

DEVOPS PROFESSIONAL CERTIFICATION PROGRAM

Lab – 1 : Tools

- **Getting Started with Ubuntu (topgear VDI)**
- **Check availability of tools**
- **Walk through Jenkins**

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1. Getting Started with Ubuntu (topgear VDI)

- ✓ Recap basic commands (not limited to)
 - Creating / Editing / Deleting Folder or Files
 - Constructing shell scripts and executing
 - View folder contents (including hidden folders)
 - Starting / Stopping/Killing services
 - Setting /Editing system proxy details

2. Check availability of necessary tools

- ✓ Check environment variable JAVA_HOME and PATH settings in the machine:

```
osgdev@TG-DevOps-OS004:~$ echo $JAVA_HOME
/usr/java/jdk1.8.0_162
```

```
osgdev@TG-DevOps-OS004:~$ echo $PATH
/home/osgdev/bin:/home/osgdev/.local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin:/usr/java/jdk1.8.0_162/bin:/opt/apache-maven-3.5.2/bin:/usr/java/jdk1.8.0_162/bin:/opt/apache-maven-3.5.2/bin:/usr/java/jdk1.8.0_162/bin:/opt/apache-maven-3.5.2/bin
```

- ✓ Availability of java:

```
osgdev@TG-DevOps-OS004:~$ java -version
java version "1.8.0_161"
Java(TM) SE Runtime Environment (build 1.8.0_161-b12)
Java HotSpot(TM) 64-Bit Server VM (build 25.161-b12, mixed mode)
```

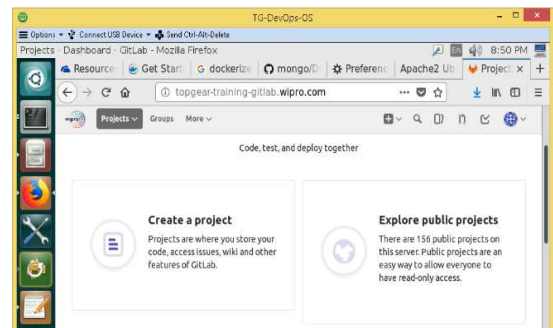
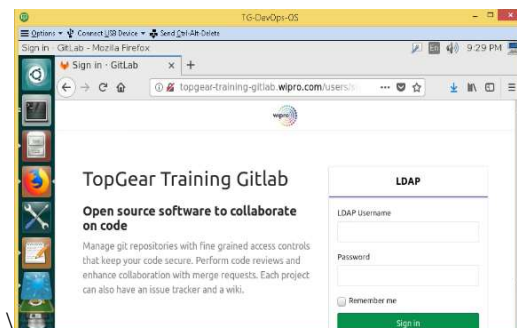
- ✓ Check availability of Git:

```
osgdev@TG-DevOps-OS004:~$ git --version
git version 2.7.4
```

- ✓ Check availability /Accessibility of Wipro's Enterprise Gitlab:

Access your account using your AD Credentials.

URL: http://topgear-training-gitlab.wipro.com/users/sign_in



- ✓ Check availability of Maven:

```
Osge\ev@TG-DevOps-OS004:~$ mvn --version
Apache Maven 3.5.2 (138ed61fd100ec658bfa2d307c43b76940a5d7d; 2017-10-18T13:28:13+05:30)
```

```

Maven home: /opt/apache-maven-3.5.2
Java version: 1.8.0_162, vendor: Oracle Corporation
Java home: /usr/java/jdk1.8.0_162/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "4.4.0-112-generic", arch: "amd64", family: "unix"

```

✓ Check availability of Apache Tomcat:

- Start tomcat service:

```
sudo /opt/tomcat/apache-tomcat-8.5.27/bin/startup.sh
```

 password: osg@1234
- Apache tomcat will be running at port# 5050;
 Localhost: 5050
 Note: Manager credentials - admin/admin
- Stop tomcat service:

```
sudo /opt/tomcat/apache-tomcat-8.5.27/bin/shutdown.sh
```

✓ Check availability of JFrog Artifactory:

- Start Jfrog Artifactory
 - \$ systemctl stop artifactory.service ... type the password "osg@1234"
 - \$ sudo /opt/jfrog/artifactory/bin/artifactory.sh ... type the password "osg@1234"
 - Service available @ "http://localhost:5040/artifactory/"
 - Login with devops/devops (Default Admin credentials : admin/password)
- Stop Jfrog Artifactory
 - Use Ctl+c

✓ Check availability of SonarQube:

- Start SonarQube Service

```
$ sudo /home/osgdev/mySonarQube/sonarqube-6.4/bin/linux-x86-64/sonar.sh start
```

 Open browser to check: <http://127.0.0.1:9000/sonar>
- Stop SonarQube Service

```
$ sudo /home/osgdev/mySonarQube/sonarqube-6.4/bin/linux-x86-64/sonar.sh stop
```
- To check SonarQube status

```
$ sudo /home/osgdev/mySonarQube/sonarqube-6.4/bin/linux-x86-64/sonar.sh status
```

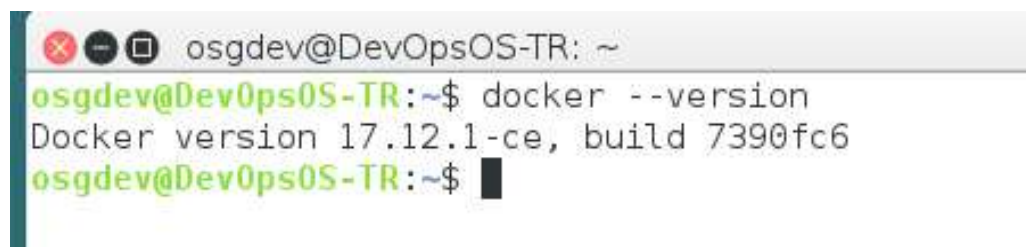
✓ Check availability of Firefox Webdriver (geckodriver):

```

$whereis geckodriver
geckodriver: usr/bin/geckodriver

```

✓ Check availability of Docker:



```

osgdev@DevOpsOS-TR: ~
osgdev@DevOpsOS-TR:~$ docker --version
Docker version 17.12.1-ce, build 7390fc6
osgdev@DevOpsOS-TR:~$

```

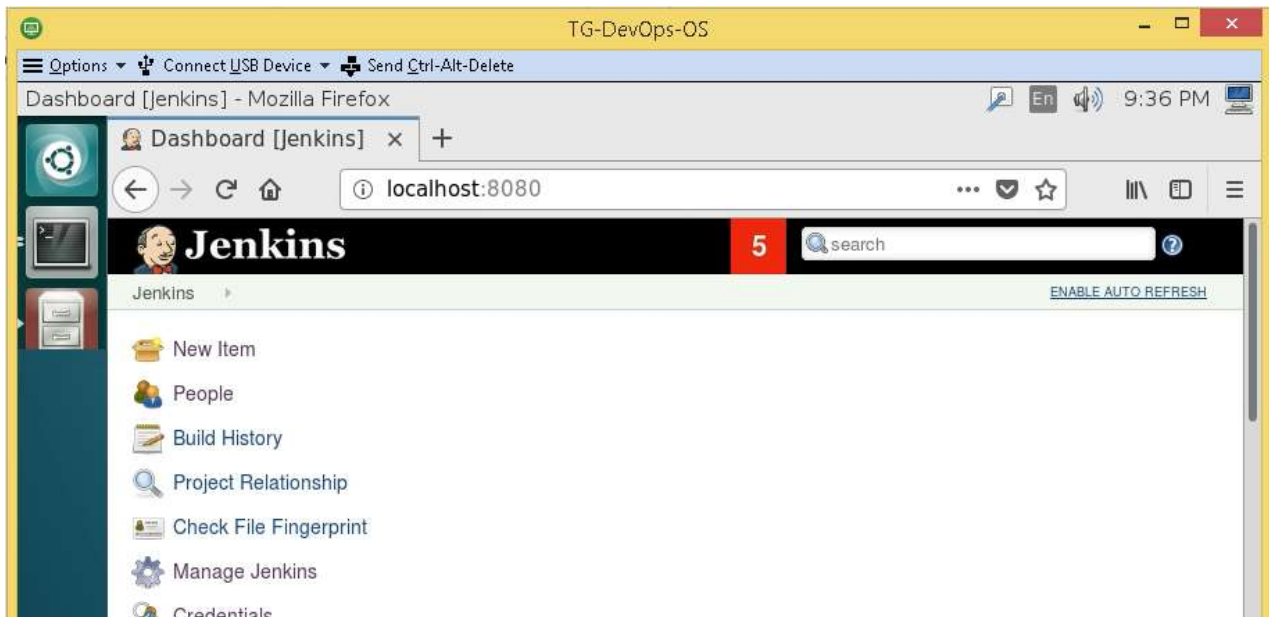
✓ Check availability of Ansible:

```
osgdev@DevOps0S-TR:~$ ansible --version
ansible 2.4.2.0
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/osgdev/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.12 (default, Dec  4 2017, 14:50:18) [GCC 5.4.0 20160609]
osgdev@DevOps0S-TR:~$
```

✓ Check availability of Jenkins:

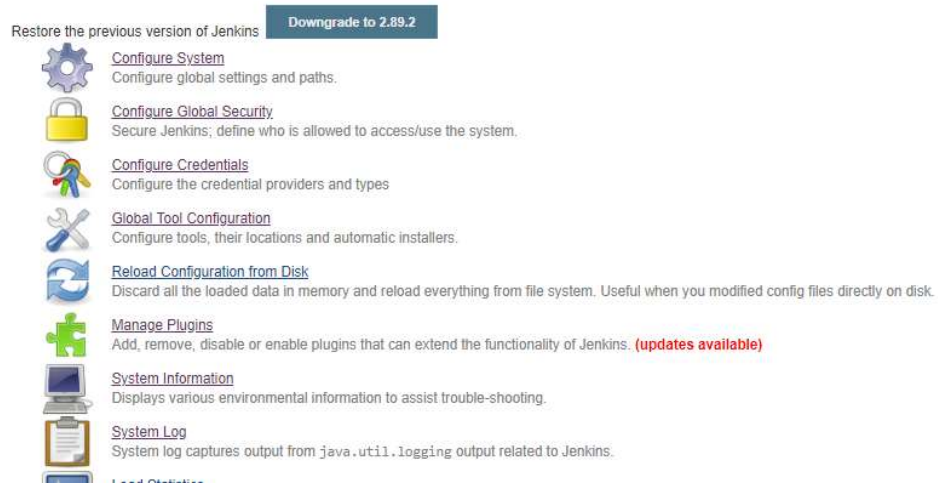
```
osgdev@TG-DevOps-OS004:~$ service jenkins status
â- jenkins.service - LSB: Start Jenkins at boot time
   Loaded: loaded (/etc/init.d/jenkins; bad; vendor preset: enabled)
   Active: active (exited) since Thu 2018-03-29 13:21:06 IST; 2 weeks 6 days ago
     Docs: man:systemd-sysv-generator(8)
  Process: 1665 ExecStart=/etc/init.d/jenkins start (code=exited, status=0/SUCCESS)
    Tasks: 0
   Memory: 0B
      CPU: 0
```

You can access Jenkins on the browser using the URL: <http://localhost:8080/>



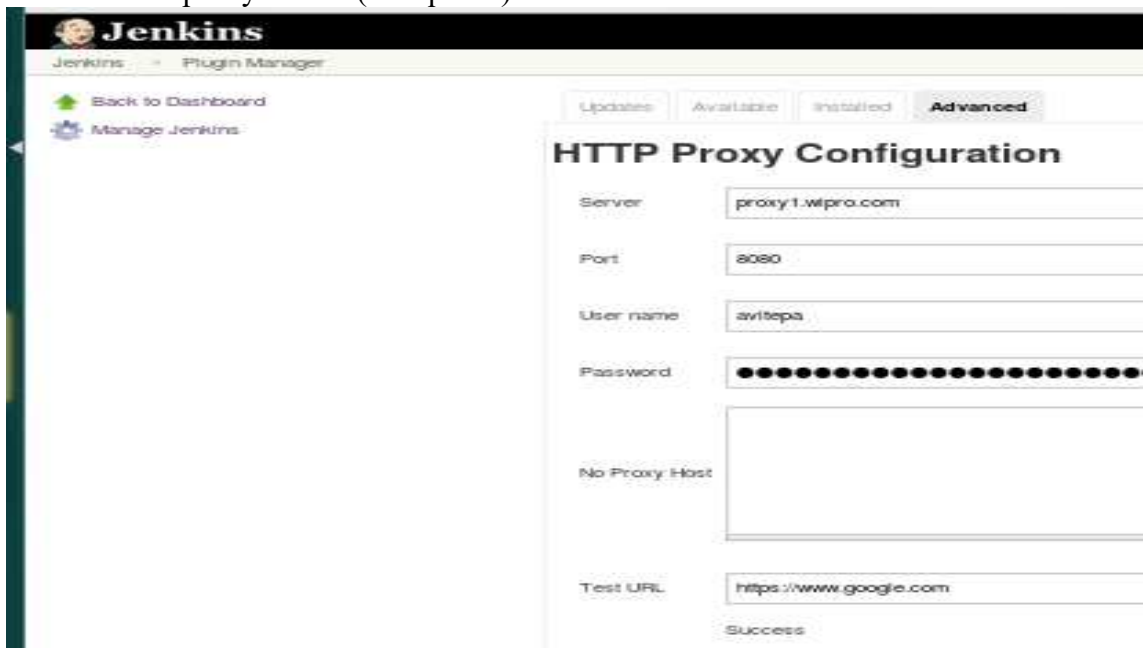
3. Walk through Jenkins

✓ Manage Jenkins



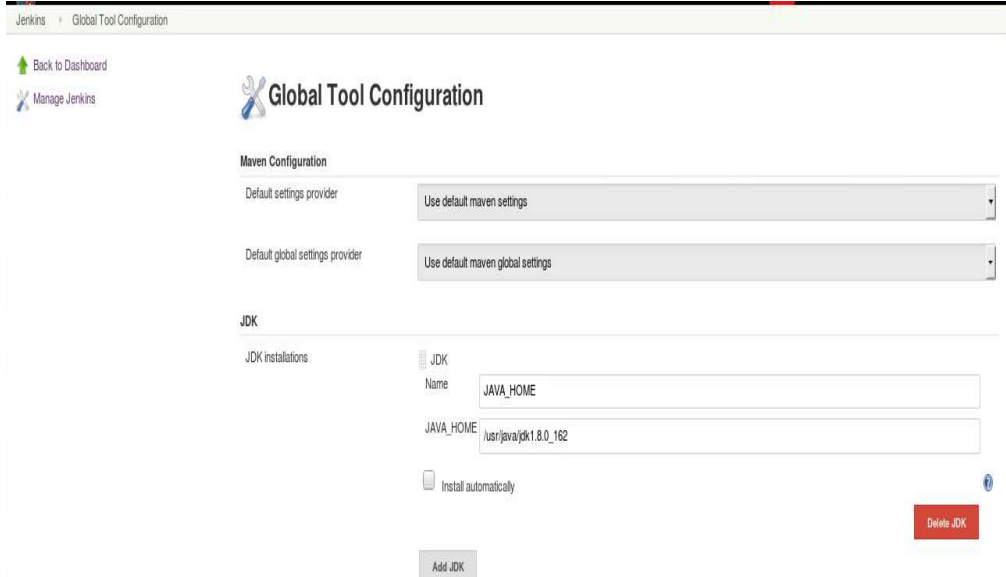
✓ Manage Plugins (Updates|installed|Available|Advanced)

- Select required plugins and install
- Set proxy details (if required)



- ✓ **Global Tool Configuration**
 - **Configure Git, JDK, Maven, Sonar Server...**

1. JDK Configuration



The screenshot shows the Jenkins 'Global Tool Configuration' page for the 'JDK' section. It includes a 'Maven Configuration' section with dropdowns for 'Default settings provider' and 'Default global settings provider', both set to 'Use default maven settings'. The 'JDK' section has a table for 'JDK installations' with one entry named 'JAVA_HOME' with a path of '/usr/java/jdk1.8.0_162'. There are checkboxes for 'Install automatically' and buttons for 'Delete JDK' and 'Add JDK'.

Jenkins > Global Tool Configuration

Back to Dashboard
Manage Jenkins

Global Tool Configuration

Maven Configuration

Default settings provider: Use default maven settings

Default global settings provider: Use default maven global settings

JDK

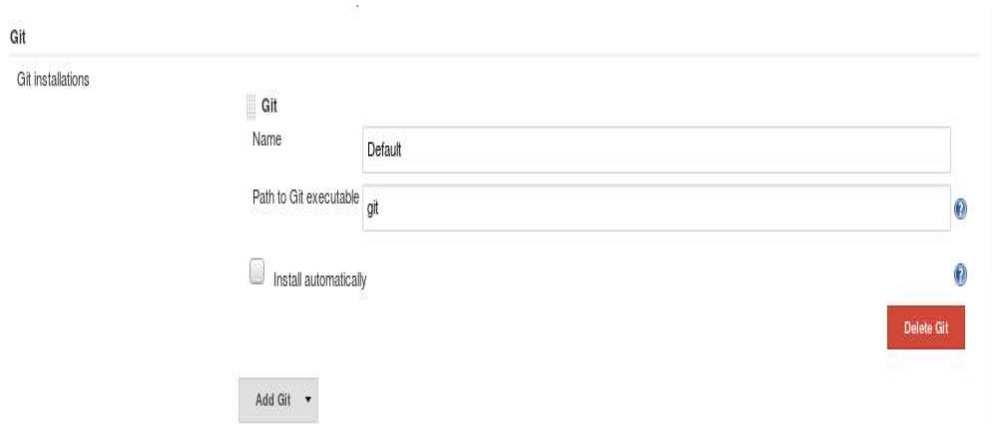
JDK installations

JDK
<div>Name: JAVA_HOME</div> <div>JAVA_HOME: /usr/java/jdk1.8.0_162</div> <div><input type="checkbox"/> Install automatically</div>

Delete JDK

Add JDK

2. Git Configuration



The screenshot shows the Jenkins 'Global Tool Configuration' page for the 'Git' section. It includes a 'Git installations' table with one entry named 'Default' with a path of 'git'. There are checkboxes for 'Install automatically' and buttons for 'Delete Git' and 'Add Git'.

Git

Git installations

Git
<div>Name: Default</div> <div>Path to Git executable: git</div> <div><input type="checkbox"/> Install automatically</div>

Delete Git

Add Git

3. SonarQube Server Configuration



The screenshot shows the Jenkins 'Global Tool Configuration' page for the 'SonarQube Scanner' section. It includes a 'SonarQube Scanner installations' table with one entry named 'SonarQube Scanner'. The 'Name' field is empty and marked as 'Required'. There is a checkbox for 'Install automatically' which is checked. Below the table, there is a section for 'Install from Maven Central' with a 'Version' dropdown set to 'SonarQube Scanner 3.1.0.1141'. There is a 'Delete Installer' button.

SonarQube Scanner

SonarQube Scanner installations

SonarQube Scanner
<div>Name: Required</div> <div><input checked="" type="checkbox"/> Install automatically</div>

Install from Maven Central

Version: SonarQube Scanner 3.1.0.1141

Delete Installer

4. Maven Configuration

The screenshot shows the Jenkins configuration page for Maven. Under the 'Maven' section, there is a 'Maven installations' list. A new installation is being added with the name 'MAVEN_HOME' and the path '/opt/apache-maven-3.5.2'. There is an 'Install automatically' checkbox and a 'Delete Maven' button. Below this, there is an 'Add Maven' button and a link to 'List of Maven installations on this system'. The 'Ansible' and 'Docker' sections are also visible, each with an 'Add' button and a link to their respective installation lists.

✓ Configure System

○ Configure Sonar Server, Artifactory, Gitlab & Email Notification

The screenshot shows the Jenkins configuration page for SonarQube servers. Under the 'Tool Locations' section, there is a 'SonarQube servers' subsection. The 'Environment variables' checkbox is checked, and the 'Enable injection of SonarQube server configuration as build environment variables' checkbox is also checked. The 'Server URL' field is empty, and a red error message states 'This property is mandatory.' The 'Server version' dropdown is set to '5.3 or higher'. The 'Server authentication token' field is empty. The 'SonarQube account login' and 'SonarQube account password' fields are also empty. There are 'Advanced...', 'Delete SonarQube', 'Save', and 'Apply' buttons at the bottom.

Gitlab

Enable authentication for 'project' end-point

☒

GitLab connections

Connection name

MyGitlabB4On17th

A name for the connection

Gitlab host URL

http://topgear-training-gitlab.wipro.com

The complete URL to the Gitlab server (i.e. http://gitlab.org)

Credentials

GitLab API token (on17ThMay)

Add

API Token for Gitlab access required

API Token for accessing Gitlab

Advanced...

Test Connection

Delete

Add

Jenkins Location

Jenkins URL

http://localhost:8080/

Please set a valid host name, instead of localhost

System Admin e-mail address

avitepa@wipro.com

Artifactory

Enable Push to Bintray

☒

Use the Credentials Plugin

☐

Artifactory servers

Artifactory

Server ID

central

URL

http://localhost:5040/artifactory

Default Deployer Credentials

Username

b4devops

Password

••••••••

Advanced...

Test Connection

Delete

Use Different Resolver Credentials

☐

Add Artifactory Server

List of Artifactory servers that projects will want to deploy artifacts and build info to

8

Sensitivity: Internal & Restricted

Extended E-mail Notification

SMTP server: smtp.office365.com

Default user E-mail suffix: @wipro.com

☒ Use SMTP Authentication

User Name: avitepa@wipro.com

Password: ●●●●●●●●

Use SSL: ☐

SMTP port: 587

Charset: UTF-8

Default Content Type: HTML (text/html)

☐ Use List-ID Email Header

☐ Add 'Precedence: bulk' Email Header

Default Recipients:

Reply To List:

Save **Apply**

E-mail Notification

SMTP server: smtp.office365.com

Default user e-mail suffix: @wipro.com

☒ Use SMTP Authentication

User Name: avitepa@wipro.com

Password: ●●●●●●●●

Use SSL: ☐

SMTP Port: 587

Reply-To Address:

Charset: UTF-8

☒ Test configuration by sending test e-mail

Test e-mail recipient: avinash.patel@wipro.com

Email was successfully sent

Test configuration

Save **Apply**

Jenkins Job

Enter an item name

» Required field

Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

Maven project
Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

Pipeline
Orchestrates long-running activities that can span multiple build slaves. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

GitHub Organization
Scans a GitHub organization (or user account) for all repositories matching some defined markers.

OK

Multi-branch Pipeline