

# Continuous Delivery

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## Goals

This lab will guide you through building a BASIC continuous delivery pipeline using Jenkins, Artifactory, and Cloud Foundry.

Estimated time: 30 minutes

## Exercises

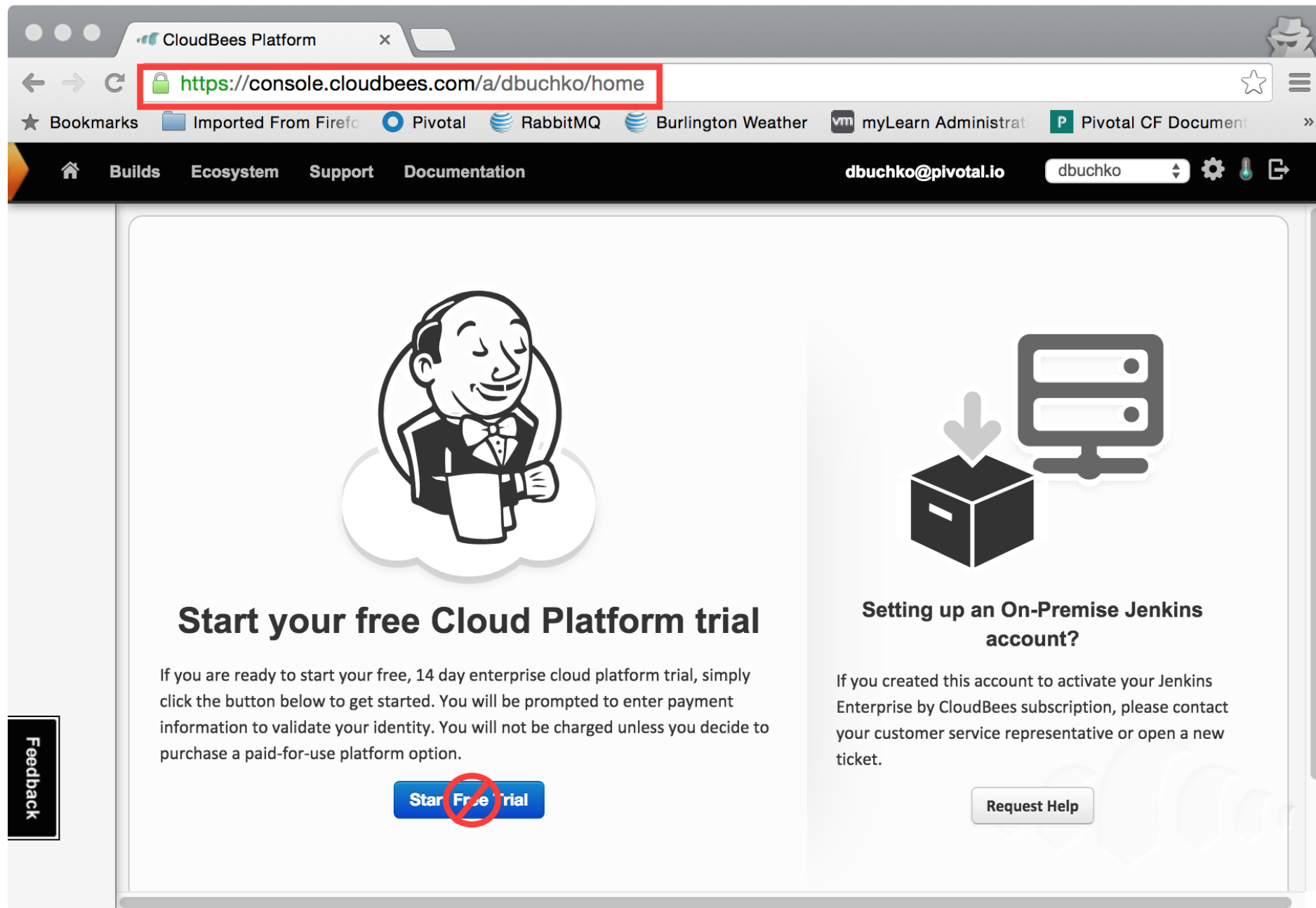
### Fork an Existing Maven Project

For this lab, you can use any Github Maven project. If you don't have one, log into your Github account, navigate to the CloudFoundry-EnvironmentDemo (<https://github.com/S2EDU/CloudFoundry-EnvironmentDemo>) project, and fork it to your account.

### Establish a CloudBees Account

CloudBees is a SaaS provider for Jenkins, a tool for creating and managing automated builds.

1. Signup for access to CloudBees: <https://grandcentral.cloudbees.com/login>. Setup your account using one of the options available. After signing in, you should be taken to your account home page. Do **NOT** click "Start Free Trial" at this time.



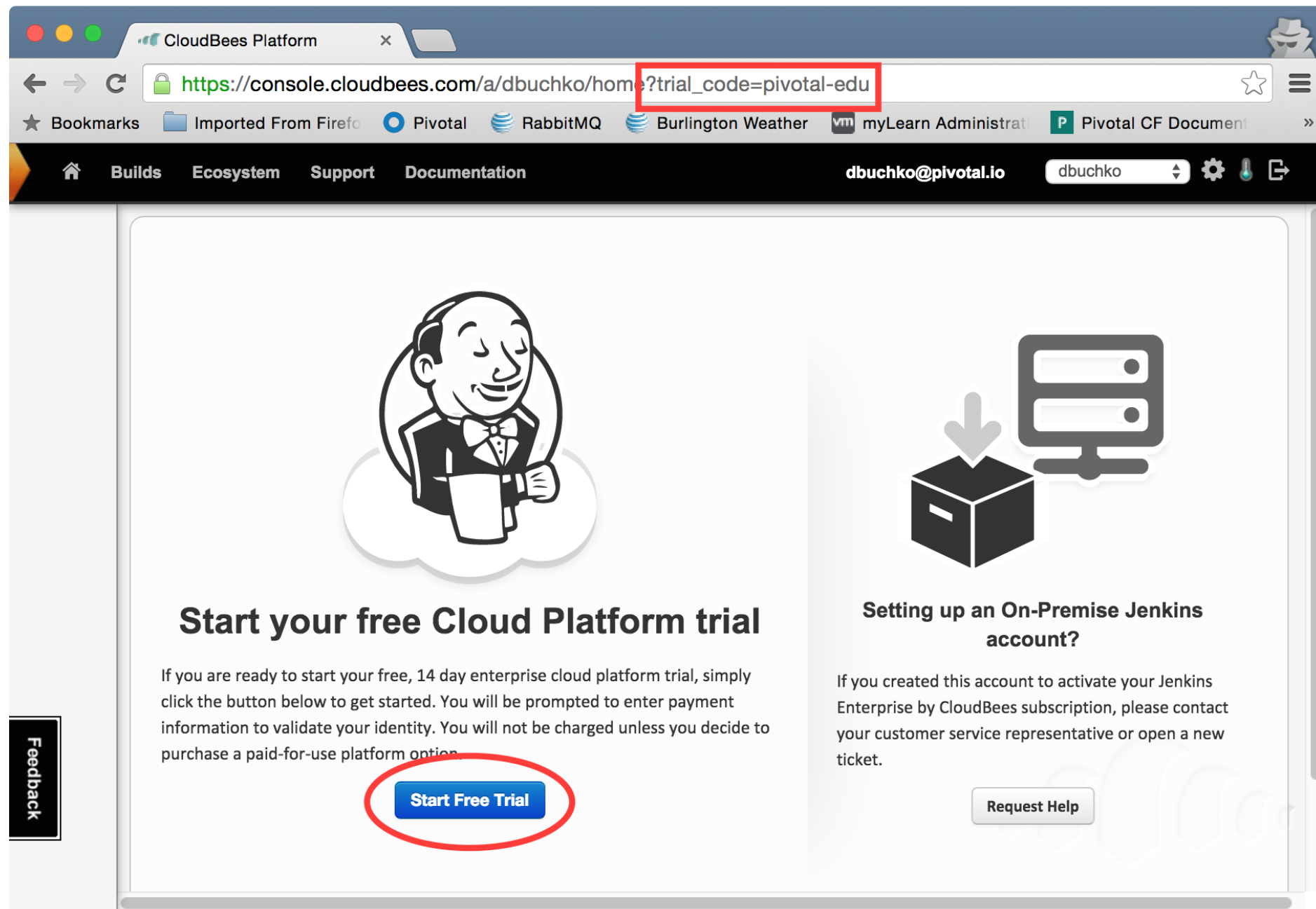
The screenshot shows a web browser window with the address bar highlighted in red, displaying the URL <https://console.cloudbees.com/a/dbuchko/home>. The browser's bookmark bar includes links to 'Bookmarks', 'Imported From Firefo', 'Pivotal', 'RabbitMQ', 'Burlington Weather', 'myLearn Administrati', and 'Pivotal CF Document'. The page header features navigation links: 'Builds', 'Ecosystem', 'Support', and 'Documentation'. The user's email 'dbuchko@pivotal.io' and a search bar with 'dbuchko' are also visible.

The main content area is divided into two columns. The left column features a cartoon illustration of a man in a tuxedo holding a document, with the heading 'Start your free Cloud Platform trial'. Below this, a paragraph states: 'If you are ready to start your free, 14 day enterprise cloud platform trial, simply click the button below to get started. You will be prompted to enter payment information to validate your identity. You will not be charged unless you decide to purchase a paid-for-use platform option.' A blue button labeled 'Start Free Trial' is present, with a red circle and slash overlaid on it. A vertical 'Feedback' button is located on the far left.

The right column features an illustration of a server rack with a downward arrow pointing to a box, with the heading 'Setting up an On-Premise Jenkins account?'. Below this, a paragraph states: 'If you created this account to activate your Jenkins Enterprise by CloudBees subscription, please contact your customer service representative or open a new ticket.' A 'Request Help' button is located at the bottom of this section.

2. In your browser, append `?trial_code=pivotal-edu` to the end of the URL. So for example, your home page URL will be something like `https://console.cloudbees.com/a/XXX/home` (where XXX is your organization name). Your modified URL will be `https://console.cloudbees.com/a/XXX/home?trial_code=pivotal-edu`. Hit enter to submit the new

URL.



The screenshot shows a web browser window with the URL `https://console.cloudbees.com/a/dbuchko/home?trial_code=pivotal-edu`. The browser's address bar and the page's navigation bar are visible. The page content features a cartoon character in a tuxedo holding a sign that says "Start your free Cloud Platform trial". Below this, there is a paragraph of text and a blue button labeled "Start Free Trial". To the right, there is a section titled "Setting up an On-Premise Jenkins account?" with a paragraph of text and a grey button labeled "Request Help". A red rectangle highlights the URL in the address bar, and a red circle highlights the "Start Free Trial" button. A "Feedback" button is visible on the left side of the page.

CloudBees Platform

[https://console.cloudbees.com/a/dbuchko/home?trial\\_code=pivotal-edu](https://console.cloudbees.com/a/dbuchko/home?trial_code=pivotal-edu)

Bookmarks Imported From Firefo Pivotal RabbitMQ Burlington Weather myLearn Administrati Pivotal CF Document

Builds Ecosystem Support Documentation dbuchko@pivotal.io dbuchko

**Start your free Cloud Platform trial**

If you are ready to start your free, 14 day enterprise cloud platform trial, simply click the button below to get started. You will be prompted to enter payment information to validate your identity. You will not be charged unless you decide to purchase a paid-for-use platform option.

**Start Free Trial**

**Setting up an On-Premise Jenkins account?**

If you created this account to activate your Jenkins Enterprise by CloudBees subscription, please contact your customer service representative or open a new ticket.

**Request Help**

Feedback

3. Now click on "Start Free Trial".



## 4. Click on the "Get Started with Builds" link.

The screenshot shows the CloudBees Platform console interface. The browser address bar displays `https://console.cloudbees.com/a/dbuchko/home`. The top navigation bar includes links for Builds, Ecosystem, Support, and Documentation, along with the user email `dbuchko@pivotal.io` and a dropdown menu for `dbuchko`. A yellow banner at the top of the main content area reads: "Time to Upgrade? You are running a free trial account plan with 13 days remaining. Check out the features you gain with our pay-as-go plans." Below this banner, there are five large buttons: "DEV@cloud Builds", "DEV@cloud Repositories", "Contact Support", "Learning Resources", and "Edit Users". Under the "Cloud resources" section, there are filters and sorting options. The "Builds" section is expanded, showing a red-bordered box around the "Get Started with Builds" link, which includes a cartoon character icon and the text "Click here to go to Builds and create your first build job...". Below this, the "Repositories" section is also expanded, showing a "Get Started with Repositories" link with a similar icon and text.

CloudBees Platform

<https://console.cloudbees.com/a/dbuchko/home>

Bookmarks Imported From Firefo Pivotal RabbitMQ Burlington Weather myLearn Administrati Pivotal CF Document

Builds Ecosystem Support Documentation dbuchko@pivotal.io dbuchko

**Time to Upgrade?** You are running a free trial account plan with 13 days remaining. Check out the features you gain with our pay-as-go plans.

DEV@cloud Builds

DEV@cloud Repositories

Contact Support

Learning Resources

Edit Users

Cloud resources

Filter: Filter resources

Sort: Name

View: Icons

Builds

**Get Started with Builds**  
Click here to go to Builds and create your first build job...

Repositories

**Get Started with Repositories**  
Click here to go to Repositories and add your first source repository...

Feedback



5. At this point a blue progress bar appears while your Jenkins instance is provisioned.

**Warning:** Registering for the trial often takes longer than the time to refresh the page. If the previous page appears, you may have to click the "Get Started with Builds" link again. Wait a short while and click the house icon at top left of the page. Eventually it should say your trial has been accepted and take you to the home page.

Dashboard [Jenkins]

https://dbuchko.ci.cloudbees.com/?cloudbees.platform

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Builds Ecosystem Support Documentation

Daniel | Account: dbuchko

Jenkins

ENABLE AUTO REFRESH

search

New Item

People

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

DEV@cloud Slave Templates

Support











Credentials

My Views




Groups

Roles

All +

S	W	Name ↓	Last Success	Last Failure	Last Duration	Deployed On
		<a href="#">CD-Lab</a>	5 mo 7 days - <a href="#">#7</a>	5 mo 7 days - <a href="#">#6</a>	1 min 47 sec	  N/A
		<a href="#">test-gradle</a>	N/A	N/A	N/A	 N/A
		<a href="#">test-maven</a>	N/A	N/A	N/A	 N/A

Icon: [S](#) [M](#) [L](#)

[Legend](#)  [RSS for all](#)  [RSS for failures](#)  [RSS for just latest builds](#)

Build Queue

No builds in the queue.



6. Follow the directions to install the Cloud Foundry CLI into your instance, as described [here](http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-cli.html) (<http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-cli.html>) (including this section [here](http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-sect-config.html) (<http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-sect-config.html>)).
7. Navigate to Manage Jenkins > Manage Plugins > Installed , and verify the GitHub Plugin is installed. If not, click on the Available tab and check the box for the GitHub Plugin. Click on the Download now and install after restart button. Then manually restart Jenkins from the Manage Jenkins page.

## Create the Initial Build Job

1. Navigate back to Jenkins Home.
2. Click new item , give it a name and select Build a Maven project Then click OK .
3. Under Source Code Management , select Git , and supply your forked repository URL and credentials
4. Under Build Triggers , select Poll SCM . In the Schedule , enter the CRON formatted string such as H/5 \* \* \* \* .
5. Under Build Environment , check Set up Cloud Foundry CLI .

Cloud Foundry CLI version: Select the latest version in the dropdown. If there is no dropdown, then go back and do the steps [here](http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-sect-config.html) (<http://documentation.cloudbees.com/docs/cje-user-guide/cloudfoundry-sect-config.html>), paying particular attention to this:

*Note: if the dropdown list of available versions is not visible and replaced by an input box, you have to trigger the reloading of the update center: Click on Manage Jenkins then Manage Plugins then go on the Advanced tab and click on Check Now .*

If you had to do the above step, un-check the Set up Cloud Foundry CLI box, save your job, then re-check and save the job to make sure the version is picked up.

Set the following parameters:

API EndPoint: `https://api.run.pivotal.io`

API Credentials: Add your PWS credentials

Organization: `<your organization>`

Space: `<your space>`

6. Add a post-build step "Execute Shell".

Select Run only if build succeeds

Command: Enter the `cf push` command (relative from the project root directory) to push the application to PWS.

eg: `cf push dbuchko-env-demo -p target/cf-intro-environment-demo-0.0.1-SNAPSHOT.war`

7. Save the config and try running the build by clicking ``Build Now".

## Github Set Up

1. Go to `https://github.com/<YOUR-ACCOUNT>/your-workspace` > Settings > Webhooks & Services > Services > Add a Service > Jenkins (Github plugin)
2. Jenkins hook url: `https://<YOUR_ACCOUNT>.ci.cloudbees.com/github-webhook/`
  - Make sure you include the trailing slash. The integration between github and jenkins will not work without it.
3. Commit a change to git and watch the magic

## Beyond the Class

The CD exercise above is very simplistic and should be expanded for real projects.

## Artifact Repository

Ideally, you want to build your artifacts (jars/wars) and publish them to a repository like Artifactory.

- Artifacts should be versioned to match the app deployments on PCF.
- All pushes to PCF should be using the same artifacts. Artifacts should be built once and used throughout the lifecycle.

## Code promotion

- Jobs should be established in Jenkins to deploy/promote code to different phases like dev to test to prod.
- Jobs should use the same artifact published to Artifactory.
- Jobs can be triggered automatically or manually but should be fully automated. There should be no manual steps beyond clicking "build now".

## Notification

Jenkins supports many notification plugins. It is important for code owners to be aware of build status.

Last updated 2015-11-30 10:39:49 PST