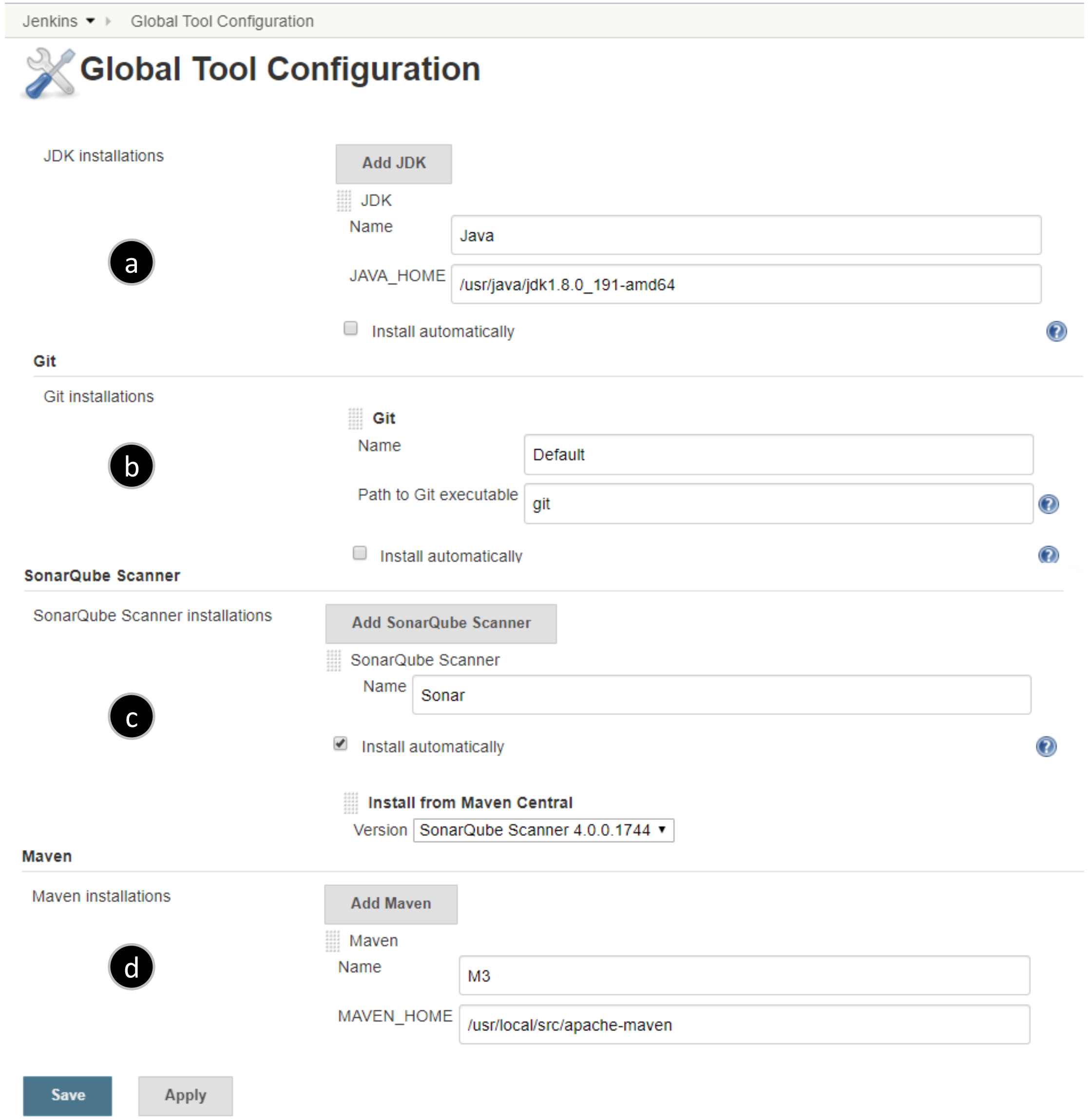
Third party tools configuration

Navigation Steps:

1. Go to manage Jenkins
2. Click on Global tool configuration

Third party tools installed on server needs to be configured in jenkins:

- a Java
- b Git
- c Sonarqube scanner
- d Maven
- e Docker



Global Tool Configuration

JDK installations

JDK
Name: Java
JAVA_HOME: /usr/java/jdk1.8.0_191-amd64
□ Install automatically

Git

Git installations

Git
Name: Default
Path to Git executable: git
□ Install automatically

SonarQube Scanner

SonarQube Scanner installations

SonarQube Scanner
Name: Sonar
☑ Install automatically

Install from Maven Central
Version: SonarQube Scanner 4.0.0.1744 ▾

Maven

Maven installations

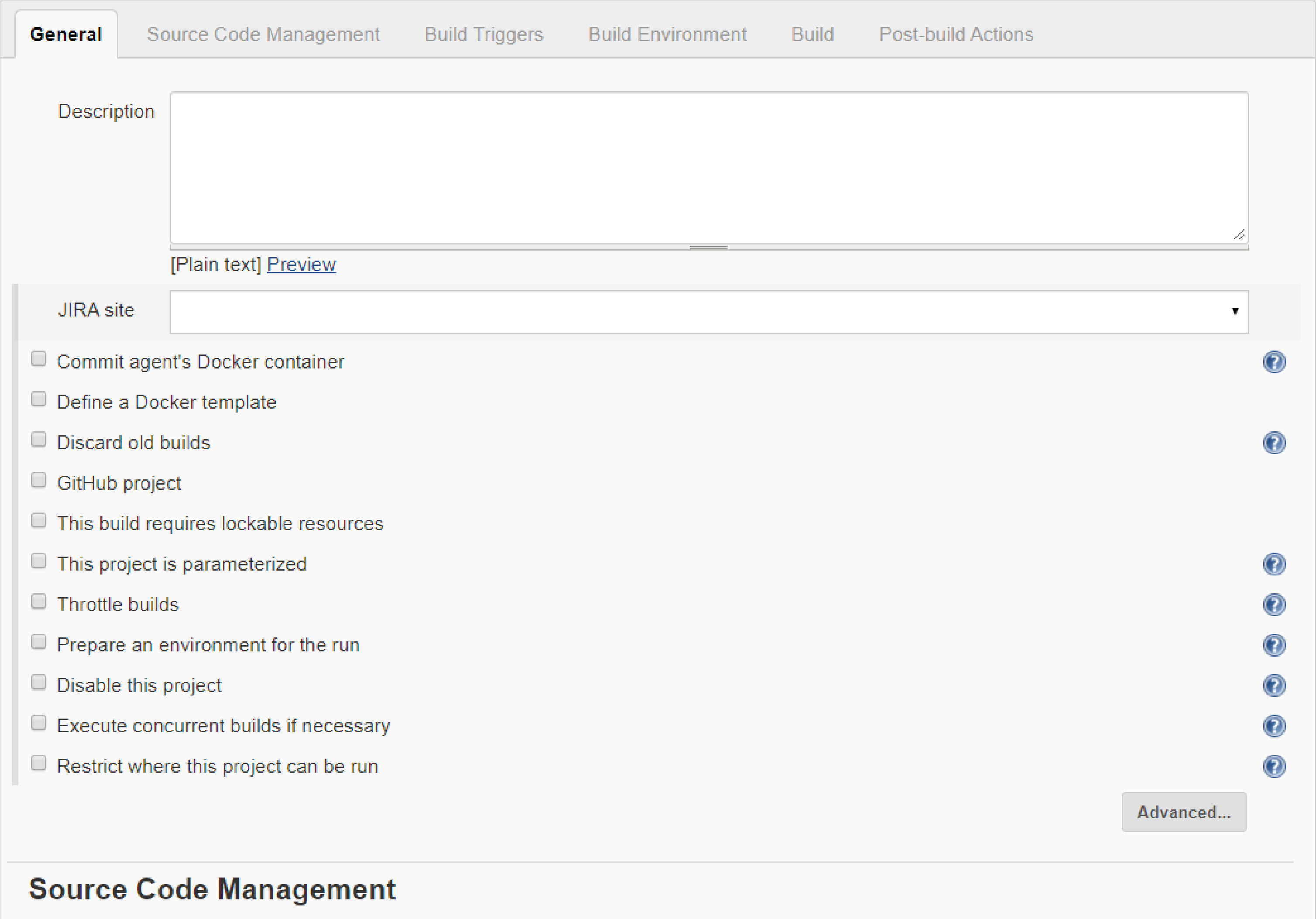
Maven
Name: M3
MAVEN_HOME: /usr/local/src/apache-maven

Jenkins ….freestyle job

Create a new job

Navigation Steps:

1. Go to manage Jenkins
2. Click on new job



Description

[Plain text] Preview

JIRA site

□ Commit agent's Docker container
□ Define a Docker template
□ Discard old builds
□ GitHub project
□ This build requires lockable resources
□ This project is parameterized
□ Throttle builds
□ Prepare an environment for the run
□ Disable this project
□ Execute concurrent builds if necessary
□ Restrict where this project can be run

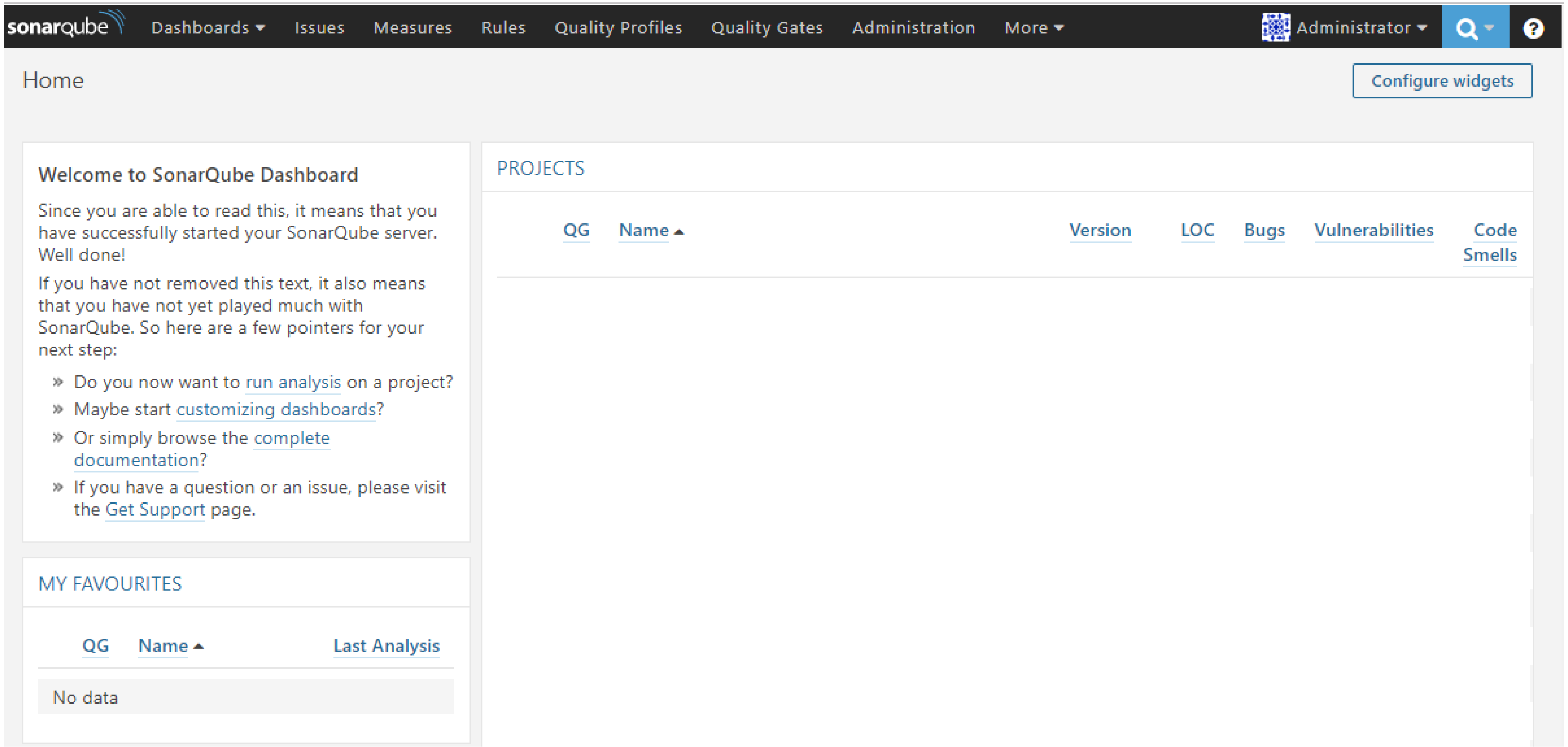
Source Code Management

Code Coverage (Sonarqube)

Catch bugs and vulnerabilities, with thousands of automated Static Code Analysis rules

Navigation steps:

1. Navigate to http://10.127.127.160:9000/
2. Login using your AD credentials



Welcome to SonarQube Dashboard

Since you are able to read this, it means that you have successfully started your SonarQube server. Well done!

If you have not removed this text, it also means that you have not yet played much with SonarQube. So here are a few pointers for your next step:

- Do you now want to run analysis on a project?
- Maybe start customizing dashboards?
- Or simply browse the complete documentation?
- If you have a question or an issue, please visit the Get Support page.

MY FAVOURITES

QG	Name ▲	Last Analysis
No data		

PROJECTS

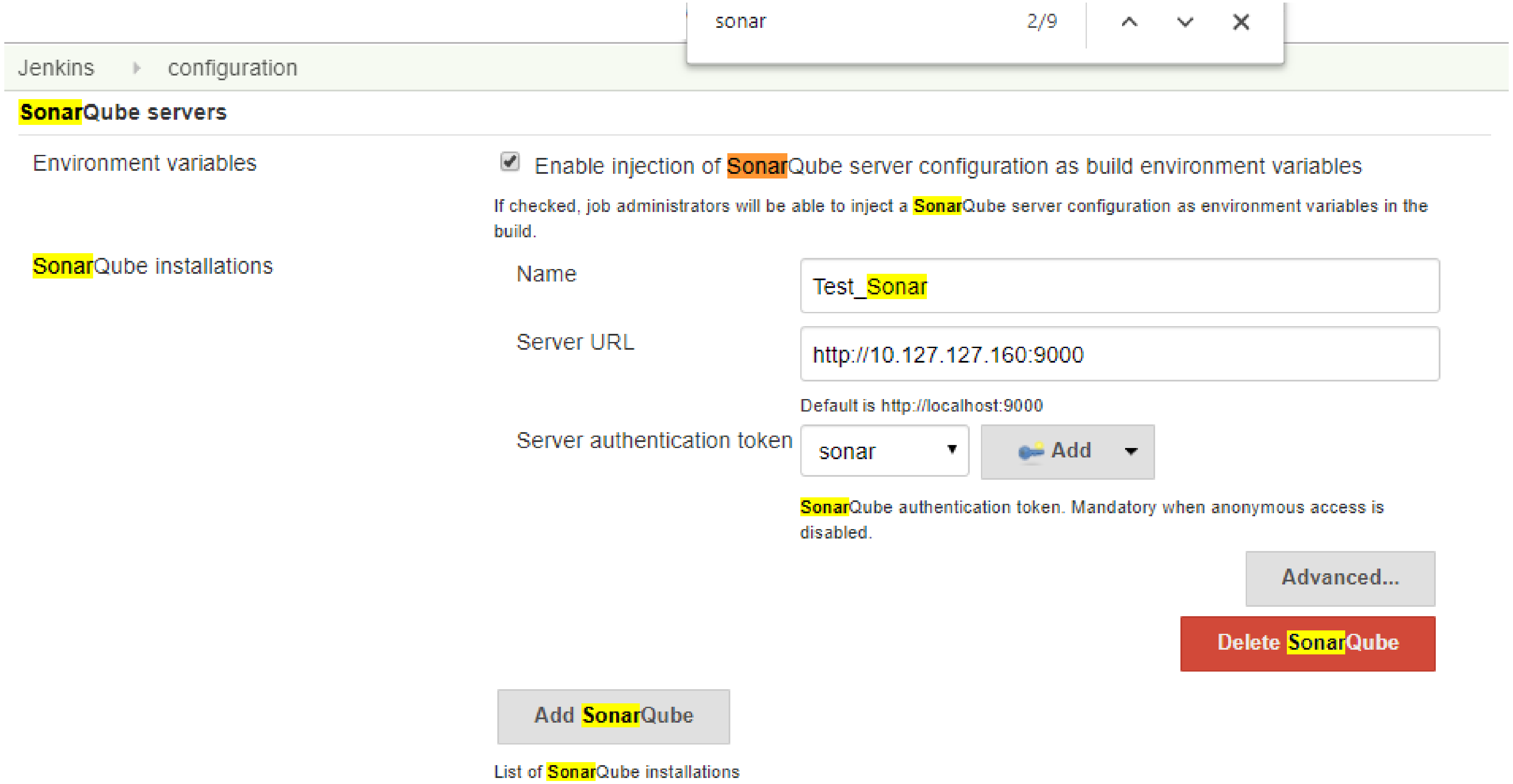
QG	Name ▲	Version	LOC	Bugs	Vulnerabilities	Code Smells

Jenkins and its integrations

Sonarqube integrated with Jenkins

Navigation steps:

1. Go to manage Jenkins
2. Click on configure system
3. Search for Sonar



sonar 2/9

Jenkins › configuration

SonarQube servers

Environment variables

☑ Enable injection of SonarQube server configuration as build environment variables

If checked, job administrators will be able to inject a SonarQube server configuration as environment variables in the build.

SonarQube installations

Name: Test_Sonar

Server URL: http://10.127.127.160:9000

Default is http://localhost:9000

Server authentication token: sonar

SonarQube authentication token. Mandatory when anonymous access is disabled.

List of SonarQube installations

QUESTIONS