JENKINS

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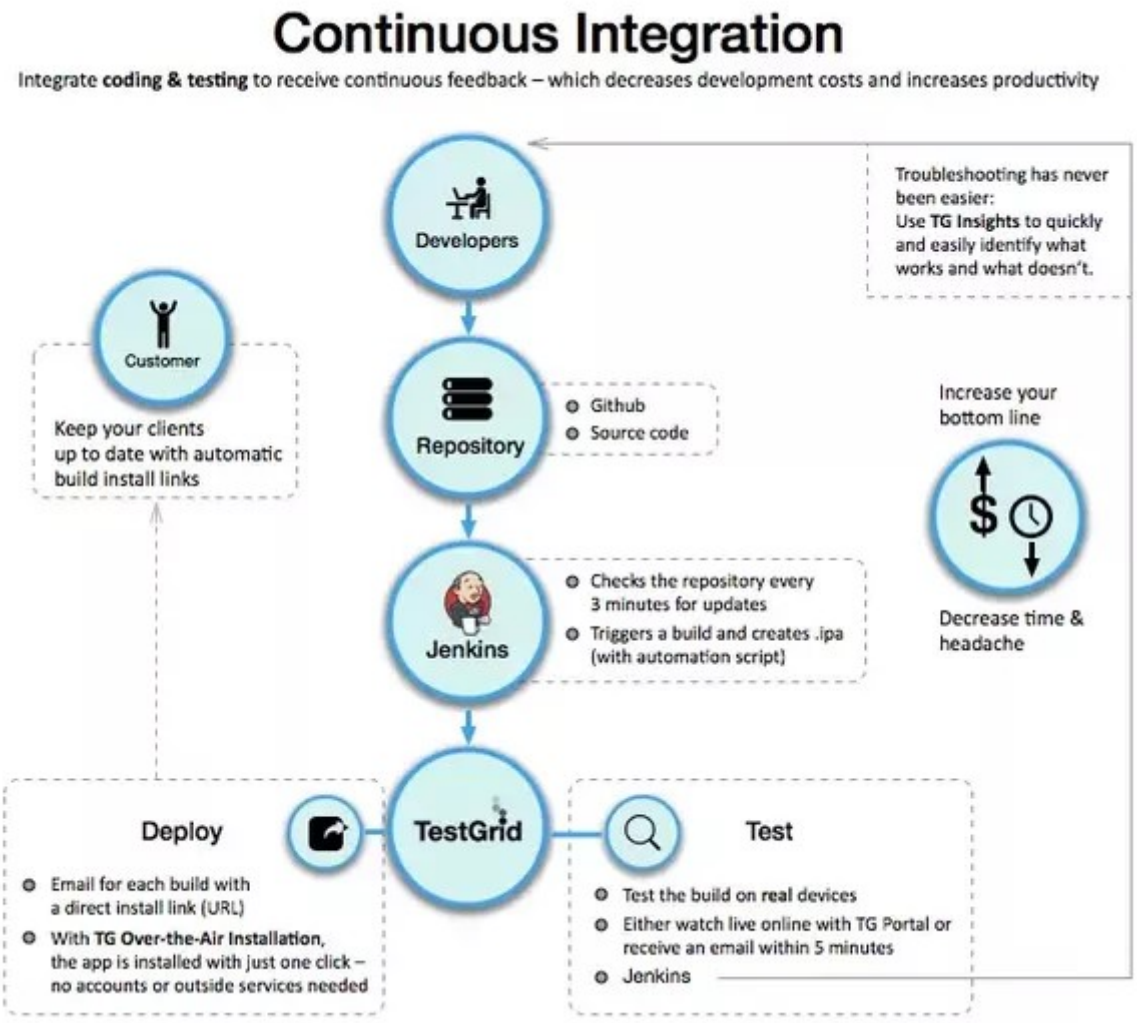
Jenkins is a Continuous Integration (CI) server or tool which is written in java. It provides Continuous Integration services for software development, which can be started via command line or web application server. And also, it is happy to know that Jenkins is free software to download and install.

Continuous Integration

Before going in details to Jenkins, let me tell you what ***Continuous Integration*** (CI) is.

Continuous Integration (CI) is a development practice that requires developers to integrate code into a shared repository several times a day. It is a process of running your tests on a non-developer (say testers) machine automatically when someone pushes new code into the source repository. The below diagram shows the CI workflow.

FLOW DIAGRAM OF JENKINS



Jenkins is an application that monitors the executions of repeatable jobs.

Jenkins focuses on:

1. **Building/testing software projects continuously**
2. **Monitoring executions of externally-run jobs**

So, eventually you need to know about CI/CD, i.e continuous integration & continuous delivery. All these concepts are based on these practices and help reduce the wastage, time, effort, smooth and friction less software development process.

Advantages of Jenkins

- Jenkins is an open source tool with much support from its community.
- Installation is easier.
- It has more than 1000 plug-in to make the work easier.
- It is easy to create new Jenkins plugin if one is not available.
- It is a tool which is written in Java. Hence it can be portable to almost all major platforms.

The diagram below depicts that Jenkins is integrating various DevOps stages:

Once the project is configured in Jenkins then all future builds are automated. It has basic reporting features like status and weather reports (job health).

Status of the build	Description
	Failed
	Unstable
	Success
	Pending
	Disabled
	Aborted

Figure a: Build status

Job health	Description
	No recent builds failed
	20-40% of recent builds failed
	40-60% of recent builds failed
	60-80% of recent builds failed
	All recent builds failed
	Unknown status

Figure b: Weather reports

Installation of jenkins

System Requirmentt:

JDK	JDK 1.5 or above
Memory	2 GB RAM (recommended)
Disk Space	No minimum requirement. Note that since all builds will be stored on the Jenkins machines, it has to be ensured that sufficient disk space is available for build storage.
Operating System Version	Jenkins can be installed on Windows, Ubuntu/Debian, Red Hat/Fedora/CentOS, Mac OS X, openSUSE, FReeBSD, OpenBSD, Gentoo.
Java Container	The WAR file can be run in any container that supports Servlet 2.4/JSP 2.0 or later.(An example is Tomcat 5).

Download the Jenkins

https://jenkins.io/index.html

Jenkins Installion on Ubuntu

Basic Requirements:

There’s no complex requirement for Jenkins but you must have sufficient superuser privileges to perform some basic installation tasks on your operating system and your system should be properly updated with the latest packages. Furthermore, Jenkins requires to have any basic web server installed on it. So, let’s start the setup of Jenkins on Ubuntu 14.04 LTS operating system.

System Update

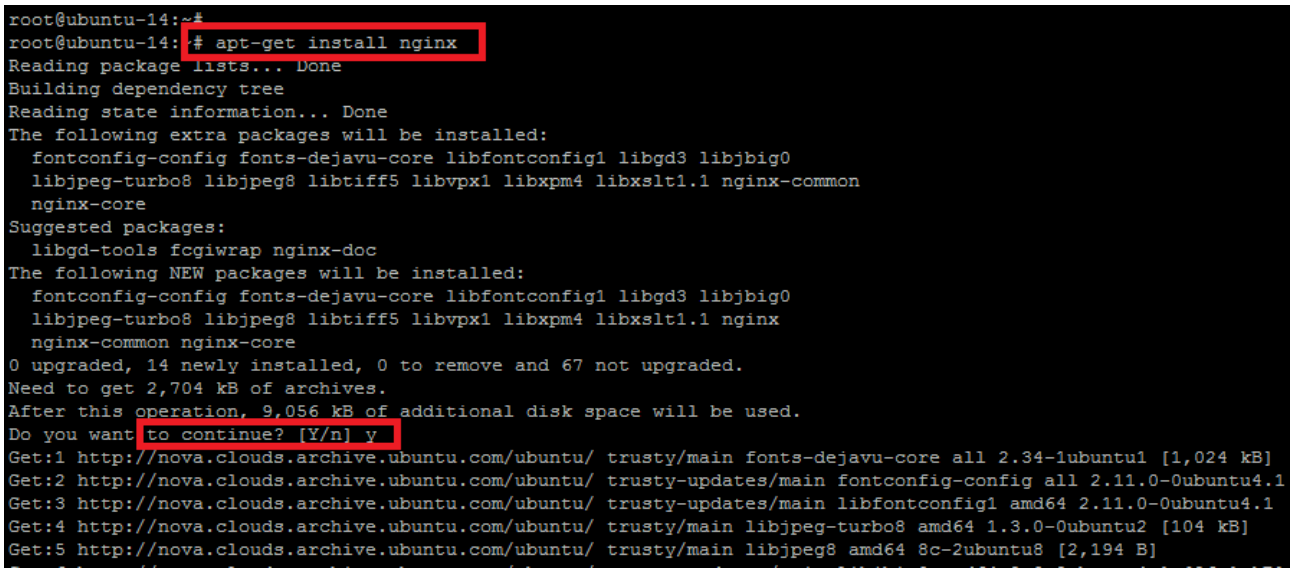
Run the following command to update your operating system before moving on to other packages installation.

root@ubuntu-14:~# apt-get update

Basic Web Server:

Jenkins requires the basic web server installed on your system, so if you don’t have any of your web server installed on your operating system, you can execute the following command to install the web server.

root@ubuntu-14:~# apt-get install nginx
This will be installing Nginx web server. If you are more comfortable with a different web server,



Once your Nginx web server is installed check the status of its services with the command below.

root@ubuntu-14:~# service nginx status

* nginx is running
It means `Nginx` is working fine, so let’s proceed to next step.Java Installation

Java Installation

Now install the Java first through the `apt-get` package manager. For this purpose, you will need to install open source implementation of JAVA Version 7. This is quite easy to do so by executing the command below.

root@ubuntu-14:~# apt-get install openjdk-7-jdk

```
root@ubuntu-14:~#
root@ubuntu-14:~# apt-get install openjdk-7-jdk
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  ca-certificates-java fontconfig java-common libasound2 libasound2-data
  libasyncns0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0
  libatk1.0-data libavahi-client3 libavahi-common-data libavahi-common3
  libcairo2 libcups2 libdatrie1 libflac8 libgdk-pixbuf2.0-0
  libgdk-pixbuf2.0-common libgif4 libgl1-mesa-glx libglapi-mesa libgraphite2-3
  libgtk2.0-0 libgtk2.0-common libharfbuzz0b libjasper1 liblcms2-2 libnspr4
  libnss3 libnss3-nssdb libogg0 libpango-1.0-0 libpangocairo-1.0-0
  libpangoft2-1.0-0 libpcsclite1 libpixman-1-0 libpulse0 libsndfile1
  libthai-data libthai0 libvorbis0a libvorbisenc2 libx11-xcb1 libxcb-dri2-0
  libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-render0 libxcb-shm0
  libxcb-sync1 libxcomposite1 libxcursor1 libxdamage1 libxfixes3 libxi6
  libxinerama1 libxrandr2 libxrender1 libxshmfence1 libxtst6 libxxf86vm1
  openjdk-7-jre openjdk-7-jre-headless tzdata-java x11-common
Suggested packages:
  default-jre equivs libasound2-plugins alsa-utils cups-common librsvg2-common
  gvfs libjasper-runtime liblcms2-utils ttf-baekmuk ttf-arphic-gbsn00lp
  ttf-arphic-bsmi00lp ttf-arphic-gkai00mp ttf-arphic-bkai00mp pcscd pulseaudio
  openjdk-7-demo openjdk-7-source visualvm icedtea-7-plugin
  icedtea-7-jre-jamvm libnss-mdns sun-java6-fonts fonts-ipafont-gothic
  fonts-ipafont-mincho ttf-wqy-microhei ttf-wqy-zenhei ttf-indic-fonts-core
  ttf-telugu-fonts ttf-oriya-fonts ttf-kannada-fonts ttf-bengali-fonts
Recommended packages:
  libgl1-mesa-dri hicolor-icon-theme libgtk2.0-bin libxt-dev libgnome2-0
  libgnomevfs2-0 libgconf2-4 fonts-dejavu-extra
The following NEW packages will be installed:
  ca-certificates-java fontconfig java-common libasound2 libasound2-data
  libasyncns0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0
  libatk1.0-data libavahi-client3 libavahi-common-data libavahi-common3
  libcairo2 libcups2 libdatrie1 libflac8 libgdk-pixbuf2.0-0
  libgdk-pixbuf2.0-common libgif4 libgl1-mesa-glx libglapi-mesa libgraphite2-3
  libgtk2.0-0 libgtk2.0-common libharfbuzz0b libjasper1 liblcms2-2 libnspr4
  libnss3 libnss3-nssdb libogg0 libpango-1.0-0 libpangocairo-1.0-0
  libpangoft2-1.0-0 libpcsclite1 libpixman-1-0 libpulse0 libsndfile1
  libthai-data libthai0 libvorbis0a libvorbisenc2 libx11-xcb1 libxcb-dri2-0
  libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-render0 libxcb-shm0
  libxcb-sync1 libxcomposite1 libxcursor1 libxdamage1 libxfixes3 libxi6
  libxinerama1 libxrandr2 libxrender1 libxshmfence1 libxtst6 libxxf86vm1
  openjdk-7-jdk openjdk-7-jre openjdk-7-jre-headless tzdata-java x11-common
0 upgraded, 67 newly installed, 0 to remove and 67 not upgraded.
Need to get 62.8 MB of archives.
```

root@ubuntu-14:~# java –version

```
root@ubuntu-14:~#
root@ubuntu-14:~# java -version
java version "1.7.0_79"
OpenJDK Runtime Environment (IcedTea 2.5.6) (7u79-2.5.6-0ubuntu1.14.04.1)
OpenJDK 64-Bit Server VM (build 24.79-b02, mixed mode)
root@ubuntu-14:~#
root@ubuntu-14:~#
```

Jenkins Installation and Configuration

Now we are ready to install `Jenkins`. So before the package installation, we have to add the key and source list to apt for Jenkins. To do so, issue the following two commands in the terminal.

root@ubuntu-14:~# wget -q -O – http://pkg.jenkins-ci.org/debian/jenkins-ci.org.key | sudo apt-key add -
OK
You will get the `OK` status after you add the key. For the source list, here is the command to run.

root@ubuntu-14:~# sh -c 'echo deb http://pkg.jenkins-ci.org/debian binary/ > /etc/apt/sources.list.d/jenkins.list'

Now it needs to update `apt's` cache before moving to Jenkins so that it can refresh the operating system's repository for the latest packages.

root@ubuntu-14:~# apt-get update

Once your system is updated, execute the command below for the installation of Jenkins and type the `Y` key to proceed with the installation process.

root@ubuntu-14:~# apt-get install Jenkins

```
root@ubuntu-14:~#
root@ubuntu-14:~# apt-get install jenkins
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  daemon
The following NEW packages will be installed:
  daemon jenkins
0 upgraded, 2 newly installed, 0 to remove and 67 not upgraded.
Need to get 62.7 MB of archives.
After this operation, 63.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://nova.clouds.archive.ubuntu.com/ubuntu/ trusty/universe daemon amd64 0.6.4-1 [98.2 kB]
Get:2 http://pkg.jenkins-ci.org/debian/ binary/ jenkins 1.622 [62.6 MB]
Fetched 62.7 MB in 14s (4,331 kB/s)
Selecting previously unselected package daemon.
(Reading database ... 38910 files and directories currently installed.)
Preparing to unpack .../daemon_0.6.4-1_amd64.deb ...
Unpacking daemon (0.6.4-1) ...
Selecting previously unselected package jenkins.
Preparing to unpack .../archives/jenkins_1.622_all.deb ...
Unpacking jenkins (1.622) ...
Processing triggers for man-db (2.6.7.1-1ubuntu1) ...
Processing triggers for ureadahead (0.100.0-16) ...
Setting up daemon (0.6.4-1) ...
Setting up jenkins (1.622) ...
 * Starting Jenkins Continuous Integration Server jenkins
Processing triggers for ureadahead (0.100.0-16) ...
root@ubuntu-14:~#
```

The installation process will end up with starting its daemon. To check the status of Jenkins service, the command below will show you its status with running process ID. Jenkins service run with its default user name `jenkin`.

root@ubuntu-14:~# service jenkins status

Jenkins Continuous Integration Server is running with the pid of some number.
If you need to update the configurations of Jenkins as per your requirements, then you can find its

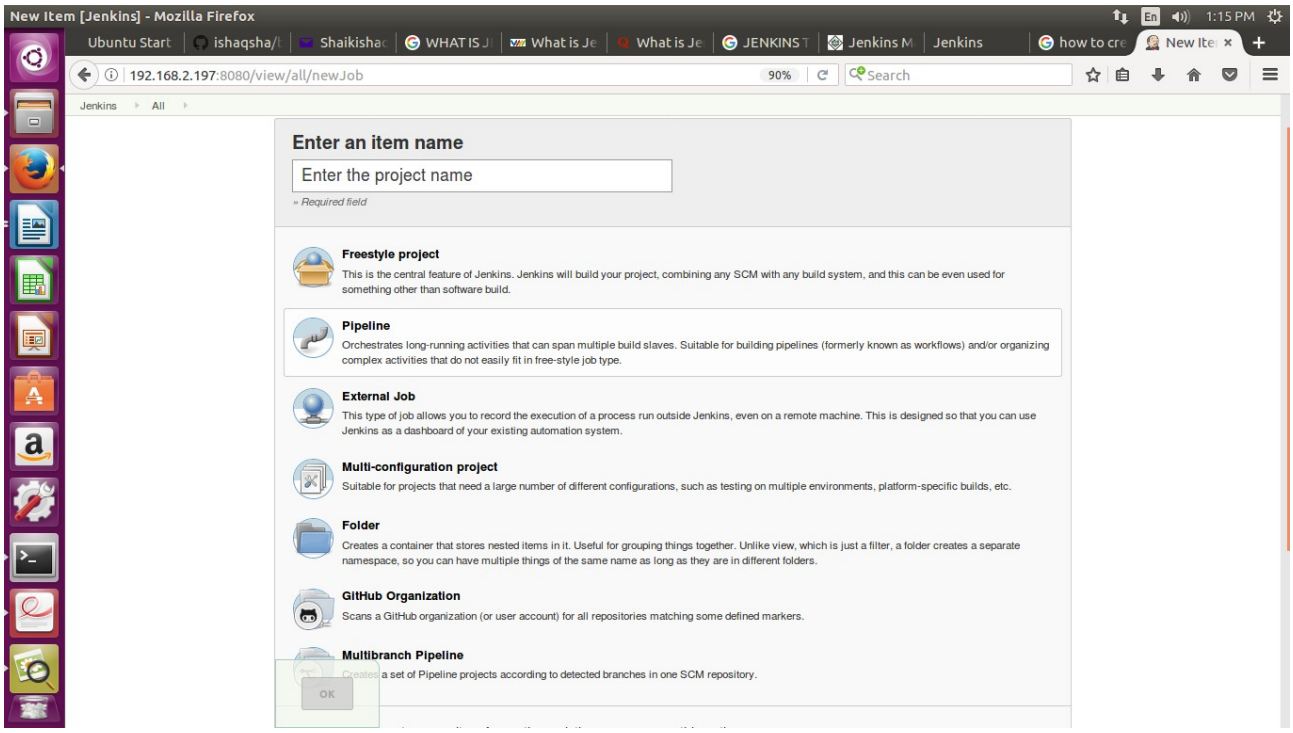
configuration file under the `/etc/default/` directory and can make the changes.

root@ubuntu-14:~# vim /etc/default/Jenkins

Jenkins runs on port 8080 by default for HTTP connector.
Note: if Required Change the permisssinon of /var/lib/jenkins/Secret
chmod +777 Secre

HOW TO CREAT A PROJECT IN JENKINs

Click on a NEW ITEM



Seletc a freestyle project
click OK

once it created we can configure it with gerrit ang GIT and SVN and we can also run the individual programme