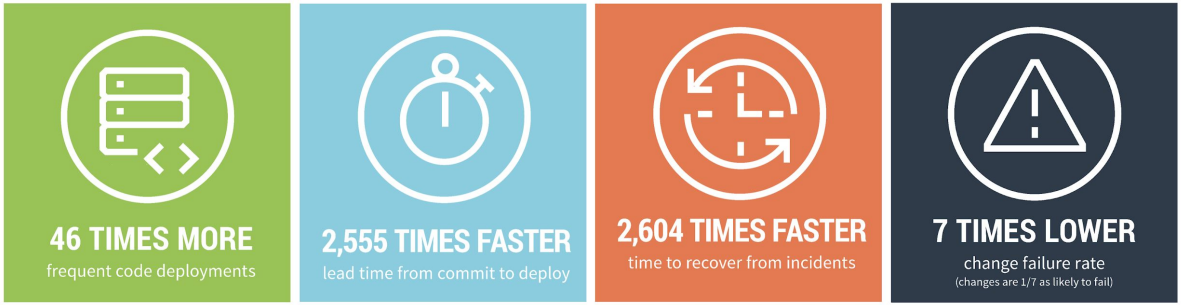
Jenkins X

Continuous Delivery for Kubernetes

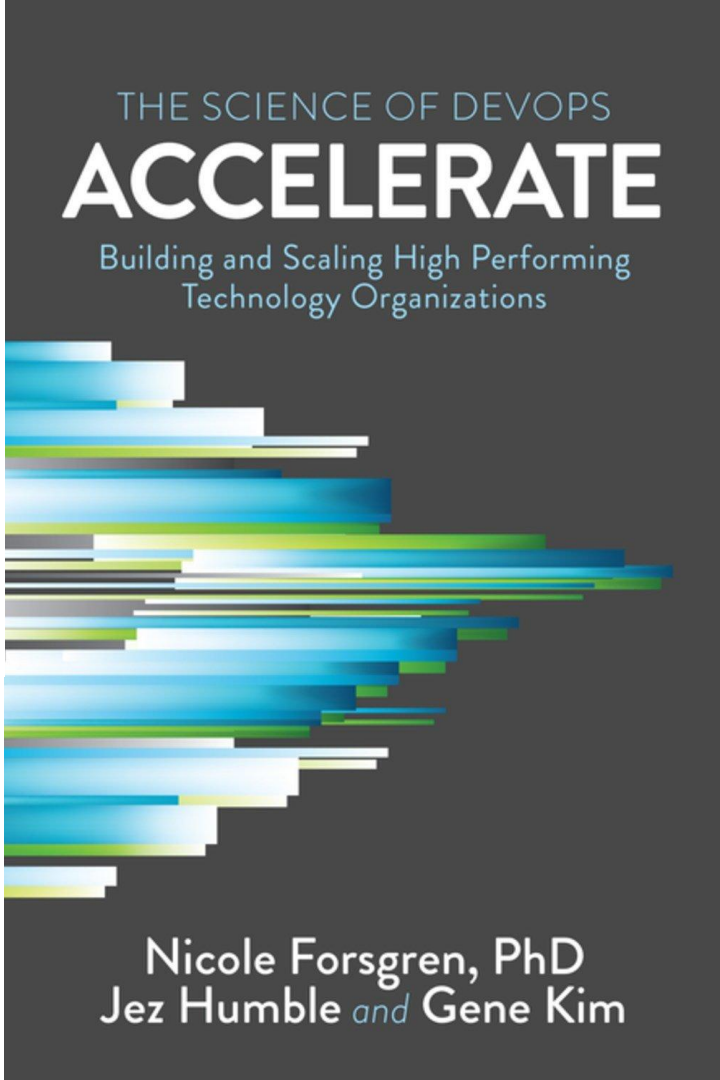
https://jenkins-x.io/

Key Findings - Elite Performers



DORA
DEVOPS RESEARCH & ASSESSMENT

We all want to be high performing teams!!

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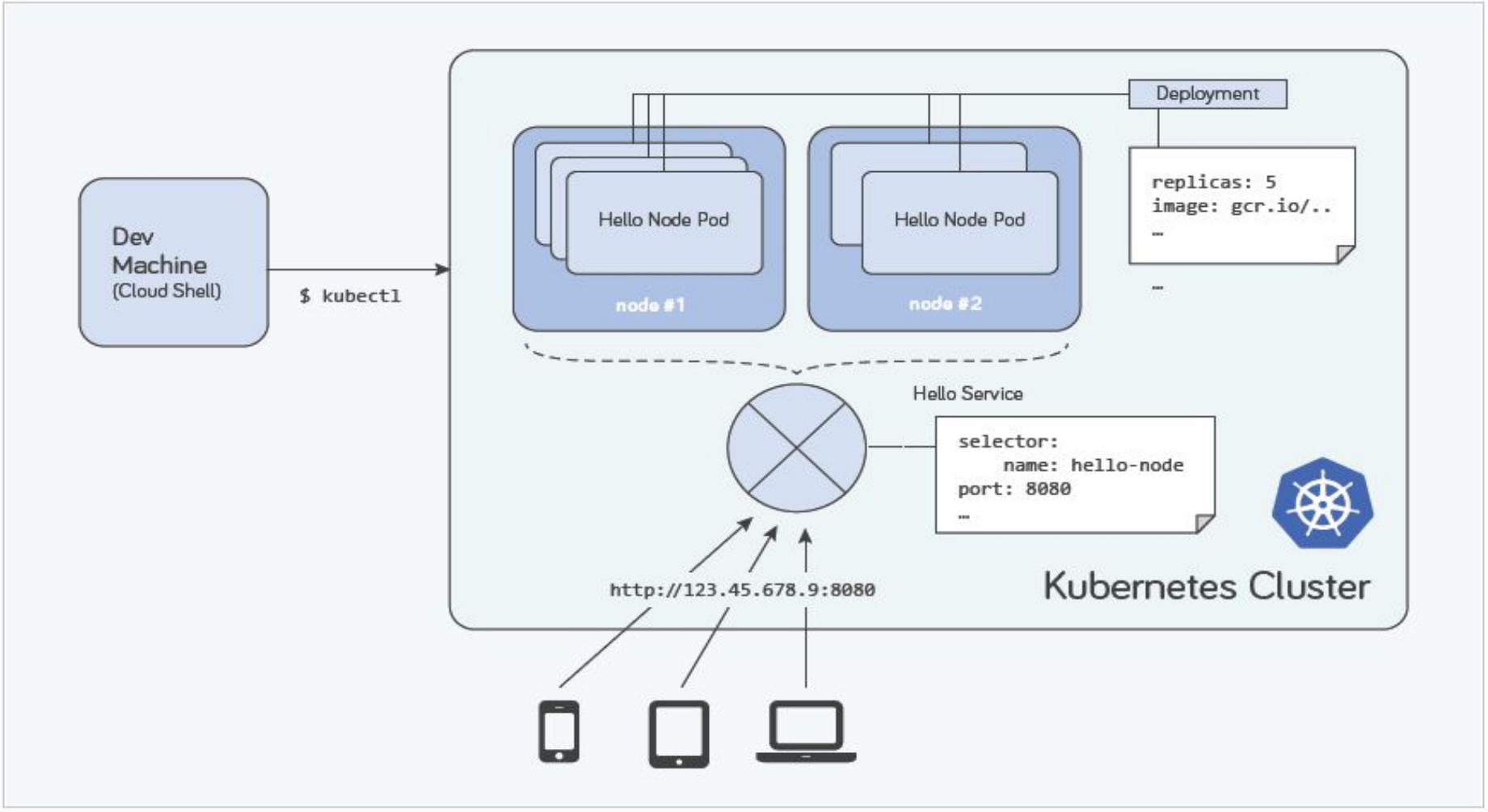
Capabilities of Jenkins X
Jenkins X uses capabilities identified by the Accelerate book by Nicole Forsgren, Jez Jumble & Gene Kim
1
Use version control for all artifacts.
2
Automate your deployment process.
3
Use trunk-based development.
4
Implement continuous integration.
5
Implement continuous delivery.
6
Use loosely coupled architecture.
7
Architect for empowered teams.
https://jenkins-x.io/about/accelerate


Dev
Machine
(Cloud Shell)
$ kubectl
Deployment
replicas: 5
image: gcr.io/..
…
Hello Node Pod
node #1
Hello Node Pod
node #2
Hello Service
selector:
name: hello-node
port: 8080
…
http://123.45.678.9:8080
Kubernetes Cluster

Jenkins X

https://jenkins-x.io/

How does Jenkins X help?

- Automates the setup of your tools + environments:
  - Jenkins, nexus + helm, skaffold, nexus, monocular
- 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

Installing Jenkins X

https://jenkins-x.io/

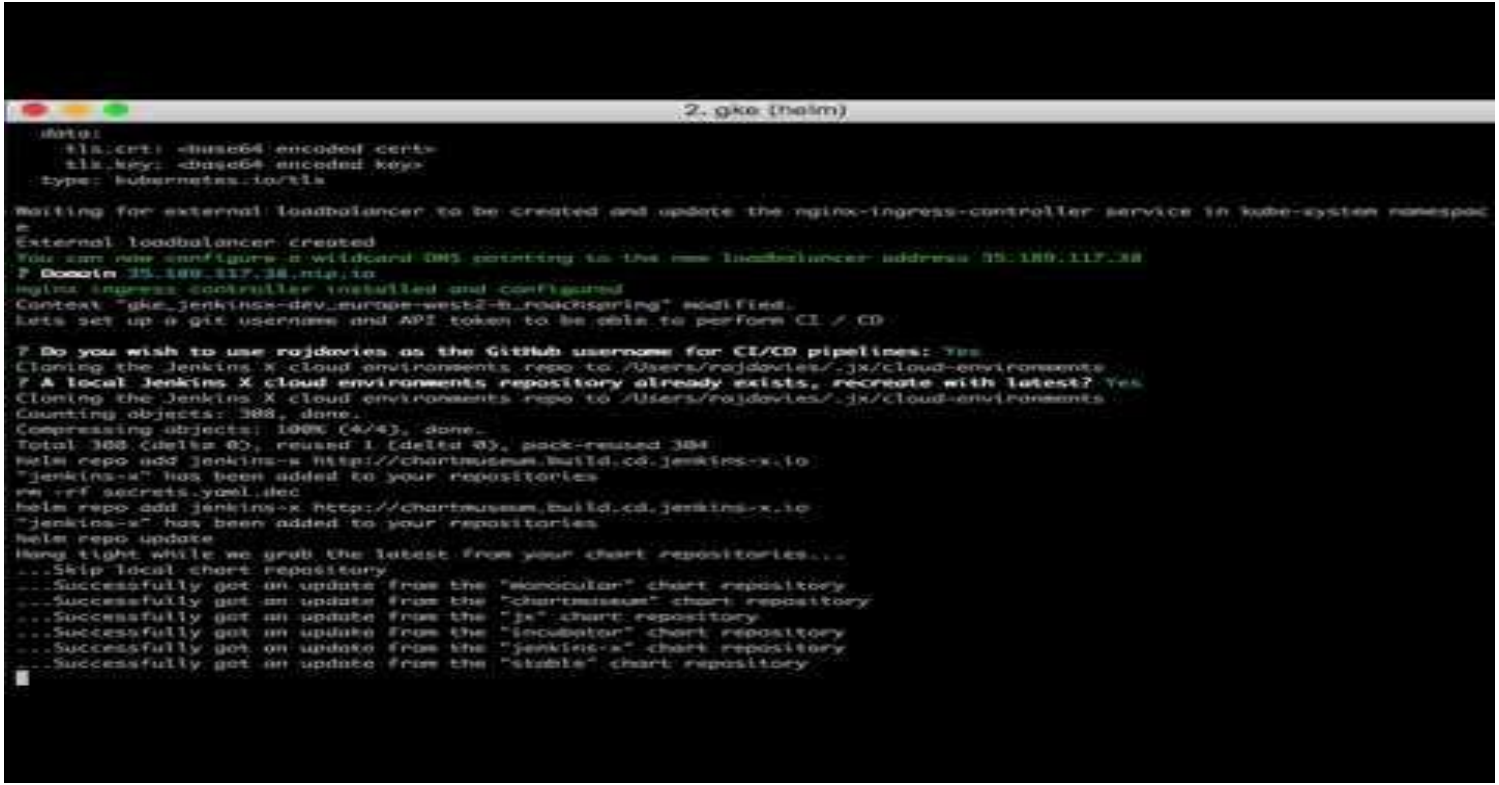
- Install the **jx** binary:
  https://jenkins-x.io/getting-started/install/
- Create a new k8s cluster on GKE:

```
$ jx create cluster gke
```

- Install Jenkins X on an existing cluster:

```
$ jx install --provider=...
```

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



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

Importing & Creating Projects

https://jenkins-x.io/

- import existing applications:

```
$ jx import
```

- create new applications from quickstarts:

```
$ jx create quickstart
```

- create new Spring Boot applications:

```
$ jx create spring
```

I’m so excited.

Sneak peek at Jenkins X 2.x

- Pluggable execution engines
  - Static Jenkins master
  - Serverless jenkins via jenkinsfilerunner
    - Uses custom war packager
  - Knative build support
- Tiller-less Helm on helm 2.x
  - Runs tiller as a local process so no tiller inside k8s
- Prow for webhooks
  - https://github.com/kubernetes/test-infra/tree/master/prow
  - Provides commands on Pull Request comments
    - https://prow.k8s.io/command-help
- Promotion workflow engine
  - `jx controller workflow`

To try Jenkins X 2.x now...

```
jx create cluster gke --no-tiller --prow
```

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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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!