On Debian-based distributions, such as Ubuntu, you can install Jenkins through `apt-get`.

Recent versions are available in an apt repository. Older but stable LTS versions are in this apt repository.

You need to have a JDK and JRE installed. openjdk-7-jre and openjdk-7-jdk are suggested. As of 2011-08 gcj is known to be problematic - see https://issues.jenkins-ci.org/browse/JENKINS-743.

Please make sure to back up any current Hudson or Jenkins files you may have.

Installation

```
wget -q -O - https://pkg.jenkins.io/debian/jenkins-ci.org.key | sudo apt-key add
-
sudo sh -c 'echo deb http://pkg.jenkins.io/debian-stable binary/ >
/etc/apt/sources.list.d/jenkins.list'
sudo apt-get update
sudo apt-get install jenkins
```

Upgrade

Once installed like this, you can update to the later version of Jenkins (when it comes out) by running the following commands:

```
sudo apt-get update
sudo apt-get install jenkins
```

(aptitude or apt-get doesn't make any difference.)

What does this package do?

- Jenkins will be launched as a daemon up on start. See `/etc/init.d/jenkins` for more details.
- The '`jenkins`' user is created to run this service.
- Log file will be placed in `/var/log/jenkins/jenkins.log`. Check this file if you are troubleshooting Jenkins.
- `/etc/default/jenkins` will capture configuration parameters for the launch like e.g

JENKINS_HOME

- By default, Jenkins listen on port 8080. Access this port with your browser to start configuration.

⚠ If your `/etc/init.d/jenkins` file fails to start jenkins, edit the `/etc/default/jenkins` to replace the line

```
HTTP_PORT=8080
```

by

```
HTTP_PORT=8081
```

Here, 8081 was chosen but you can put another port available.

To get image out-put

1) install some plugins

docker-plugin----------{ ssh-slave , token-marco , durable-task , jclouds-jenkins
(for slave connection and build images)
docker-plugin-step
git plugin
github plugin

2) install docker engine in jenkin host to build images

Docker is supported on these Ubuntu operating systems:

-
-
-
-

Ubuntu Xenial 16.04 (LTS)

Ubuntu Wily 15.10

Ubuntu Trusty 14.04 (LTS)

Ubuntu Precise 12.04 (LTS)

This page instructs you to install using Docker-managed release packages and installation mechanisms. Using these packages ensures you get the latest release of Docker. If you wish to install using Ubuntu-managed packages, consult your Ubuntu documentation.

Note: Ubuntu Utopic 14.10 and 15.04 exist in Docker's APT repository but are no longer officially supported.

Prerequisites

Docker requires a 64-bit installation regardless of your Ubuntu version. Additionally, your kernel must be 3.10 at minimum. The latest 3.10 minor version or a newer maintained version are also acceptable.

Kernels older than 3.10 lack some of the features required to run Docker containers. These older versions are known to have bugs which cause data loss and frequently panic under certain conditions.

To check your current kernel version, open a terminal and use uname -r to display your kernel version:

```
$ uname -r
3.11.0-15-generic
```

Note: If you previously installed Docker using APT, make sure you update your APT sources to the new Docker repository.

Update your apt sources

Docker's APT repository contains Docker 1.7.1 and higher. To set APT to use packages from the new repository:

1. Log into your machine as a user with sudo or root privileges.

2. Open a terminal window.

3. Update package information, ensure that APT works with the https method, and that CA certificates are installed.

$ sudo apt-get update

$ sudo apt-get install apt-transport-https ca-certificates

4. Add the new GPG key.

$ sudo apt-key adv --keyserver hkp://p80.pool.sks-keyservers.net:80--recv-keys 58118E89F3A912897C070ADBF76221572C52609D

5. Open the /etc/apt/sources.list.d/docker.list file in your favorite editor.

If the file doesn’t exist, create it.

6. Remove any existing entries.

7. Add an entry for your Ubuntu operating system.

The possible entries are:

• On Ubuntu Precise 12.04 (LTS)

deb https://apt.dockerproject.org/repo ubuntu-precise main

• On Ubuntu Trusty 14.04 (LTS)

deb https://apt.dockerproject.org/repo ubuntu-trusty main

• Ubuntu Wily 15.10

deb https://apt.dockerproject.org/repo ubuntu-wily main

• Ubuntu Xenial 16.04 (LTS)

deb https://apt.dockerproject.org/repo ubuntu-xenial main

Note: Docker does not provide packages for all architectures. You can find nightly built binaries in https://master.dockerproject.org. To install docker on a multi-architecture system, add an [arch=...] clause to the entry. Refer to the Debian Multiarch wiki for details.

8. Save and close the /etc/apt/sources.list.d/docker.list file.

9. Update the APT package index.

$ sudo apt-get update

10.Purge the old repo if it exists.

$ sudo apt-get purge lxc-docker

11.Verify that APT is pulling from the right repository.

$ apt-cache policy docker-engine

From now on when you run apt-get upgrade, APT pulls from the new repository.Prerequisites by Ubuntu Version

• Ubuntu Xenial 16.04 (LTS)

• Ubuntu Wily 15.10

• Ubuntu Trusty 14.04 (LTS)

For Ubuntu Trusty, Wily, and Xenial, it’s recommended to install the linux-image-extra kernel package. The linux-image-extra package allows you use the aufs storage driver.

To install the linux-image-extra package for your kernel version:

1. Open a terminal on your Ubuntu host.

2. Update your package manager.

$ sudo apt-get update

3. Install the recommended package.

$ sudo apt-get install linux-image-extra-$(uname -r)

4. Go ahead and install Docker.

If you are installing on Ubuntu 14.04 or 12.04, apparmor is required. You can install it using:

apt-get install apparmor

Ubuntu Precise 12.04 (LTS)

For Ubuntu Precise, Docker requires the 3.13 kernel version. If your kernel version is older than 3.13, you must upgrade it. Refer to this table to see which packages are required for your environment:

Generic Linux kernel image. This kernel has AUFS built in. This

is required to run Docker.

Allows packages such as ZFS and VirtualBox guest additions

which depend on them. If you didn’t install the headers for your

linux-headers-generic-lts-trusty existing kernel, then you can skip these headers for the”trusty”

kernel. If you’re unsure, you should include this package for

safety.

xserver-xorg-lts-trusty

Optional in non-graphical environments without Unity/Xorg.

Required when running Docker on machine with a graphical

environment.

linux-image-generic-lts-trusty

libgl1-mesa-glx-lts-trusty

To learn more about the reasons for these packages, read the

installation instructions for backported kernels, specifically the

LTS Enablement Stack — refer to note 5 under each version.To upgrade your kernel and install the additional packages, do the following:

1. Open a terminal on your Ubuntu host.

2. Update your package manager.

$ sudo apt-get update

3. Install both the required and optional packages.

$ sudo apt-get install linux-image-generic-lts-trusty

Depending on your environment, you may install more as described in the preceding table.

4. Reboot your host.

$ sudo reboot

5. After your system reboots, go ahead and install Docker.

Install

Make sure you have installed the prerequisites for your Ubuntu version.

Then, install Docker using the following:

1. Log into your Ubuntu installation as a user with sudo privileges.

2. Update your APT package index.

$ sudo apt-get update

3. Install Docker.

$ sudo apt-get install docker-engine

4. Start the docker daemon.

$ sudo service docker start

5. Verify docker is installed correctly.

$ sudo docker run hello-world

This command downloads a test image and runs it in a container. When the container runs, it prints an informational message. Then, it exits.Optional configurations

This section contains optional procedures for configuring your Ubuntu to work better with Docker.

•

•

•

•

•

Create a docker group

Adjust memory and swap accounting

Enable UFW forwarding

Configure a DNS server for use by Docker

Configure Docker to start on boot

Create a Docker group

The docker daemon binds to a Unix socket instead of a TCP port. By default that Unix socket is

owned by the user root and other users can access it with sudo. For this reason, docker daemon always runs as the root user.

To avoid having to use sudo when you use the docker command, create a Unix group called docker and add users to it. When the docker daemon starts, it makes the ownership of the Unix socket read/writable by the docker group.

Warning: The docker group is equivalent to the root user; For details on how this impacts security in your system, see Docker Daemon Attack Surface for details.

To create the docker group and add your user:

1. Log into Ubuntu as a user with sudo privileges.

This procedure assumes you log in as the ubuntu user.

2. Create the docker group.

$ sudo groupadd docker

3. Add your user to docker group.

$ sudo usermod -aG docker ubuntu

4. Log out and log back in.

This ensures your user is running with the correct permissions.

5. Verify your work by running docker without sudo.

$ docker run hello-world

If this fails with a message similar to this:

Cannot connect to the Docker daemon. Is 'docker daemon' running on thishost?

Check that the DOCKER_HOST environment variable is not set for your shell. If it is, unset it.

Adjust memory and swap accounting

When users run Docker, they may see these messages when working with an image:

WARNING: Your kernel does not support cgroup swap limit. WARNING: Your kernel does not support swap limit capabilities. Limitation discarded.

To prevent these messages, enable memory and swap accounting on your system. Enabling memory and swap accounting does induce both a memory overhead and a performance degradation even when Docker is not in use. The memory overhead is about 1% of the total available memory. The performance degradation is roughly 10%.

To enable memory and swap on system using GNU GRUB (GNU GRand Unified Bootloader), do the following:

1. Log into Ubuntu as a user with sudo privileges.

2. Edit the /etc/default/grub file.

3. Set the GRUB_CMDLINE_LINUX value as follows:

GRUB_CMDLINE_LINUX="cgroup_enable=memory swapaccount=1"

4. Save and close the file.

5. Update GRUB.

$ sudo update-grub

6. Reboot your system.

Enable UFW forwarding

If you use UFW (Uncomplicated Firewall) on the same host as you run Docker, you'll need to do additional configuration. Docker uses a bridge to manage container networking. By default, UFW drops all forwarding traffic. As a result, for Docker to run when UFW is enabled, you must set UFW's forwarding policy appropriately.

Also, UFW's default set of rules denies all incoming traffic. If you want to reach your containers from another host allow incoming connections on the Docker port. The Docker port defaults to 2376 if TLS is enabled or 2375 when it is not. If TLS is not enabled, communication is unencrypted. By default, Docker runs without TLS enabled.

To configure UFW and allow incoming connections on the Docker port:

1. Log into Ubuntu as a user with sudo privileges.

2. Verify that UFW is installed and enabled.

$ sudo ufw status3. Open the /etc/default/ufw file for editing.

$ sudo nano /etc/default/ufw

4. Set the DEFAULT_FORWARD_POLICY policy to:

DEFAULT_FORWARD_POLICY="ACCEPT"

5. Save and close the file.

6. Reload UFW to use the new setting.

$ sudo ufw reload

7. Allow incoming connections on the Docker port.

$ sudo ufw allow 2375/tcp

Configure a DNS server for use by Docker

Systems that run Ubuntu or an Ubuntu derivative on the desktop typically use 127.0.0.1 as the default nameserver in /etc/resolv.conf file. The NetworkManager also sets up dnsmasq to use the real DNS servers of the connection and sets up nameserver 127.0.0.1 in /etc/resolv.conf.

When starting containers on desktop machines with these configurations, Docker users see this warning:

WARNING: Local (127.0.0.1) DNS resolver found in resolv.conf and containers can't use it. Using default external servers : [8.8.8.8 8.8.4.4]

The warning occurs because Docker containers can’t use the local DNS nameserver. Instead, Docker defaults to using an external nameserver.

To avoid this warning, you can specify a DNS server for use by Docker containers. Or, you can disable dnsmasq in NetworkManager. Though, disabling dnsmasq might make DNS resolution slower on some networks.

The instructions below describe how to configure the Docker daemon running on Ubuntu 14.10 or below. Ubuntu 15.04 and above use systemd as the boot and service manager. Refer to control and configure Docker with systemd to configure a daemon controlled by systemd.

To specify a DNS server for use by Docker:

1. Log into Ubuntu as a user with sudo privileges.

2. Open the /etc/default/docker file for editing.

$ sudo nano /etc/default/docker

3. Add a setting for Docker.

DOCKER_OPTS="--dns 8.8.8.8"

Replace 8.8.8.8 with a local DNS server such as 192.168.1.1. You can also specifymultiple DNS servers. Separated them with spaces, for example:

--dns 8.8.8.8 --dns 192.168.1.1

Warning: If you’re doing this on a laptop which connects to various networks,

make sure to choose a public DNS server.

4. Save and close the file.

5. Restart the Docker daemon.

$ sudo service docker restart

Or, as an alternative to the previous procedure, disable dnsmasq in NetworkManager (this might slow your network).

1. Open the /etc/NetworkManager/NetworkManager.conf file for editing.

$ sudo nano /etc/NetworkManager/NetworkManager.conf

2. Comment out the dns=dnsmasq line:

dns=dnsmasq

3. Save and close the file.

4. Restart both the NetworkManager and Docker.

$ sudo restart network-manager

$ sudo restart docker

Configure Docker to start on boot

Ubuntu uses systemd as its boot and service manager 15.04 onwards and upstart for

versions 14.10 and below.

For 15.04 and up, to configure the docker daemon to start on boot, run

$ sudo systemctl enable docker

For 14.10 and below the above installation method automatically configures upstart to start the docker daemon on boot

Upgrade Docker

To install the latest version of Docker with apt-get:

$ sudo apt-get upgrade docker-engineUninstallation

To uninstall the Docker package:

$ sudo apt-get purge docker-engine

To uninstall the Docker package and dependencies that are no longer needed:

$ sudo apt-get autoremove --purge docker-engine

The above commands will not remove images, containers, volumes, or user created configuration files on your host. If you wish to delete all images, containers, and volumes run the following command:

$ rm -rf /var/lib/docker

You must delete the user created configuration files manually.

3) add “jenkin” to sudo , adm groups and if needed put

Defaults:jenkins !authenticate if /etc/sudoers to remove authentication

4) add some shell command which requred for building those images in configuration of job

.....

.....

configure integration

I just had to set up Jenkins to use GitHub. My notes (to myself, mostly):

Detailed Instructions

For setting up Jenkins to build GitHub projects. This assumes some ability to manage Jenkins, use the command line, set up a utility LDAP account, etc. Please share or improve this Gist as needed.

Install Jenkins Plugins

- get both the git and github plugin
- http://wiki.jenkins-ci.org/display/JENKINS/Git+Plugin
- http://wiki.jenkins-ci.org/display/JENKINS/Github+Plugin

Make a Utility Account in the GitHub (optional)

- This would keep your identity separate from your Jenkins server
- Helpful if Jenkins runs under a different user

On the Jenkins server (optional)

- If Jenkins does run as different user, set this up on your server
- Set git user.name and user.email global config options.
- 'git config --global user.email JENKINS_USERNAME@WHATEVER_HOSTNAME'
- 'git config --global user.name JENKINS_USERNAME'
- This should match the GitHub utility account username and email address

Generate rsa key pair on your Jenkins server

- Log into the server as the user that Jenkins runs under
- Using command line, change directory to ~/.ssh
- Generate key with 'ssh-keygen -t rsa -C 'JENKINS_USERNAME@WHATEVER_HOSTNAME"
- Note that -C comment is optional, just helps you identify the public key later
- Do NOT use a passphrase for the keygen (at least, I could not make this work)
- If there's a way to use a key pair with passphrase, please comment and let me know?
- Init with 'ssh -v git@git.corp.adobe.com'
- Reply 'yes' to add known host
- Copy contents of public key
- There's more reading about this on GitHub https://help.github.com/articles/set-up-git

https://help.github.com/articles/generating-ssh-keys https://help.github.com/articles/error-permission-denied-publickey

Update the GitHub Account for Jenkins

- Register utility user with git.corp.adobe.com
- Log in the utility account
- Go to Account Settings > SSH Keys
- Add the contents of the public key from your server

Configure Jenkins

- Make sure the Manage Jenkins > Configure System has the right path to git
- Set the global git user.name and user.email to match your global config options
- Configure GitHub Web Hook to Manually manage hook urls
- Click the (?) icon next to the manual option and copy the hook URL you see there
- Optionally set the service account email as the Jenkins sender email address

Configure Github Project

- Log into Github as the owner or collaborator of a repo
- Click the Admin button for that repo
- Select 'Service Hooks' in the left column
- Select 'Jenkins (Github plugin)' in the Available Service Hooks column
- Add the service hook URL for your server eg http://yourjenkinsmachine.com:8080/github-webhook/ you might find the URL in the GitHub Web Hook > Manual setting (?) help text
- Check the 'Active' checkbox

Create a Jenkins job

- In the general options, add the URL to the github project eg 'http://github.com/tehfoo/build-test/'
- Under Source Code Management, select Git
- For the repository URL, enter the SSH URL for your project this is found by toggling the HTTP/SSH button to the right of the URL field on the repo home page in GitHub eg 'git@github.com:ixab/build-test.git'
- Under Build Triggers, check the "Build when a change is pushed to GitHub"
- Add other build task (running Grunt, or Ant, or scary Maven stuff, or whatever)

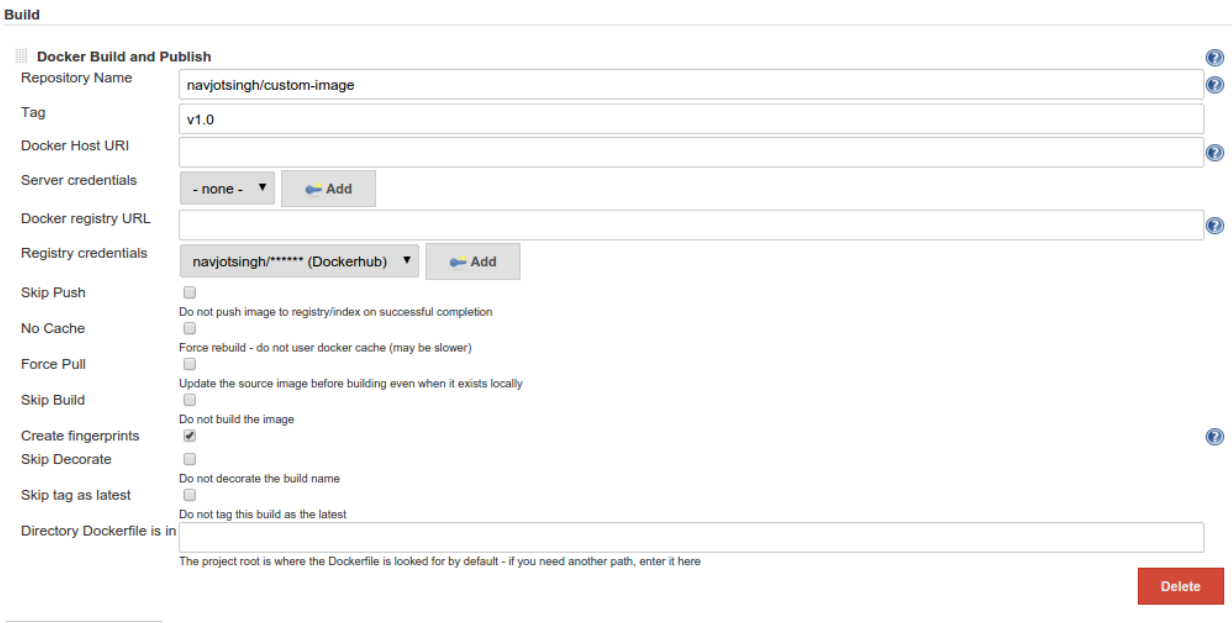
Enjoy!

Creating *continuous deployment*

CloudBees Docker Build and Publish plugin: It enables us to build images from the Dockerfile present on the server and publishing them on the DockerHub.
CloudBees DockerHub Notification: It enables us to trigger one or more Jenkins job by making use of DockerHub's web hook, thus creating a continuous delivery pipeline. Whenever a new image is pushed, the configured Jenkins job will receive notification as web hook and triggers the job.

Scenario: One click automation of a process of building image from Dockerfile, pushing it on DockerHub and immediately triggering a Jenkins deployment job based on the pushed docker image.

1. **Installing Plugins:**
   Install the above two plugins using Jenkins' "**Plugin Manager**".
2. **Creating and configuring Jenkins job to build images from Dockerfile:**
   Create a new Jenkins job (say "*Build Docker Image*") which will use *CloudBees Docker Build and Publish plugin* to build images from Dockerfile and push it on DockerHub.
   Configure this job as follows under the build section:



Various fields in the above image are explained below:

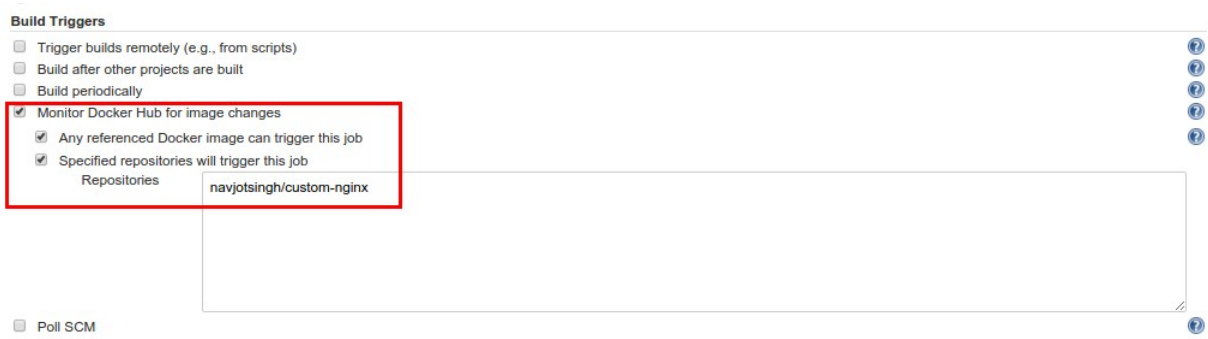
- **Repository Name**: As shown we have passed “navjotsingh/custom-image” as the repository name.
- **Tag**: We are passing “v1.0” as tag or version. We can make this build parametrized and pass custom repository name and tag as two parameters to this job.
- **Docker Host URI**: Our Docker host is on the same machine where Jenkins is installed, so we are using default Docker ‘s default URI by keeping this field empty.
- **Server credentials**: Provide user’s credentials who has permission to run Docker commands and have permission to use Docker’s socket “/var/run/docker.sock”. I have provided permission to Jenkins’ user.
- **Docker registry URL**: We are using public DockerHub registry so we have left “Docker registry URL” field empty.
- **Registry credentials**: Click “Add” to add the DockerHub account credentials.
- **As we can see there are various options provided by this plugin wherein we can choose to skip push, no cache, force pull and skip build**.
- **This plugin creates fingerprints** after building image and are managed by Docker Commons Plugin (installed with this plugin).
- **Decorating the build name means builds will be decorated with the repository name and tag name. We can skip it by checking “Skip Decorate”** check box.

- Skip tag as latest: If it is unchecked, it will create additional tag “latest” of the currently build image and push it on DockerHub as can be seen in the above

image.

- Docker Directory is in: The directory which contain the Dockerfile can be specified in this field otherwise it will try to fetch the Dockerfile from the Job's workspace.

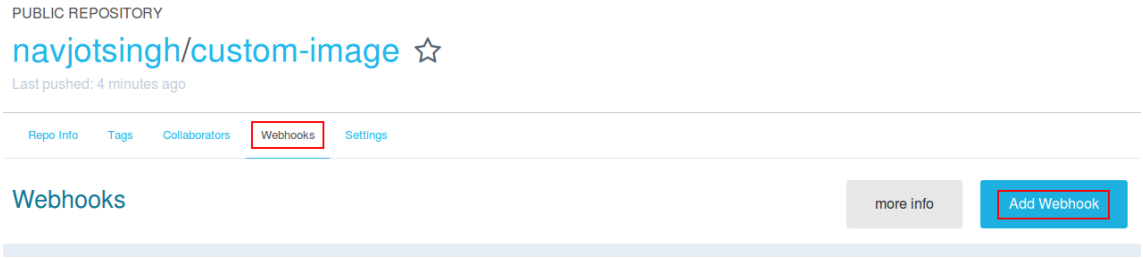
- **Modifying existing Deployment Job to be triggered immediately after building image:**
  Now we will modify the existing deployment job which we need to be executed whenever that Docker image is updated. We will achieve it by using **CloudBees Docker Hub Notification plugin**.
  Configure the deployment job under "Build Triggers" as follows:



Select "**Monitor Docker Hub image changes**", under this select "**Any referenced Docker image can trigger this job**". We can make this job to be triggered on specified repositories by selecting "**Specified repositories will trigger this job**" and specifying repository name against "**Repositories**" field. Multiple repositories can be specified in the text field, one repository per line.
Now, we have configured our deployment job to be triggered if any new image gets available in navjotsingh/custom-image repository.

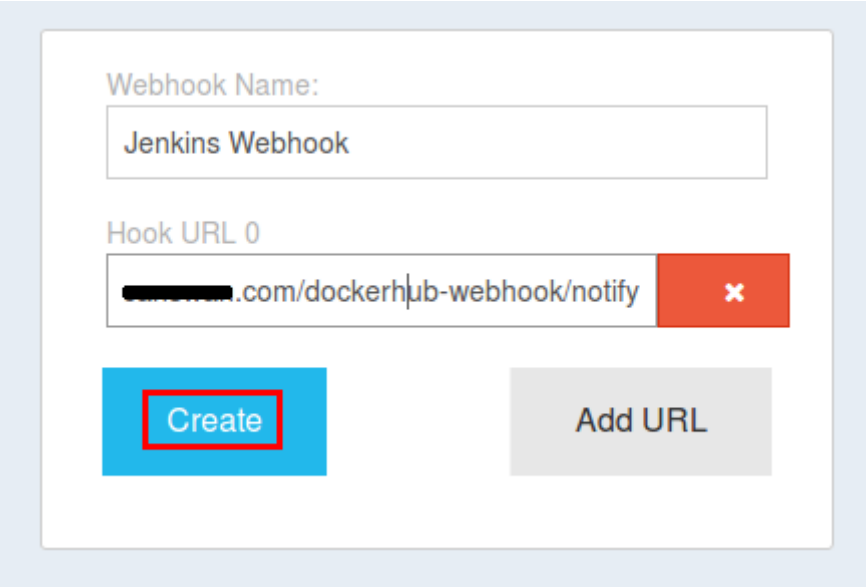
1. **Configuring webhook in DockerHub:**
   Now, we need to configure webhook for our Jenkins server in the DockerHub as follows:

   - Login to your DockerHub account.
   - Select the repository which is "navjotsingh/custom-image" in our case.
   - Click on "Webhooks" and then on "Add Webhook".



   - Provide your favourite Webhook name under " Webhook Name" field (say Jenkins Webhook).

- Provide below URL under “Hook URL 0”.
  URL: http:///dockerhub-webhook/notify
- Click “Add URL” as shown below:



That’s all! We have completed the whole configuration to get our scenario working.

Summary: Upon our single click to start “Build Docker Image” job, as a new image will be created from provided Dockerfile and pushed on to DockerHub. The new image pushed on DockerHub will trigger webhook notification to Jenkins server and this will trigger our “Deployment Job” to perform the deployment based on this new Docker image.

- See more at: http://www.tothenew.com/blog/automated-docker-deployment-using-jenkins/#sthash.C9HZvLHB.dpuf

.....

.....

We can use this commands for automatic pushing images to registry

sudo docker build -t akhilrajmailbox/jenkins:new /var/lib/jenkins/workspace/docker/

sudo docker push akhilrajmailbox/jenkins:new