

Jenkins X

automated CI/CD for kubernetes



<https://jenkins-x.io/>

Everything has changed in software in 5 years...

- Move from on premise -> public cloud
- Move from VMs to containers
 - Immutable infrastructure for DevOps speed and reduced cost
- Kubernetes has become the defacto standard in orchestrating containers
 - 2018 all public clouds will support GA kubernetes as a service
 - All other significant operating system, PaaS and platform vendors support kubernetes now too
- Move from monoliths -> microservices
 - Hypothesis driven development, small iterations, fast feedback
- Become high performing teams via CI/CD
 - Deliver business value faster!

Challenges for teams who want to be high performing:

- Setup the cloud/kubernetes & environments
- Move to containers
- Deploy containers into Kubernetes
 - Generate YAML or helm charts?
- Adopt Continuous Delivery and promotion
 - What's this GitOps thing?
- Automate everything and improve feedback
- Keep delivering actual business value to customers



Jenkins X



<https://jenkins-x.io/>

How does Jenkins X help?

- Automates the installation, configuration and upgrade of Jenkins + other apps (helm, skaffold, nexus, monocular etc) on Kubernetes
- Automates CI/CD for your applications on Kubernetes
 - Docker images
 - Helm charts
 - Pipelines
- Uses GitOps to manage promotion between environments
 - Test -> Staging -> Production
- Lots of feedback
 - E.g. commenting on issues as they hit Staging + Production

How do we setup Kubernetes + Jenkins X?



Install the command line tool: **jx**

<https://jenkins-x.io/getting-started/install/>

macOs:

```
brew tap jenkins-x/jx
```

```
brew install jx
```

linux:

```
curl -L https://github.com/jenkins-x/jx/releases/download/v1.2.16/jx-linux-amd64.tar.gz | tar xzv
```

```
sudo mv jx /usr/local/bin
```

Jenkins X: setup kubernetes + Jenkins X

- If using the public cloud use:
 - `jx create cluster aws`
 - `jx create cluster gke`
 - `jx create cluster aks`
- If you have a cluster already - ensure RBAC enabled then:
 - `jx install`

More help here: <https://jenkins-x.io/getting-started/>

jx create cluster (aks|aws|gke|minikube)

```
2. gke (helm)

data:
  tls.crt: <Base64 encoded cert>
  tls.key: <Base64 encoded key>
  type: kubernetes.io/tls

Waiting for external loadbalancer to be created and update the nginx-ingress-controller service in kube-system namespace
External loadbalancer created
You can now configure a wildcard DNS pointing to the new loadbalancer address 55.189.117.38
? Domain 55.189.117.38.nip.io
nginx ingress controller installed and configured
Context "gke_jenkins-dev_europe-west2-b_rockspring" modified.
Let's set up a git username and API token to be able to perform CI / CD

? Do you wish to use rajdovries as the GitHub username for CI/CD pipelines? Yes
Cloning the Jenkins X cloud environments repo to /Users/rajdovries/.jx/cloud-environments
? A local Jenkins X cloud environments repository already exists, recreate with latest? Yes
Cloning the Jenkins X cloud environments repo to /Users/rajdovries/.jx/cloud-environments
Counting objects: 388, done.
Compressing objects: 100% (4/4), done.
Total 388 (delta 85, reused 1 (delta 0), pack-reused 384)
helm repo add jenkins-x http://chartmuseum.build.cd.jenkins-x.io
"jenkins-x" has been added to your repositories
rm -rf secrets.yaml.local
helm repo add jenkins-x http://chartmuseum.build.cd.jenkins-x.io
"jenkins-x" has been added to your repositories
helm repo update
Hang tight while we grab the latest from your chart repositories...
...Skip local chart repository
...Successfully got an update from the "monocular" chart repository
...Successfully got an update from the "chartmuseum" chart repository
...Successfully got an update from the "jx" chart repository
...Successfully got an update from the "incubator" chart repository
...Successfully got an update from the "jenkins-x" chart repository
...Successfully got an update from the "stable" chart repository
```

What does that give me?

Each team gets their own:

- Development Tools Environment
 - Jenkins master
 - Elastic pool of Kubernetes build pods
 - Nexus + Monocular (helm application store)
- Staging Environment
- Production Environment

I'm so excited.



Jenkins X: Summary

- Please try it out!
 - <https://jenkins-x.io/>
- Feedback:
 - <https://jenkins-x.io/community/>
- CloudBees
 - <https://pages.cloudbees.com/K8s>



Jenkins X: create/import projects

- Available commands:
 - `jx create spring`
 - `jx create quickstart`
 - `jx import`
- Automatically set up CI/CD Pipelines for new + imported projects
 - Setups git repository
 - Adds webhooks on git provider to trigger Jenkins pipelines on PR / master
 - Triggers first pipeline

Jenkins X: on Pull Request

- Compiles + runs tests
- Creates preview docker image + helm chart
- Creates a Preview Environment and comments on the PR with a link to the app

Jenkins X: on Release (push to master)

- Compiles + runs tests
- Creates semantic release version
- Publishes versioned artifacts, docker image & helm chart
- Promotes through all *automatic* environments, e.g. Staging

Jenkins X: promotion via GitOps

- Each environment stores its configuration as helm charts in a git repository
 - Configuration as code
 - All changes audited and easy to revert
 - Reuse the Pull Request workflow for changes
- To promote a version to, say, Production Jenkins X submits a Pull Request
 - The Promote step waits for the Pull Request CI build to complete, merge and for the environments pipeline to complete applying the change

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