

JENKINS X

automated CI/CD for cloud native apps on Kubernetes

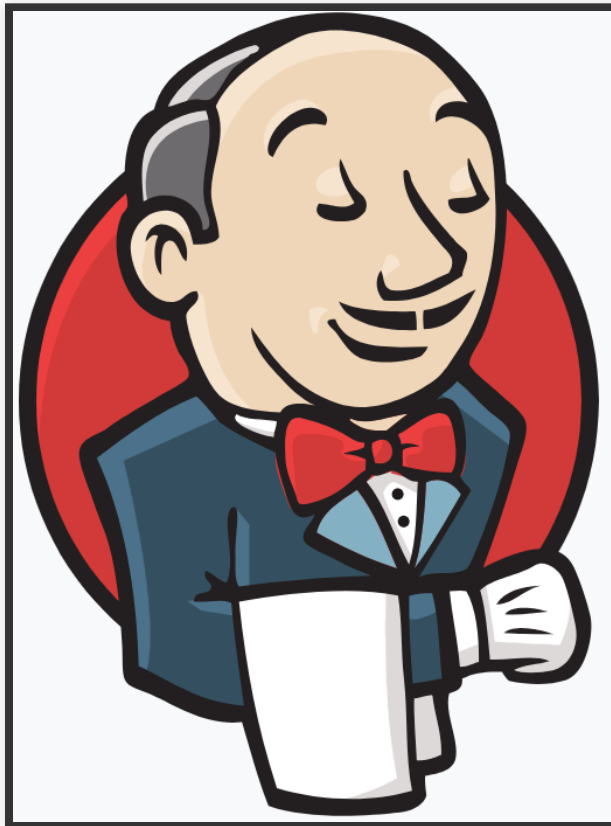
<https://jenkins-x.io/>

tedwon <jwon@redhat.com>

JENKINS VS JENKIS X

JENKINS

- <https://jenkins.io/>



JENKINS X

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



TRANSFORMATION OF DEVELOPMENT PLATFORM

- Move from on premise to cloud
- Move from VMs to containers
- Immutable infrastructure for DevOps
- Kubernetes has become the defacto standard
- Move from monoliths to microservices
- Become high performing teams via CI/CD

WHAT ARE THE CHALLENGES?

- How do I migrate my applications to the cloud?
- How do dev teams work with Kubernetes?
- What do I need to start developing, building and deploying?
- How do I wire everything together?
- How do I access my applications?

STARTED BY JAMES STRACHAN

- Released at March of this year, 2018
 - <https://twitter.com/jstrachan/status/9757967221474>
 - <https://goo.gl/ceLcmq>
 - <https://github.com/jenkins-x/jx/graphs/contributors>
- Founder of Groovy, Apache ActiveMQ/Camel
 - <https://www.linkedin.com/in/jstrachan/>
 - <https://medium.com/@jstrachan>

STARTED BY JAMES STRACHAN

- Developed similar project in Red Hat until last year, 2017
 - <https://goo.gl/4re3G7>
- gofabric8
 - <https://github.com/fabric8io/gofabric8>
 - <http://fabric8.io/>

FEATURES OF JENKINS X

- Automated CI and CD
- Environment Promotion via GitOps
- Pull Request Preview Environments
- Feedback on Issues and Pull Requests

SUPPORTED CLOUD PROVIDERS

```
jx help create cluster
```

- Google Container Engine
- OpenShift
- Amazon Elastic Container Service
- Azure Container Service
- IBM Cloud Kubernetes Service
- Oracle Cloud Container Engine
 - https://jenkins-x.io/commands/jx_create_cluster/

HOW DOES JENKINS X HELP?

- Jenkins
 - CI/CD pipeline solution
- Nexus
 - Artifact repository
- <https://helm.sh>
 - Package manager for Kubernetes
- Chartmuseum
 - Helm Chart repository

HOW DOES JENKINS X HELP?

- Monocular
 - Web UI for helm charts
- <https://draft.sh>
- Skaffold

HELM CHART









- Helm Chart is a packaging format.
- A chart is a collection of files that describe a related set of Kubernetes resources.

```
~/demo/charts/demo(master) » tree .
```

```
.
├── Chart.yaml
├── Makefile
├── README.md
├── charts
├── templates
│   ├── NOTES.txt
│   ├── _helpers.tpl
│   ├── deployment.yaml
│   └── service.yaml
└── values.yaml
```

tedwon

All









S	W	Name ↓	Last Success	Last Failure	Last Duration
		demo1030	10 min - log	N/A	1.9 sec
		environment-jwon-k8s-cluster-1030-production	2 min 10 sec - log	N/A	2.3 sec
		environment-jwon-k8s-cluster-1030-staging	10 min - log	N/A	1.9 sec
		starter1030	7 min 10 sec - log	N/A	2.4 sec

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

[Legend](#)
 [RSS for all](#)
 [RSS for failures](#)
 [RSS for ju](#)

queue.

or Status

NAME	HEALTH	BRANCHES	PR	
tedwon / demo1030		1 passing	-	
tedwon / environment-jwon-k8s-cluster-1030-production		1 passing	-	
tedwon / environment-jwon-k8s-cluster-1030-staging		1 passing	-	
tedwon / starter1030		1 passing	-	

on / demo1030 < 2

Pipeline

Changes

Tests

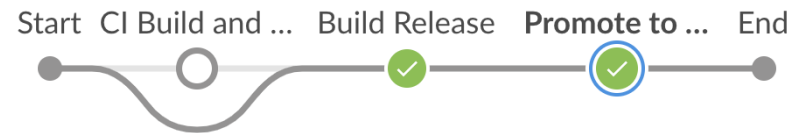
Artifacts



Log

master 7m 15s Changes by jwon

9919ea 20 hours ago Push event to branch master



to Environments - 4m 11s

[Restart Promote to Environments](#)

sten changelog --version v\$(cat ../../VERSION) — Shell Script

sten helm release — Shell Script

promote -b --all-auto --timeout 1h --version \$(cat ../../VERSION) — Shell Script

delete workspace when build is done



Browse

Browse assets and components

Filter

	Name ↑	Type	Format	Status	URL	Health
	jenkins-public	proxy	maven2	Online - Remote Available	copy	
	jitpack	proxy	maven2	Online - Remote Available	copy	
	maven-central	proxy	maven2	Online - Remote Available	copy	
	maven-group	group	maven2	Online	copy	
	maven-jenkinsci	proxy	maven2	Online - Remote Available	copy	
	maven-public	group	maven2	Online	copy	
	maven-releases	hosted	maven2	Online	copy	
	maven-snapshots	hosted	maven2	Online	copy	
	nuget-group	group	nuget	Online	copy	
	nuget-hosted	hosted	nuget	Online	copy	
	nuget.org-proxy	proxy	nuget	Online - Ready to Connect	copy	
	spring-milestone	proxy	maven2	Online - Remote Available	copy	
	spring-release	proxy	maven2	Online - Remote Available	copy	

Jenkins X Apps

[Charts](#) · [About](#)

Discover & launch great
Kubernetes-ready apps

2 charts ready to deploy



demo1030

[chartmuseum](#)



starter

[chartmuseum](#)

HOW DOES JENKINS X HELP?

```
jx open
```

jenkins	http://jenkins.jx.35.200.29.158.nip.io
jenkins-x-chartmuseum	http://chartmuseum.jx.35.200.29.158.nip.io
jenkins-x-docker-registry	http://docker-registry.jx.35.200.29.158.nip.io
jenkins-x-monocular-ui	http://monocular.jx.35.200.29.158.nip.io
nexus	http://nexus.jx.35.200.29.158.nip.io

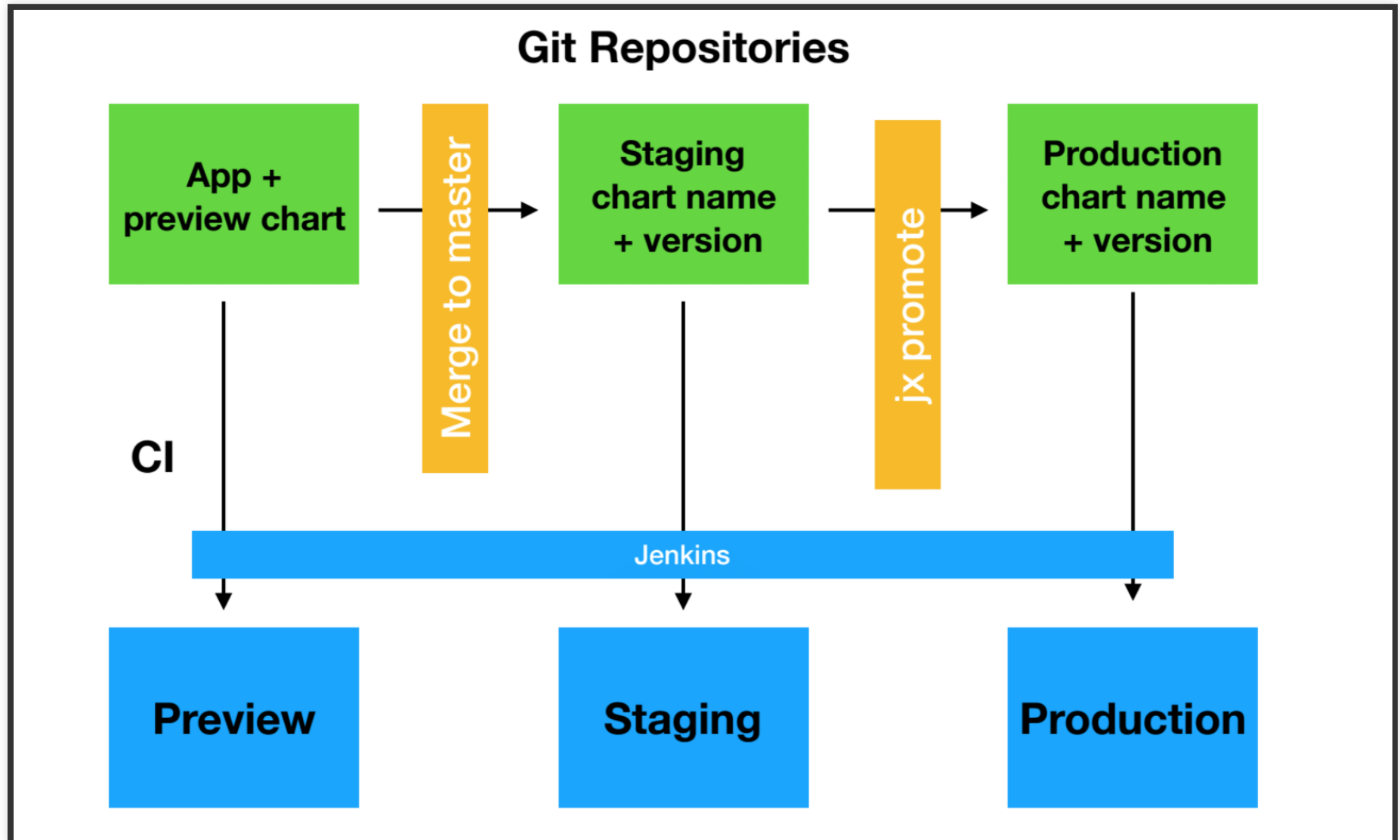
- Jenkins <http://jenkins.jx.35.200.29.158.nip.io>
- Nexus <http://nexus.jx.35.200.29.158.nip.io>
- Monocular <http://monocular.jx.35.200.29.158.nip.io>

ENVIRONMENT PROMOTION VIA GITOPS

```
jx env  
? Pick environment: [Use arrows to move, type to filter]  
> dev  
  production  
  staging
```

- Development Environment
- Staging Environment
- Production Environment

ENVIRONMENTS IN KUBERNETES



HOW DO WE SETUP KUBERNETES + JENKINS X?

- Install the jx command line tool
 - <http://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/v1.3.46  
sudo mv jx /usr/local/bin
```

HOW DO WE SETUP KUBERNETES + JENKINS X?

- If using the public cloud use:

```
jx create cluster aws  
jx create cluster gke  
jx create cluster aks
```


HOW DO WE SETUP KUBERNETES + JENKINS X?

- If you have a cluster already - ensure RBAC enabled then:

```
jx install --provider=openshift
```

JX COMMANDS

- jx command line tool
- <https://jenkins-x.io/commands/jx/>

```
jx help
```

DEMO

DEMO OVERVIEW

- Step 1. Install jx
 - <https://jenkins-x.io/getting-started/install/>
- Step 2. Create Cluster GKE
 - https://jenkins-x.io/demos/create_cluster_gke/
- Step 3. Create Cloud App: Spring Boot
 - http://jenkins-x.io/demos/create_spring/
- Step 4. Import Cloud App: Vert.x

DEMO - STEP 2. CREATE CLUSTER GKE

```
jx create cluster minikube  
jx create cluster minishift  
jx create cluster gke
```

DEMO - STEP 2. CREATE CLUSTER GKE

- <https://asciinema.org/a/209189>
 - demo.adoc
 - <https://cloud.google.com/kubernetes-engine>

```
jx create cluster gke --cluster-name jwon-k8s-cluster-1030 --user
```


DEMO - STEP 3. CREATE CLOUD APP: SPRING BOOT

```
jx create spring -d web -d actuator
```

- Automatically set up CI/CD pipelines for new + imported projects
- Setups up git repository
- Adds webhooks on git to trigger Jenkins pipelines on PR / master
- Triggers the first pipeline


DEMO & ENVIRONMENT GIT REPOSITORY

environment-jwon-k8s-cluster-1030-staging

● Makefile  Apache License 2.0 Updated 16 hours ago



environment-jwon-k8s-cluster-1030-production

● Makefile  Apache License 2.0 Updated 18 hours ago



demo1030

● Makefile Updated 20 hours ago



JENKINS X ON PULL REQUEST

- Builds and tests
- Creates preview docker image + helm chart
- Creates a Preview Environment and comments on the PR with the link

JENKINS X ON RELEASE (PUSH TO MASTER)

- Builds and tests
- Creates semantic release version
- Publishes versioned artifacts, docker image & helm chart

JENKINS X PROMOTION VIA GITOPS

- Each environment stores its configuration as helm charts in a git repository
 - 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

DEMO - STEP 4. IMPORT CLOUD APP: VERT.X

- <https://asciinema.org/a/209189>
- <http://start.vertx.io/>

```
jx import
```

JENKINS X ROADMAP

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

TRY IT OUT!

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

THANK YOU

REFERENCES

- <https://docs.google.com/presentation/d/1hwt2lFh3cCel>
- <https://developer.okta.com/blog/2018/07/11/ci-cd-spring>
- <https://jenkins.io/blog/2018/03/19/introducing-jenkins>
- https://www.youtube.com/watch?v=uHe7R_iZSLU
- <https://jenkins.io/blog/2018/07/19/jenkins-x-accelerator>
- <https://dzone.com/articles/jenkins-x-the-good-bad-and-ugly>
- <https://blog.octo.com/en/jenkinsx-new-kubernetes-dream>
- <https://www.dropbox.com/s/2l3yudybl8dx4j7/2.pdf?dl=1>
- <https://www.dropbox.com/s/1407507>

- <http://www.itworld.co.kr/news/10/52/>
- <https://www.redhat.com/en/blog/integrating-ansible-jenkins>
- <http://woowabros.github.io/experience/2018/06/26/building-a-ci-cd-pipeline-with-jenkins>
- <https://dzone.com/articles/what-is-gitops-really>
- <https://jenkins-x.io/developing/git/#using-a-different-git-provider>