JENKINS

CI/CD (Continuous Integration & Development)

Continuous Integration is a development practice that requires developers to commit the code into a repository at regular intervals so that code will be available to other developer as earliest. This will remove the last minute occurrence of issues in the build lifecycle. Continuous integration requires the developers to have frequent builds. The common practice is that whenever a code commit occurs, a build should be triggered.

CI/CD SCOPE

Required Tools for CI/CD: Jenkins

CI/CD Scope Diagram

What is Jenkins?

Jenkins is a popular tool for performing continuous integration of software projects. It is a self-contained, open source automation server which can be used to automate all sorts of tasks such as building, testing, and deploying software.

Why Jenkins?

Jenkins will be installed on a server where the central build will take place. The following flowchart demonstrates a very simple workflow of how Jenkins works.

Jenkins setup and Installation

Installation

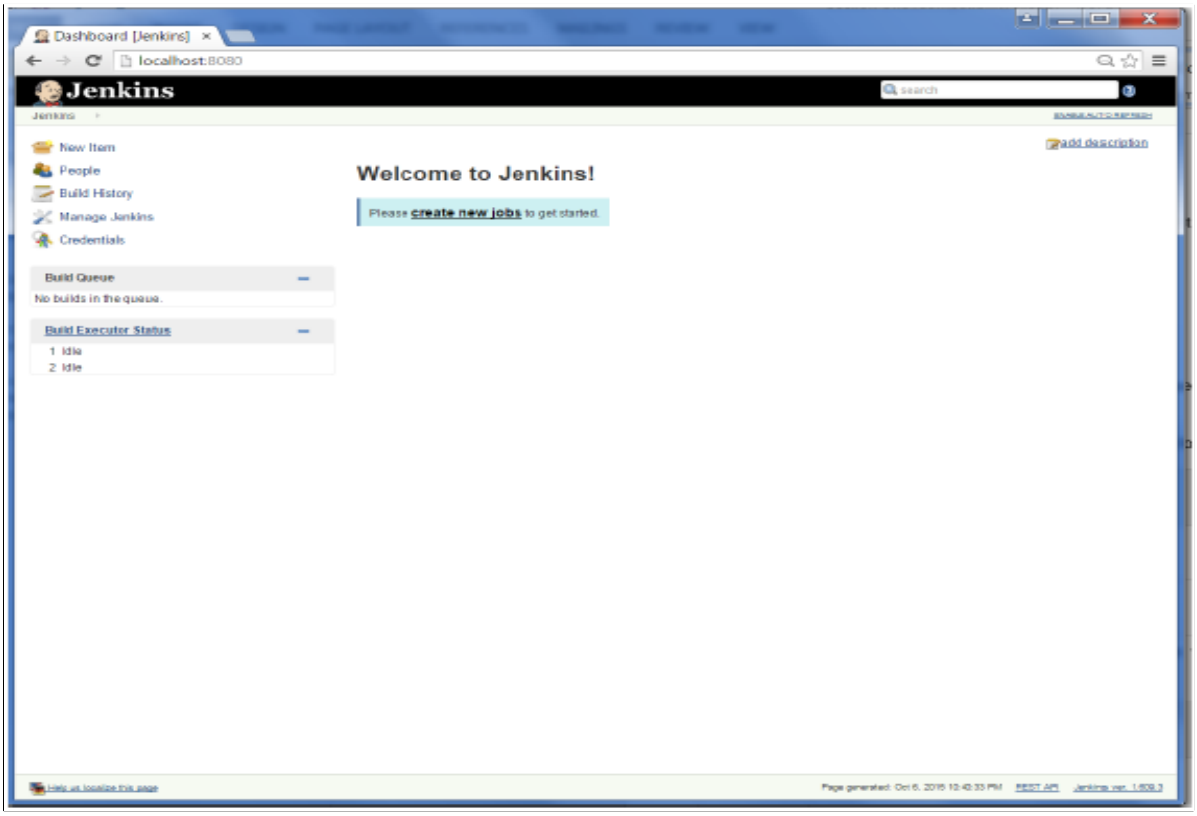
1. Go to the official website of Jenkins to download the latest version of Jenkins. The download is available for different operating systems.

URL: https://jenkins.io/download/

2. Once the download is complete, install the software into your system.

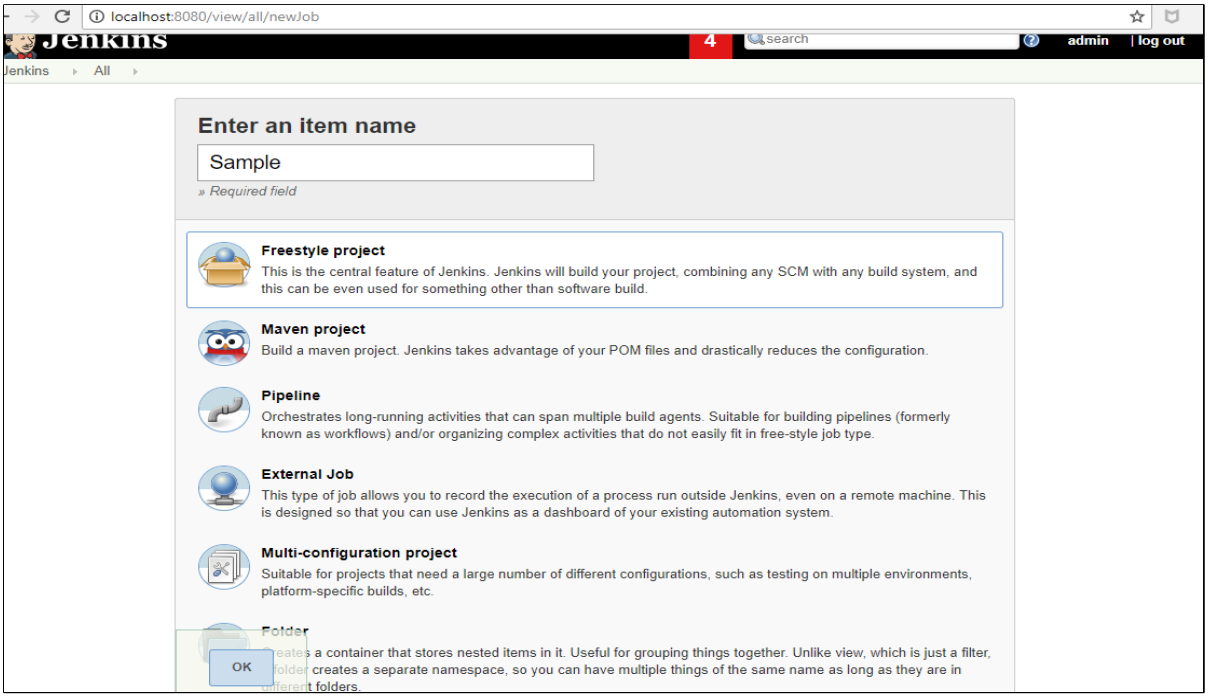
3. Once the software is installed and it is been properly running one can access the Jenkins from the given link **http://localhost:8080**

This will navigate you to the home page of Jenkins.

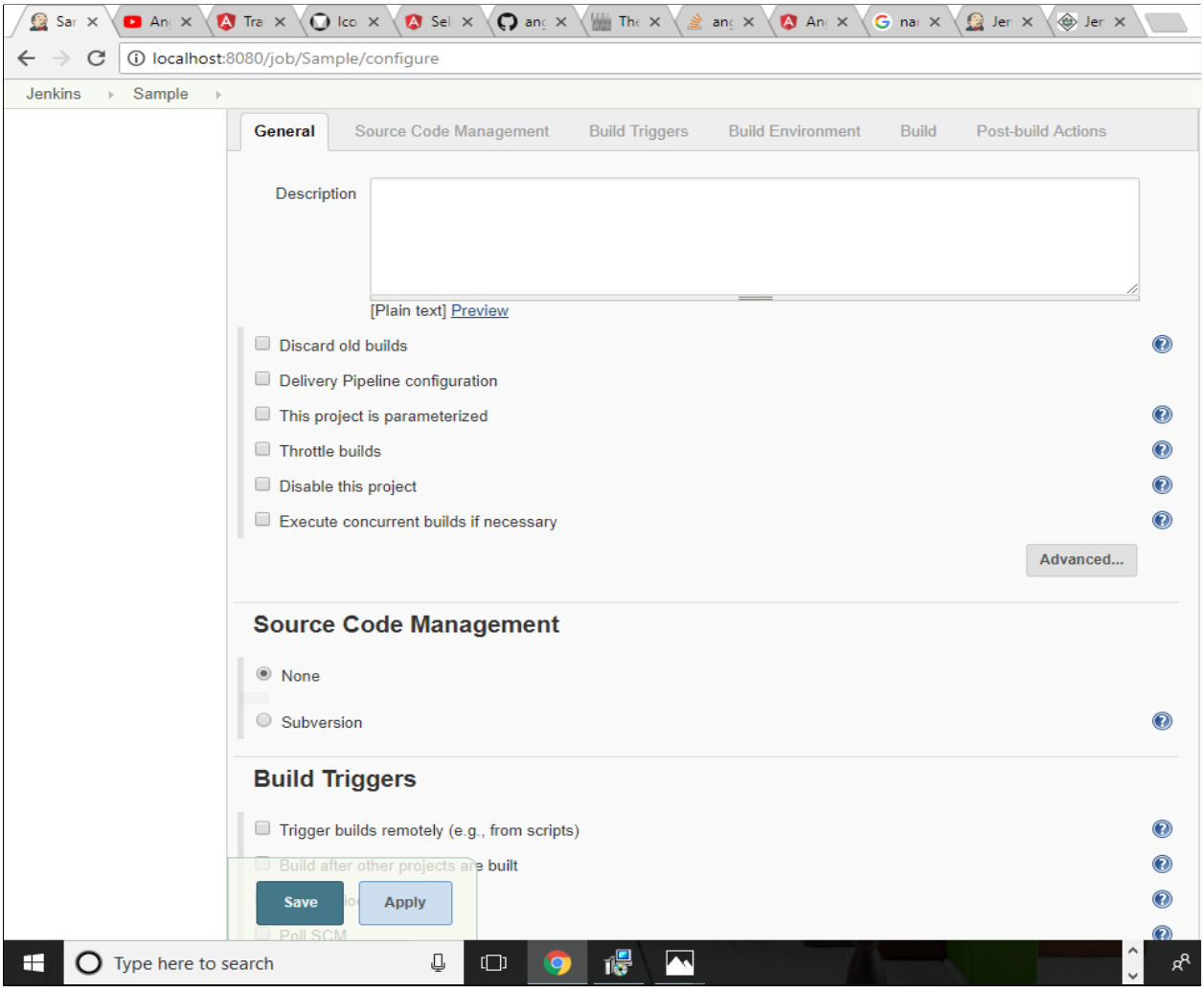


In order to create a new job click on the create new job link.

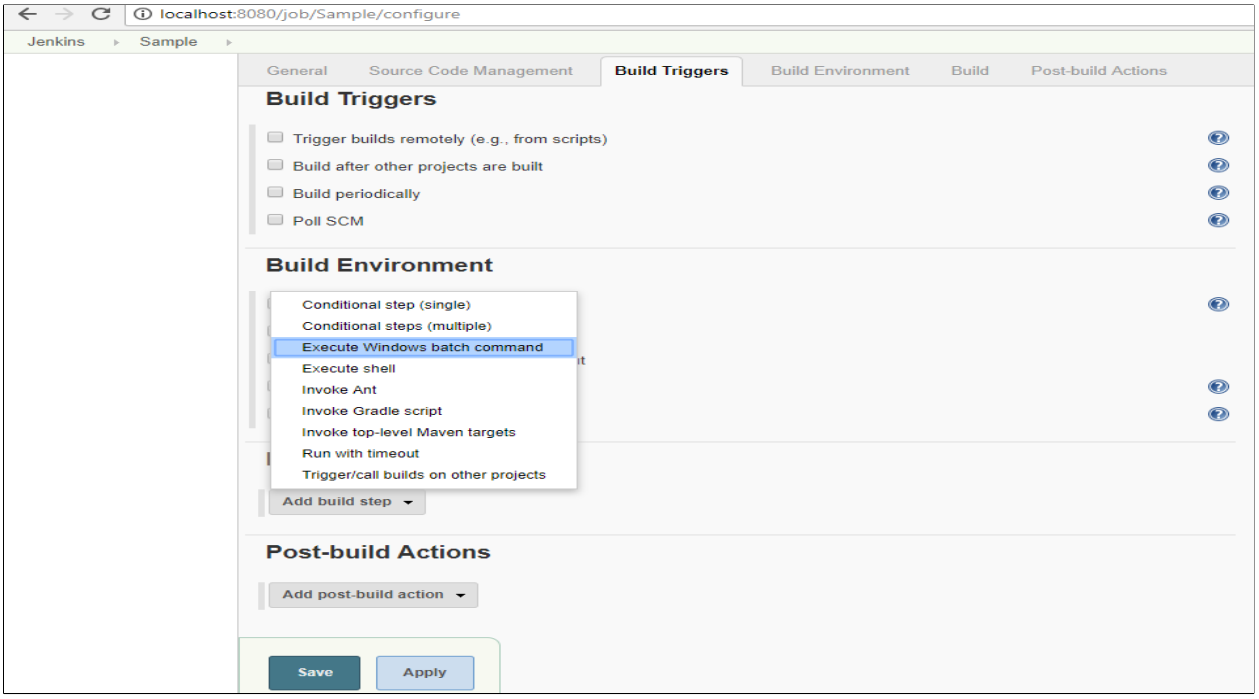
1. Enter the name for the job.
2. Select the Freestyle Project.
3. Click on the OK button.



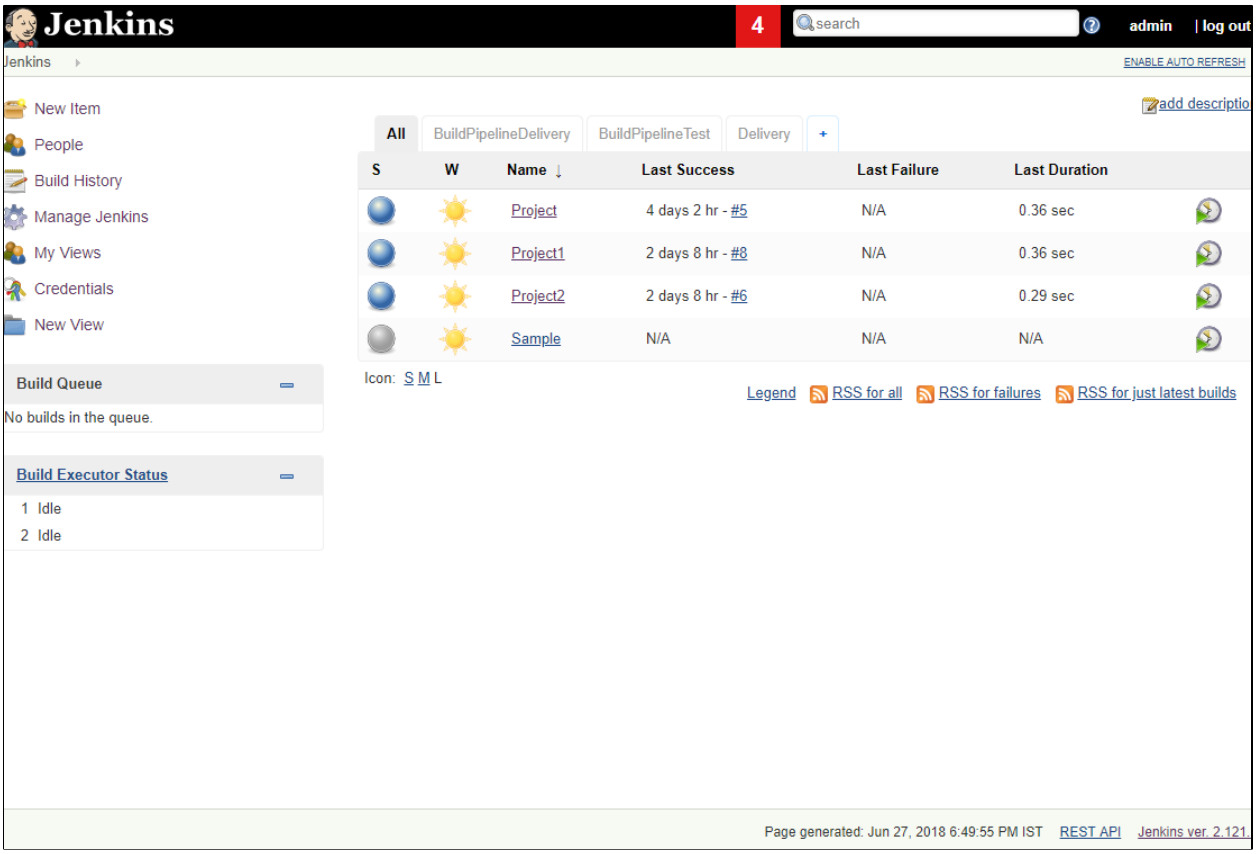
Once the job is been successfully created you will be navigated to the given page:



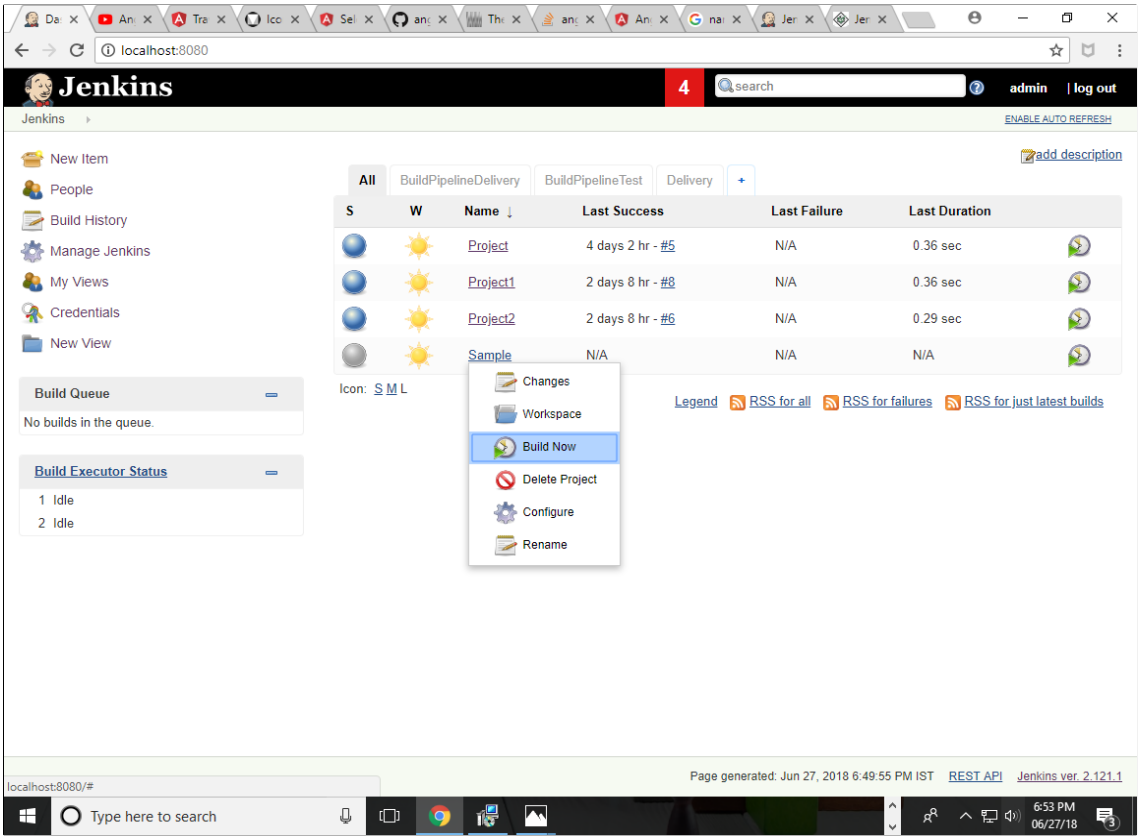
1. In the description tab give a description of your project.
2. Go to the Build Tab wherein you can see different Add Build Step options.
3. Click on the Apply button and save.



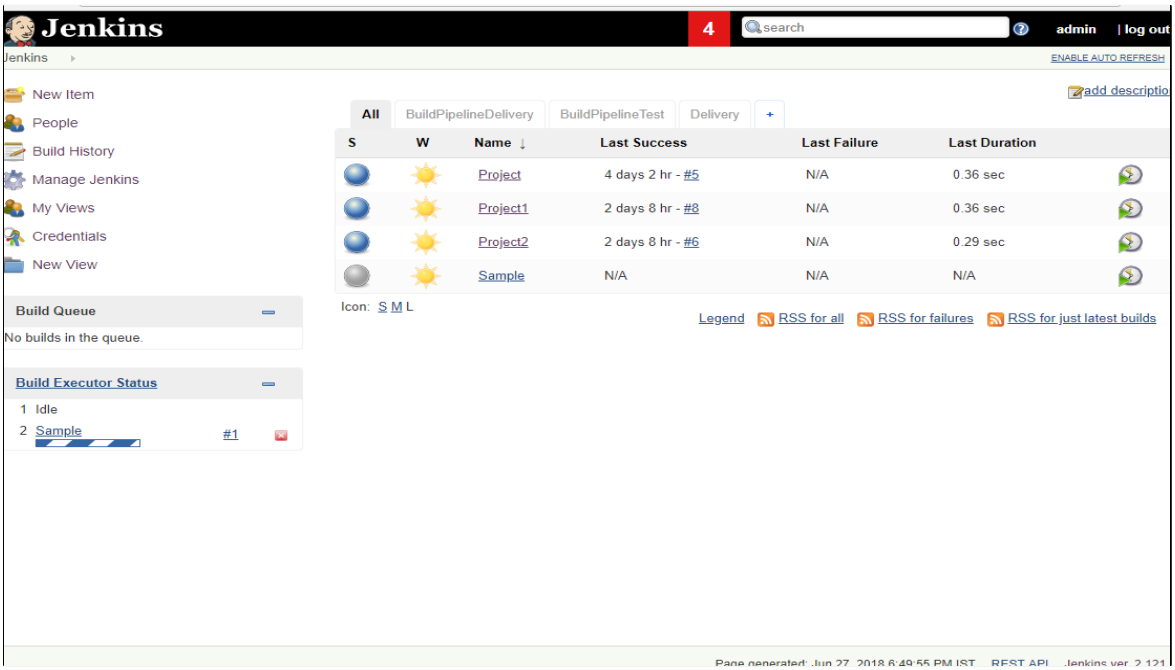
One can see that a job is been created.



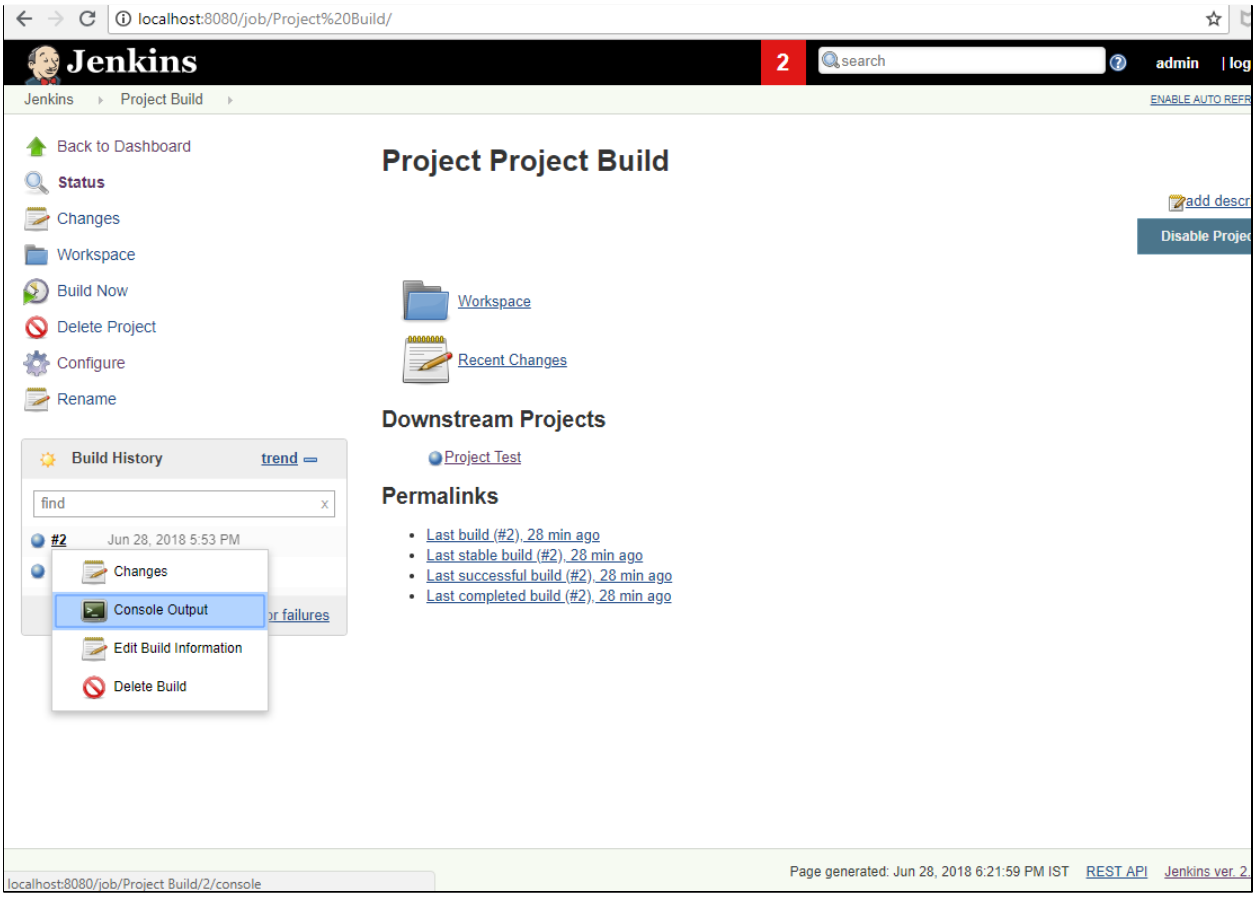
Click on the job and you can see different options in order to build a job click on Build Now option.

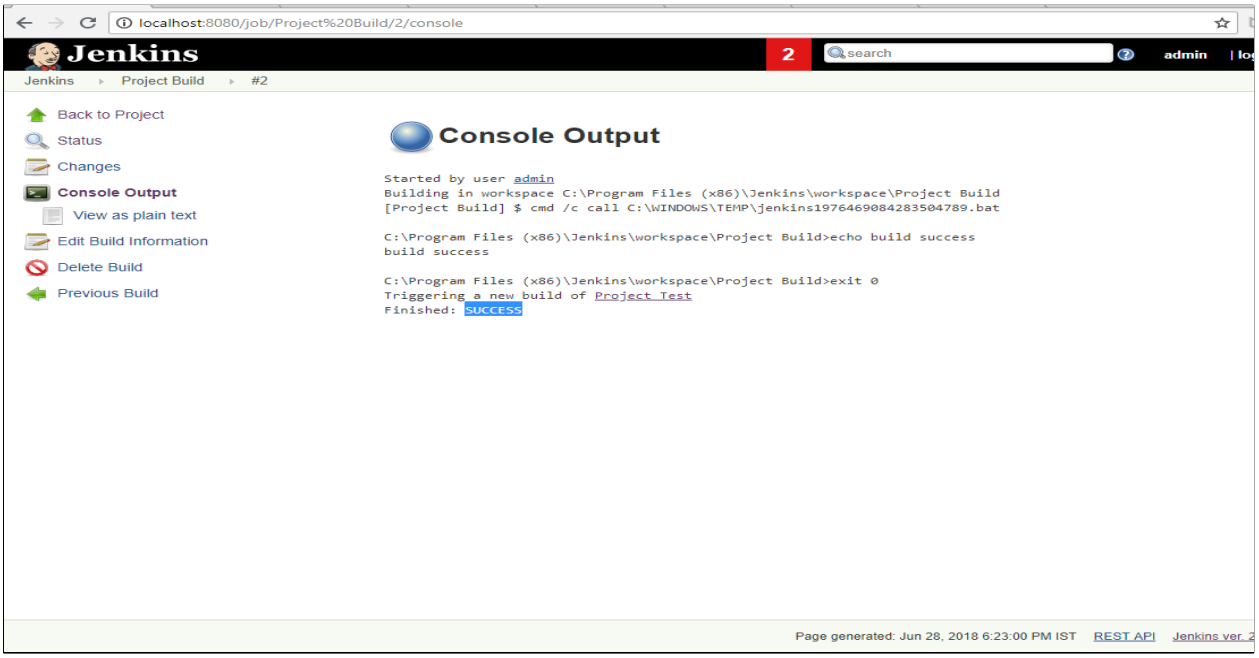


One can see that the job is been build.



To see whether the job is created successfully, go to the console output.





Pipelines

What is Jenkins Pipeline?

Jenkins Pipeline is a suite of plugins which supports implementing and integrating continuous delivery pipelines into Jenkins.

A continuous delivery (CD) pipeline is an automated expression of your process for getting software from version control right through to your users and customers. Every change to your software (committed in source control) goes through a complex process on its way to being released. This process involves building the software in a reliable and repeatable manner, as well as progressing the built software (called a "build") through multiple stages of testing and deployment.

Steps to build a pipeline in Jenkins:

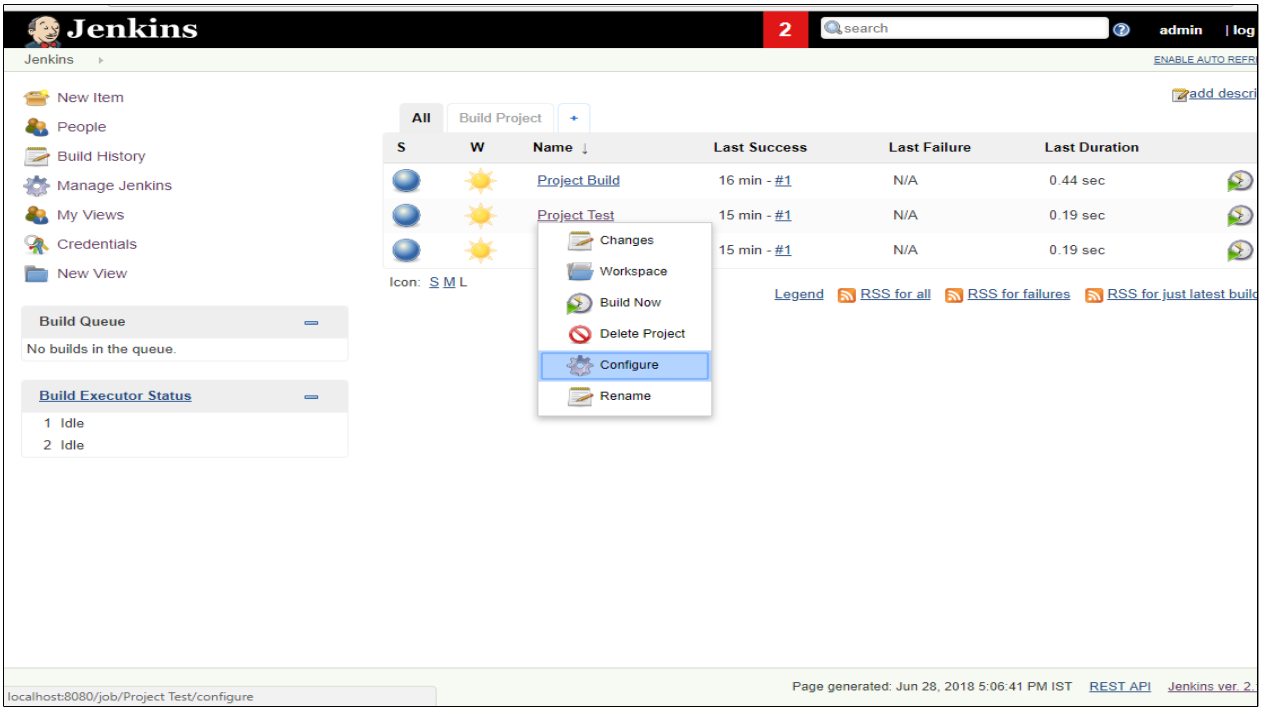
1. One need to add the jobs in the following sequence i.e Build, Test and Deploy.

2. In order to achieve the desired pipeline flow the jobs need to be configured one after the other i.e; one need to chain the sequence of jobs.

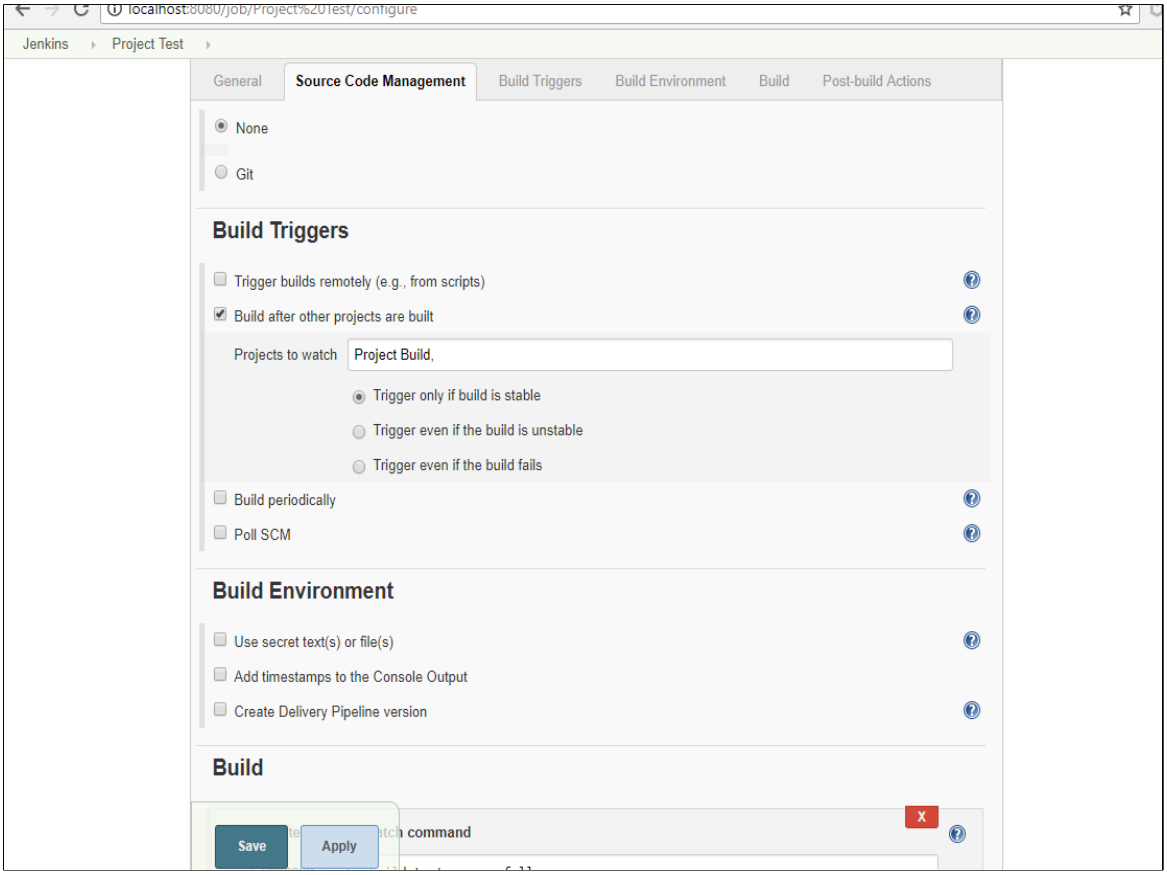
As the jobs are already been build all one needs to do is configure them

Following below are the steps to configure the jobs to create a pipeline:

1. Go to the respective job and click on the configure option.



2. Go to the Build Triggers Option and select the option “Build after other projects are build” and specify the name of the project which is to be build after the Build stage. The Build job is the default job one cannot configure the build job after another job. Because it is only after the build stage the job will be moved on to Test and Deploy stage.



Similarly we need to configure the Deploy Job.

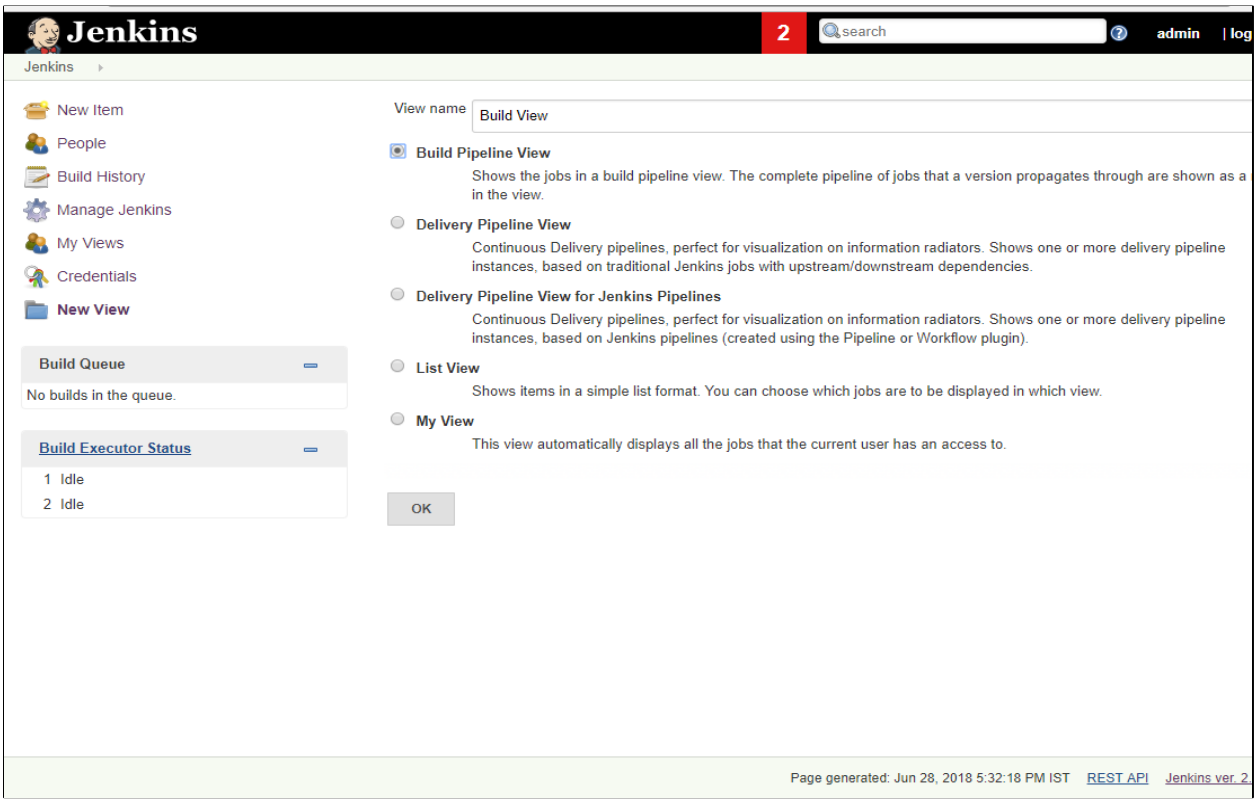
View

In order to display the sequence of jobs and the flow for various kinds of plugin what comes into picture is view. Basically view is used for representation of pipeline.

In order to create a view we need to follow the following steps:

1. Build View

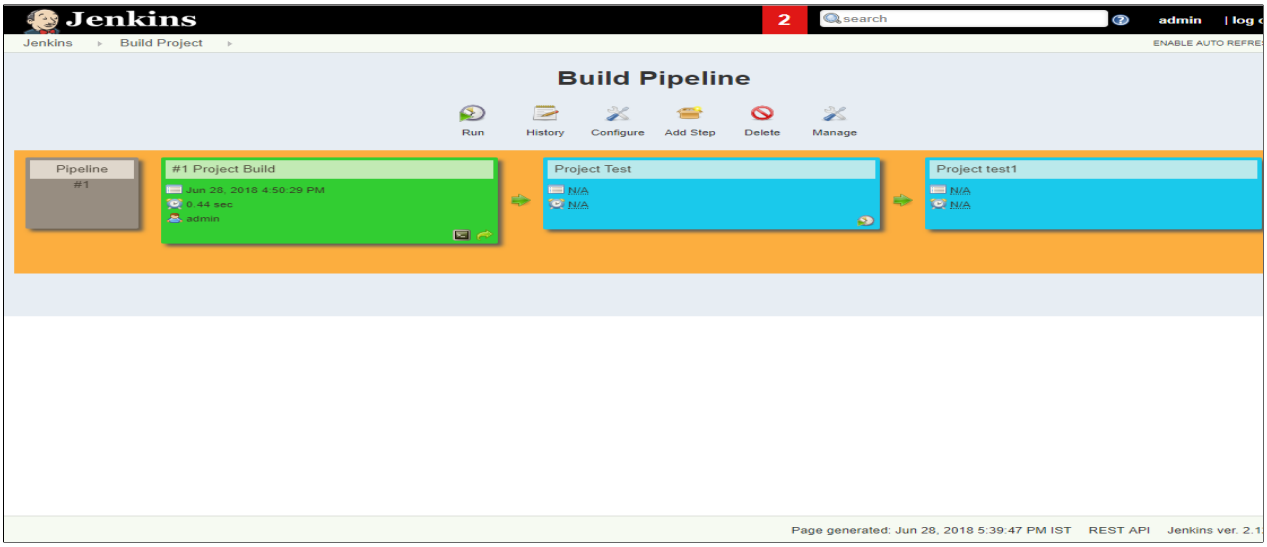
a. On the Jenkins dashboard on the left side of the screen one can see the option of “New View” click on the respective button and you will be navigated to the following page.



After one has created the view, with the help of view we can see the jobs that were been configured in the desired sequence.

In this view one can see the actual flow of the jobs which altogether comprise of a pipeline.

If one wants to check for a particular job and not for the entire pipeline, this can be achieved with the help of " Trigger" option.

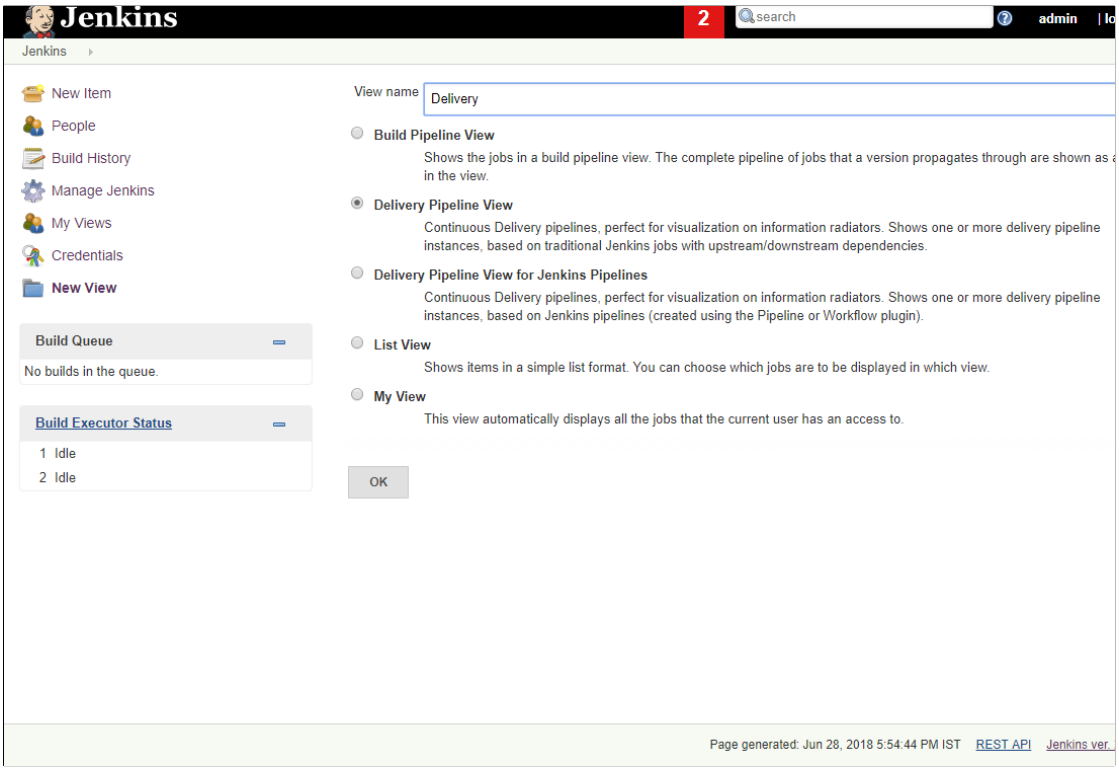


3. Delivery Pipeline

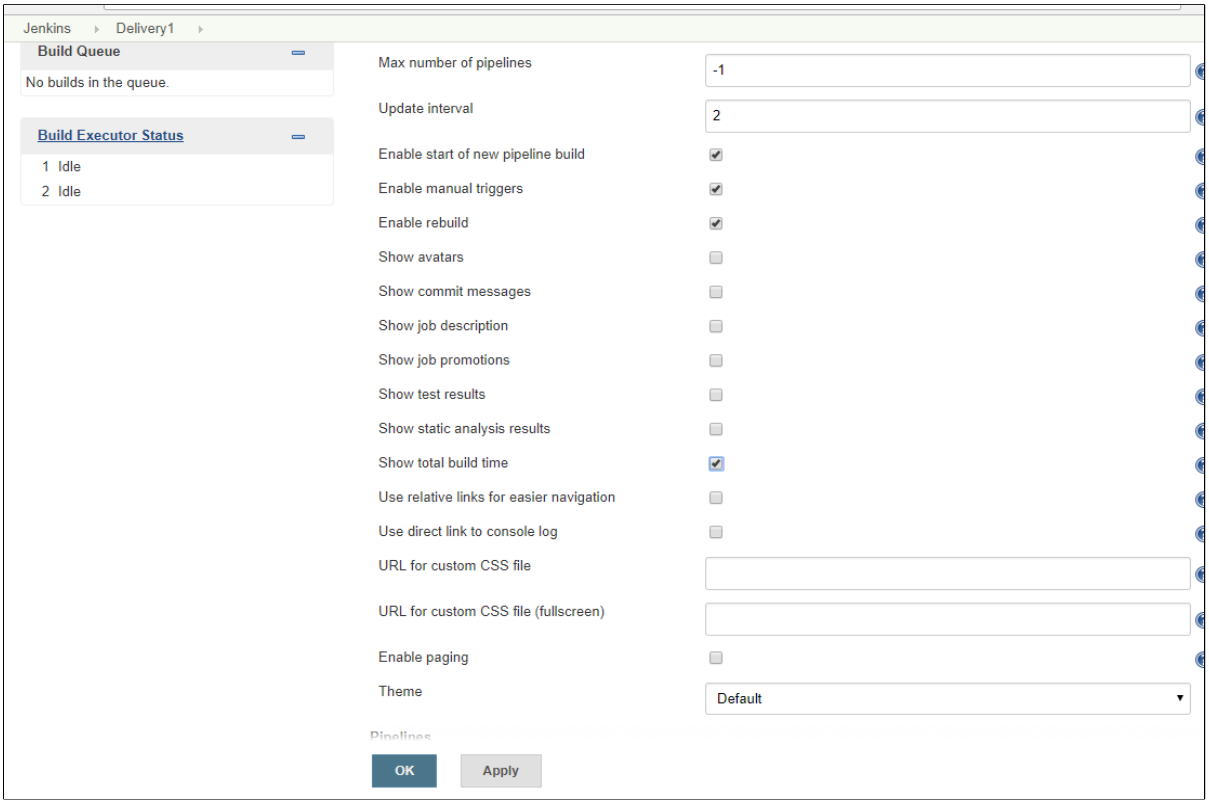
Visualization of Continuous Delivery pipelines. Renders pipelines based on upstream/downstream jobs or Jenkins pipelines. Provides a full screen view for information radiators.
In Continuous Delivery feedback and visualization of the delivery process is one of the most important areas. When using Jenkins as a build server it is with the Delivery Pipeline plugin possible to visualize one or more delivery pipelines in the same view, even in full screen.

Same steps needs to be followed in order to create a Delivery Pipeline as it is been followed in Build Pipeline:

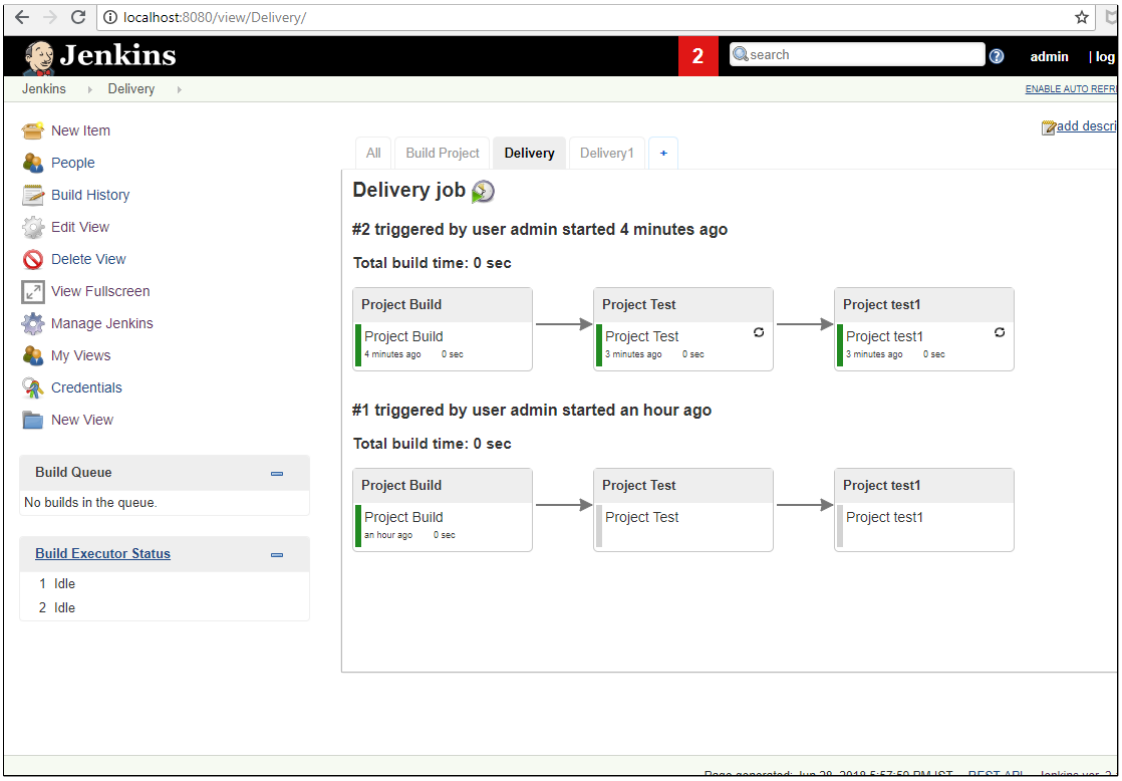
1. Set the view name



2. Do the configuration settings such as:

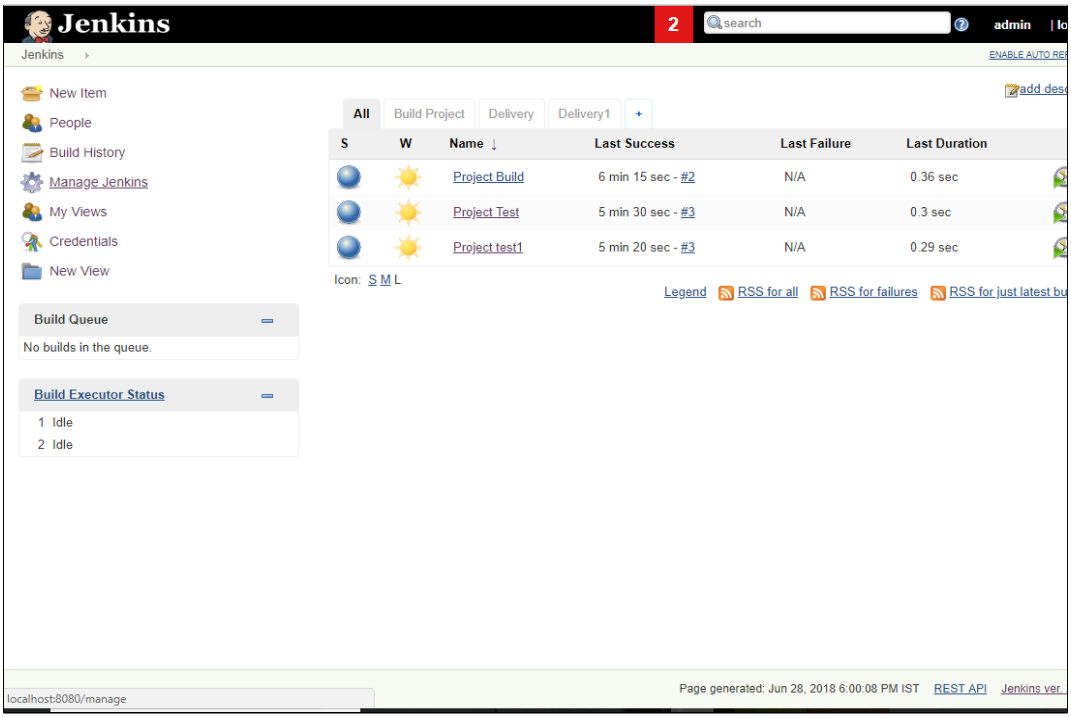


3. The view is displayed

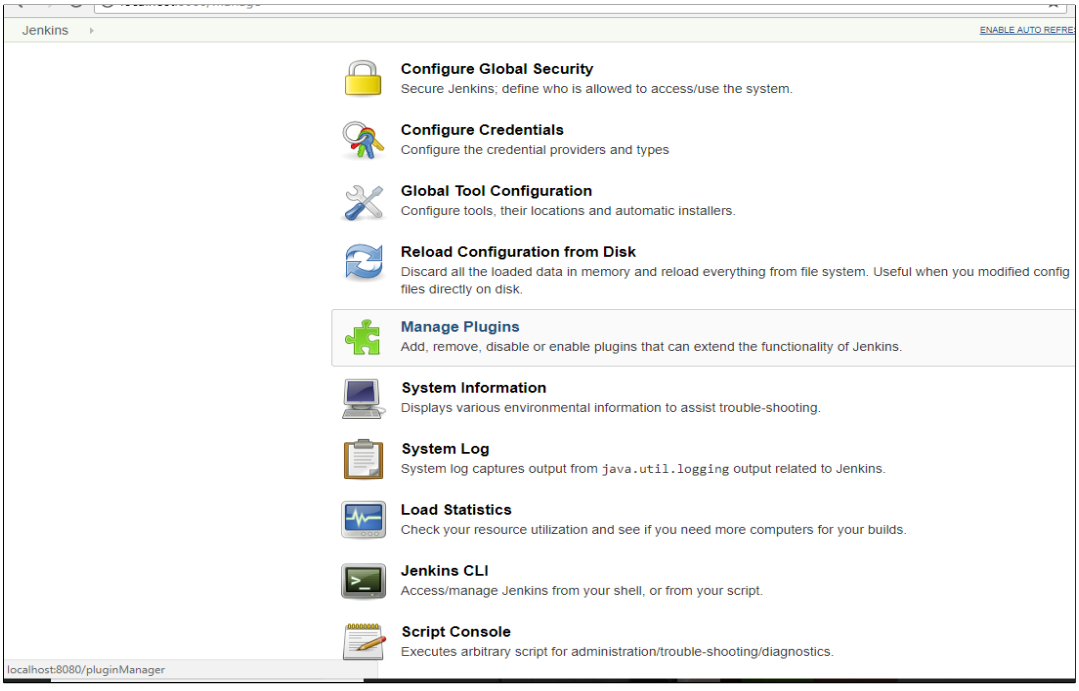


How to install the Plugins?

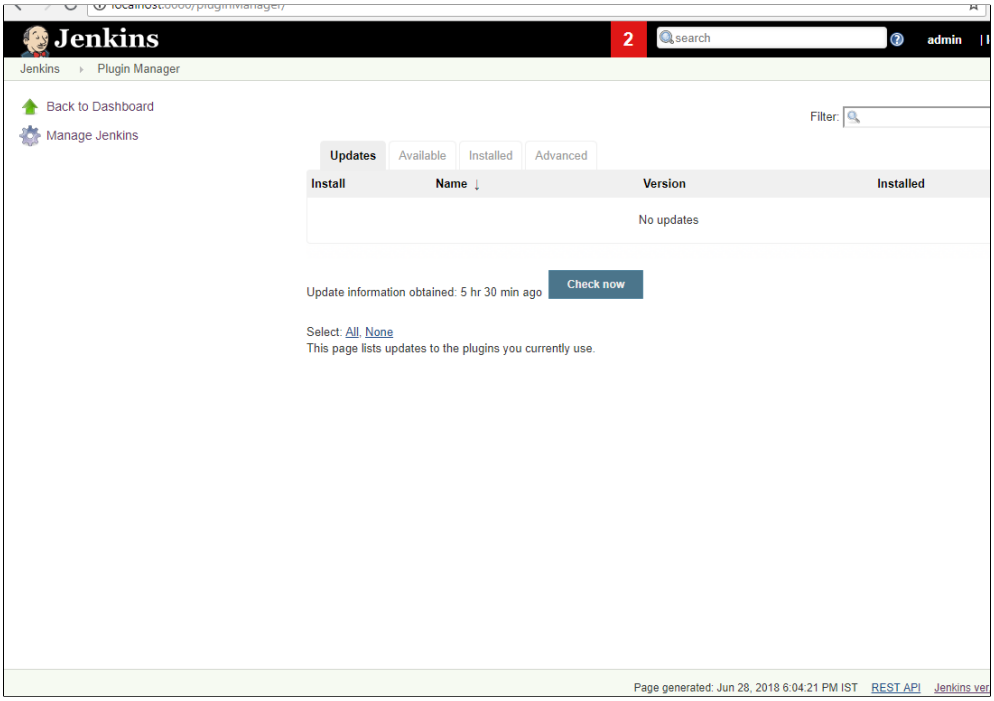
1. Go to the “Manage Jenkins” option present on the Jenkins Dashboard.



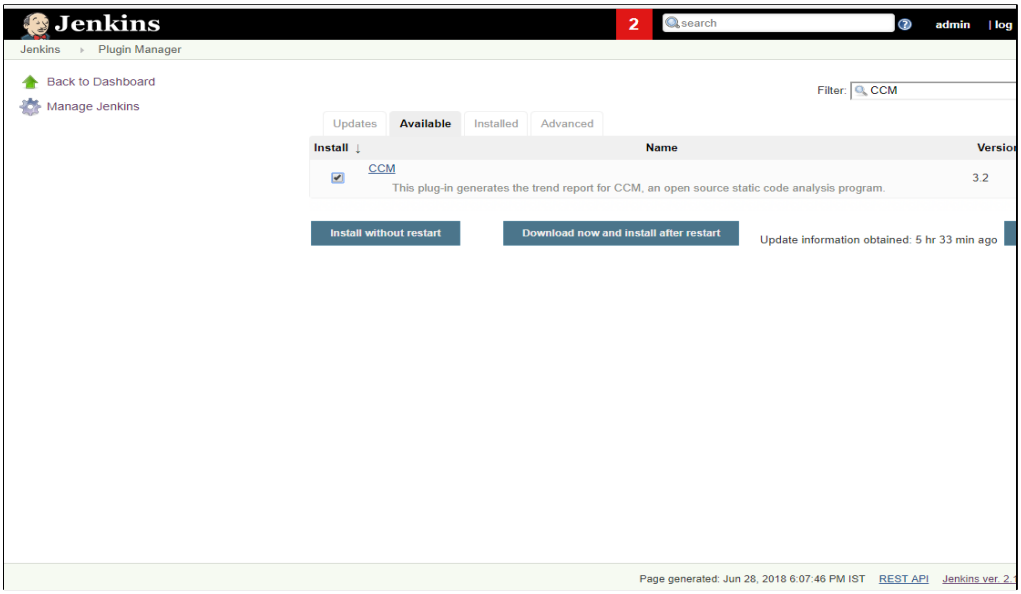
2. Click on the Manage Plugins option.



3. After clicking on the “Manage Plugins” option, it further comprises of 4 other options i. i.e Updates, Available, Installed and Advanced.



4. Go to the Available tab to see if the required plugin. If the plugin is already installed one can directly go to the installed section and find for the required plugin.



In case the Plugin is already installed.