



# DevOps World



# Jenkins World

## How Jenkins Builds and Delivers Jenkins in the Cloud

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**Jenkins Infrastructure Officer**



# Jenkins Infrastructure Project

“VMs” “Cloud” “SAAS” “Containers”

“Configuration As Code” “GitOps”

“Open Infrastructure Project”

“Ruby” “Python” “Golang” “Java” “BASH” “Groovy”



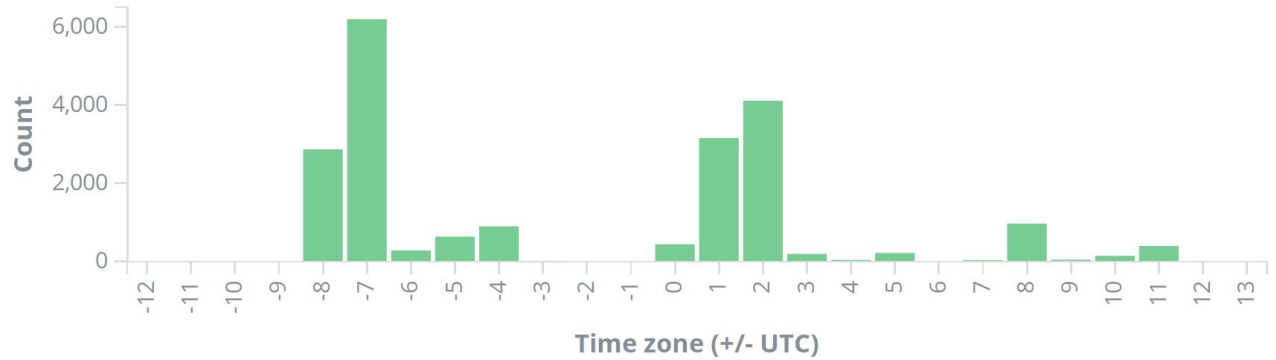
# Jenkins-Infra

634  
#  
Contributors

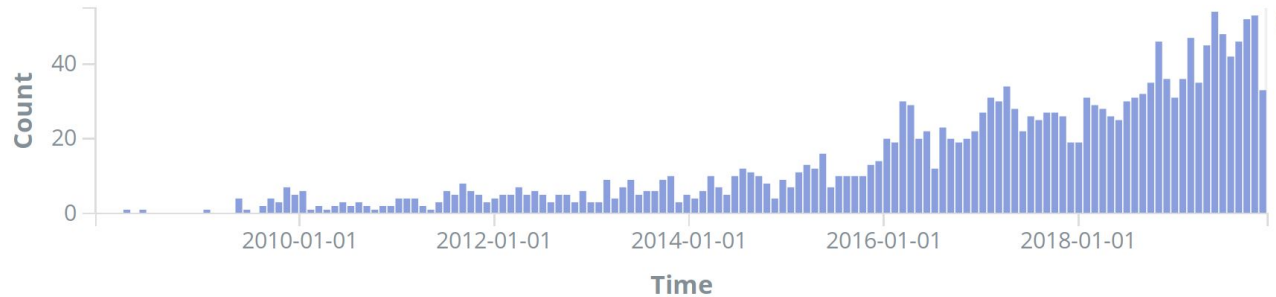
20,618  
# Commits

74  
# Repositories

Commits by Time Zone



Authors





# Jenkins-Infra

Repository ↕	Commits ↕	Authors ↕	Organizations ↕	Added Lines ↕	Removed Lines ↕	Avg. Lines/Commit ↕	Avg. Files/Commit ↕
<a href="https://github.com/jenkins-infra/jenkins.io">https://github.com/jenkins-infra/jenkins.io</a>	8,023	359	20	967769	387967	168.96	3.246
<a href="https://github.com/jenkins-infra/jenkins-infra">https://github.com/jenkins-infra/jenkins-infra</a>	3,040	28	5	28216	10952	12.88	1.048
<a href="https://github.com/jenkins-infra/evergreen">https://github.com/jenkins-infra/evergreen</a>	1,655	22	4	131110	55731	112.895	1.705
<a href="https://github.com/jenkins-infra/update-center2">https://github.com/jenkins-infra/update-center2</a>	1,110	100	12	19792	5795	23.051	1.102
<a href="https://github.com/jenkins-infra/account-app">https://github.com/jenkins-infra/account-app</a>	509	10	2	8523	3722	24.057	1.452
<a href="https://github.com/jenkins-infra/wechat">https://github.com/jenkins-infra/wechat</a>	406	27	4	13157	963	34.778	2.202
<a href="https://github.com/jenkins-infra/cn.jenkins.io">https://github.com/jenkins-infra/cn.jenkins.io</a>	393	37	5	1648682	1539940	8,113.542	43.964
<a href="https://github.com/jenkins-infra/azure">https://github.com/jenkins-infra/azure</a>	380	6	2	6662	3248	26.079	1.071
<a href="https://github.com/jenkins-infra/pipeline-library">https://github.com/jenkins-infra/pipeline-library</a>	366	21	3	5628	2202	21.393	1.008
<a href="https://github.com/jenkins-infra/plugin-site-api">https://github.com/jenkins-infra/plugin-site-api</a>	365	13	2	1303715	1295372	7,120.786	2.055



# Jenkins?

“Public” Jenkins ci.jenkins.io  $\Leftarrow$  Tests

“Trusted” Jenkins trusted.ci.jenkins.io

“Cert” Jenkins cert.ci.jenkins.io

“Release” Jenkins release.ci.jenkins.io  $\Leftarrow$  Release

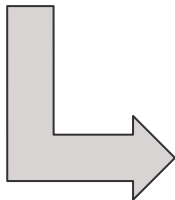


# Release Environment



## Current State

- Hard to improve
- Zero transparency
- Fragile process
- Strong dependencies on one person/machine
- At least more secure by design but...

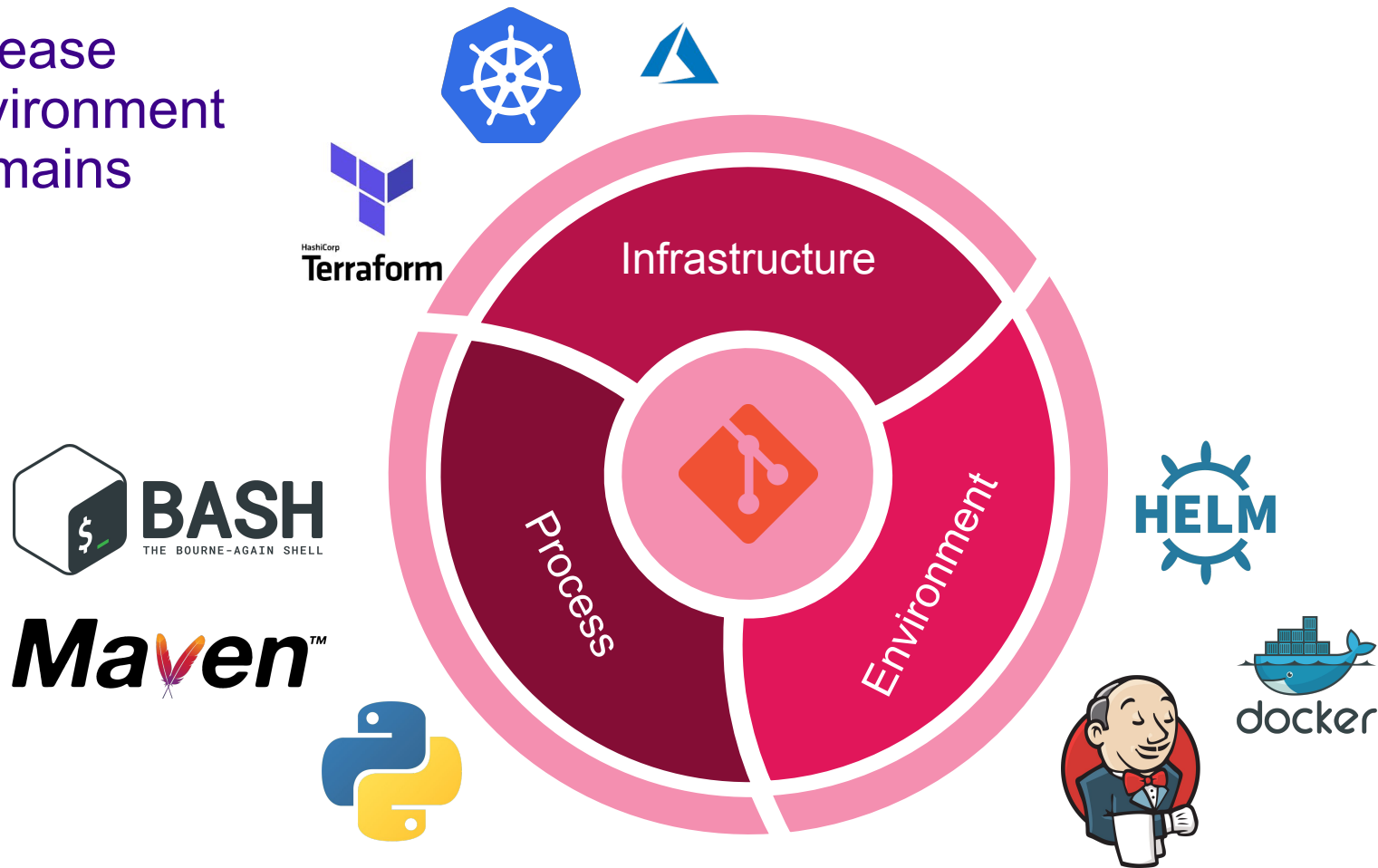


## Ideal State

More Brains....



# Release Environment Domains

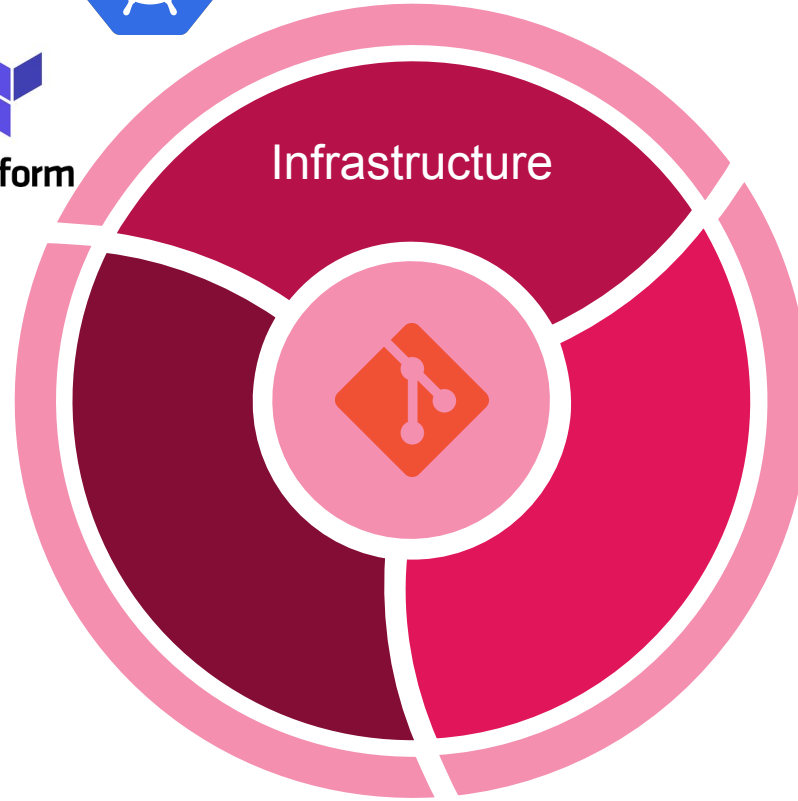




# Release Environment Infrastructure



[jenkins-infra/azure](https://github.com/jenkins-infra/azure)





[jenkins-infra/azure](https://jenkins-infra.azure.com)

# Release Infrastructure

## Azure

- Network, IPs, Dns
- Kubernetes (AKS)
  - Windows AutoScaling Nodes
  - Linux AutoScaling Nodes
- Azure KeyVault
  - Code Signing Certificate
  - Sops secrets
  - GPG key
- Azure File Storage

### Ci.jenkins.io

#### Testing Workflow

- Linting Test
- Validate Syntax
- Deploy from PR
- Delete PR
- Deploy from Master
- Upgrade from master to PR

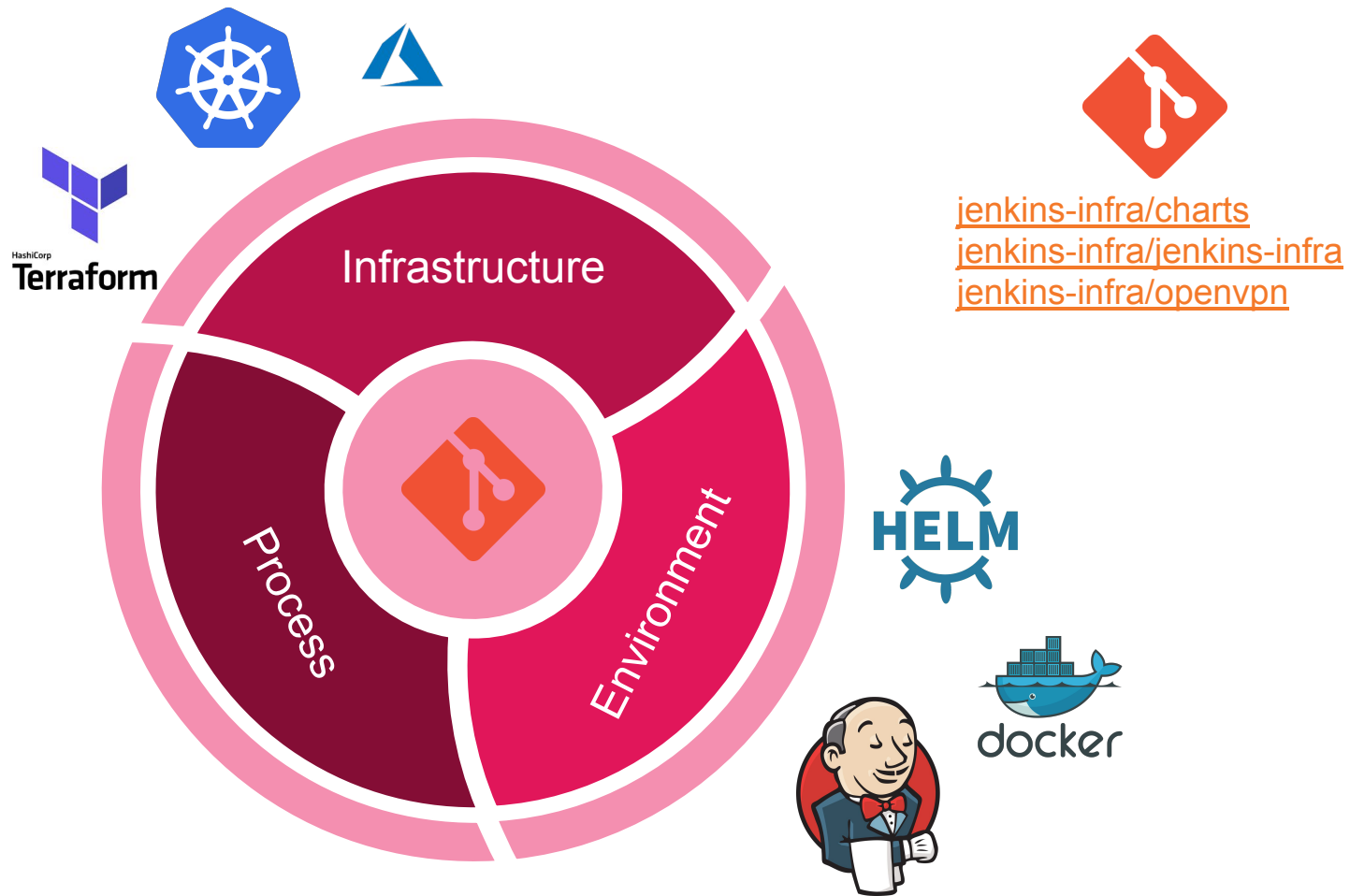
### trusted.ci.jenkins.io



# What I wish I knew before working on this Infrastructure

- AKS initial configuration
  - AutoScaling
  - Windows node
  - Network (ipcalc)
  - Node Taint
  - Vm size big enough
- Testing Terraform is hard
- Automate Terraform is risky

# Release Environment Areas





# Release Environment

[jenkins-infra/charts](#)  
[jenkins-infra/jenkins-infra](#)  
[jenkins-infra/openvpn](#)

## Services

- Vpn ([jenkins-infra/openvpn](#))
  - [Vpn.jenkins.io](#)
- Ldap
  - [Ldap.jenkins.io](#)
- Jenkins
  - [release.ci.jenkins.io](#)
- Maven repository
  - [release.repo.jenkins.io](#)
- Storage WebSite
  - [Release.pkg.jenkins.io](#)

## Code

- [jenkins-infra/charts](#) (Helm)
  - Helm Charts
  - Jenkins
  - Nexus
  - Jenkins-release-env
  - Pkg
- [jenkins-infra/jenkins-infra](#) (Puppet)
  - Vpn
  - Ldap



[jenkins-infra/charts](https://jenkins-infra.github.io/charts)

# Secret Management

## jenkins-infra/charts

- Charts
- Helmfile.d
- Clusters
- Config
- Secrets
- Jenkinsfile
- PodTemplates.yaml

## Mozilla/sops

- Stored in Git
  - Versioning
  - Audit
- No third Services to maintain
- Different secret keys between files
- Easy to replicate environments
- Different ways to (dec)encrypt
  - Azure Key Vault
  - GPG
  - ...

# Resource Automation

✓ K8s Cluster Management 1183 >

Pipeline

Changes

Tests

Artifacts

↺

✎

⚙

📁

Logout

✕

Branch: master

🕒 9m 42s

No changes

Commit: a590fa2

🕒 a day ago

Started by timer





[jenkins-infra/charts](https://jenkins-infra.github.io/charts)

# Jenkins Configuration

## Helm

stable/jenkins

charts/jenkins

charts/env-jenkins-release

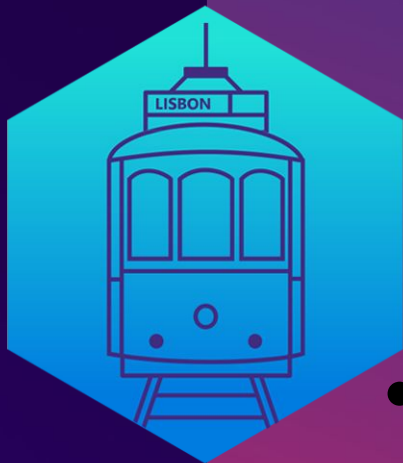
## Plugins

- Kubernetes
- Kubernetes-credential-provider
- Configuration-as-code

## Jcasc

- Cloud Kubernetes
  - Default jnlp PodTemplate
    - Linux
    - Windows
- Ldap
- Matrix
- Jobs:
  - K8smgmt
  - Release
  - Packaging

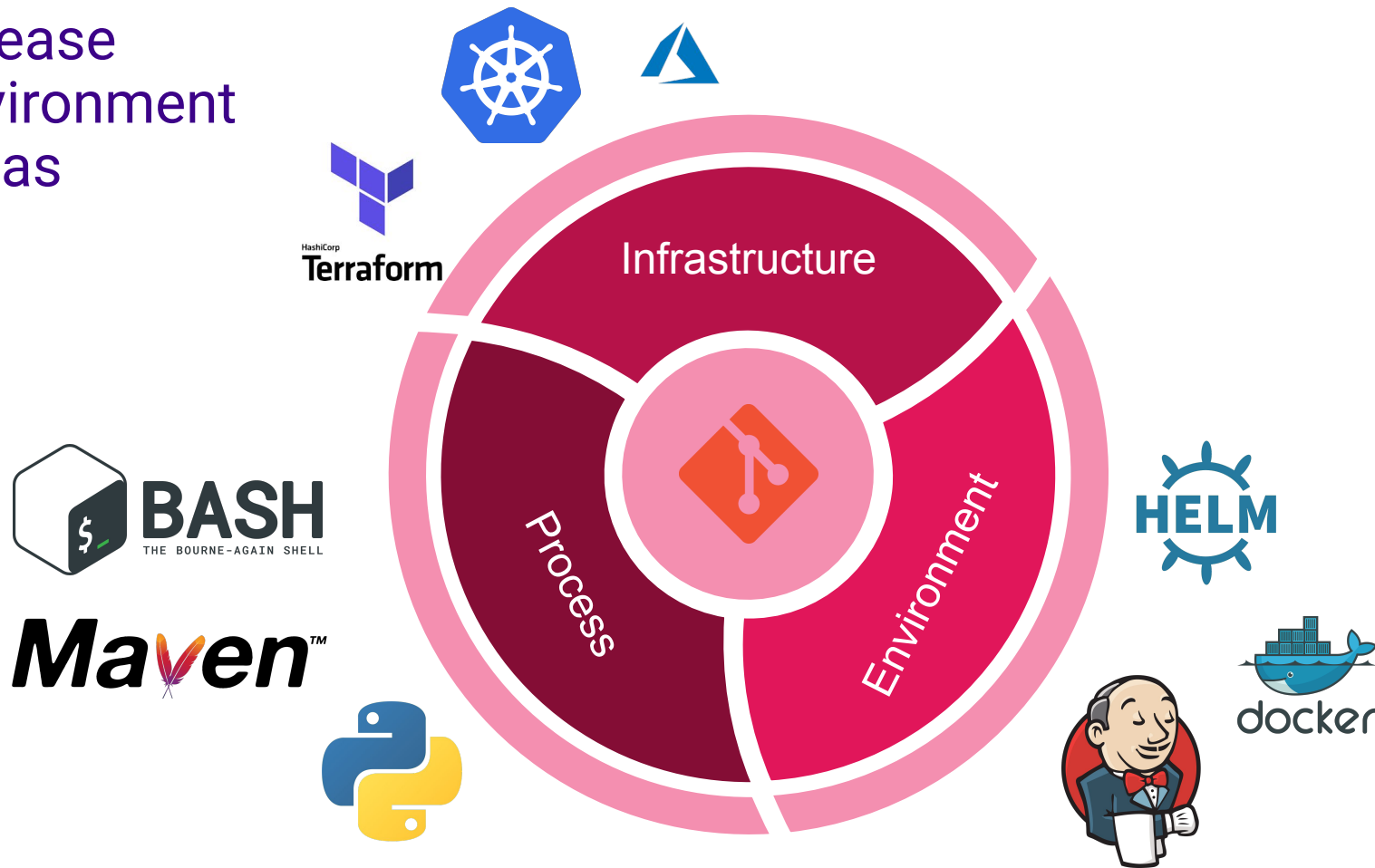




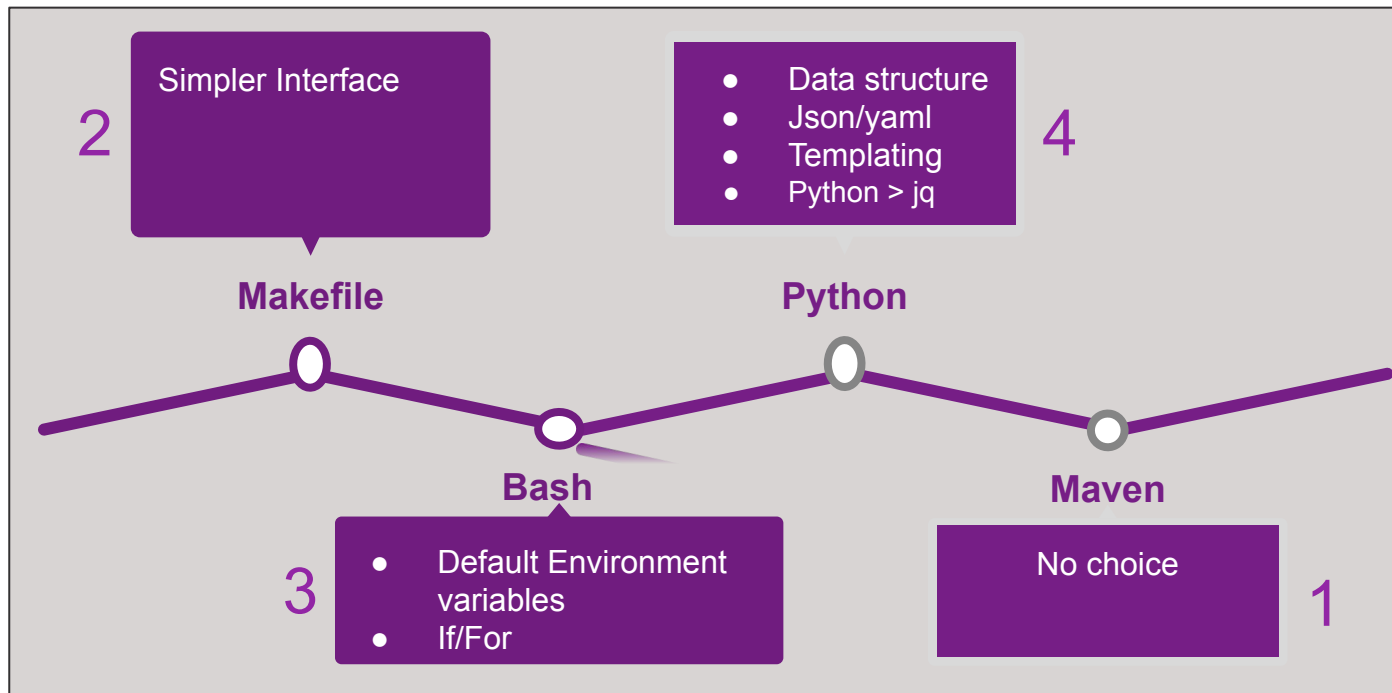
# What I wish I knew before working on this Environment

- Persistent Volumes shouldn't be managed by Kubernetes
- ♥ Certmanager - Letsencrypt - Dns-01
- Be ready to rotate all your secrets
- Autoscaling relies on Pod Limits
- ♥ Monitoring will save us all
  - Loki
  - Prometheus
  - Grafana

# Release Environment Areas



# Jenkinsfile



# Jenkins Agents: Kubernetes

## Pod Template Definition

- Global Jenkins Configuration
- Jenkinsfile
  - Injected Yaml
  - Additional yaml file
- Shared Libraries

## Containers

- Security Policy
  - runAsUser 1000
  - fsGroup
- Use Persistent Volumes

Let Kubernetes manage your resources  
PodTemplate and docker-compose

# Release Workflow



[jenkins-infra/release](https://jenkins-infra.release.jenkinsci.org/jenkins)  
[jenkinsci/jenkins](https://jenkins-infra.release.jenkinsci.org/jenkins)

Jenkinsfiles.d

PodTemplates.d

Utils

✓ Core Release < 27

Pipeline

Changes

Tests

Artifacts



Logout



Branch: master

🕒 3h 26m 8s

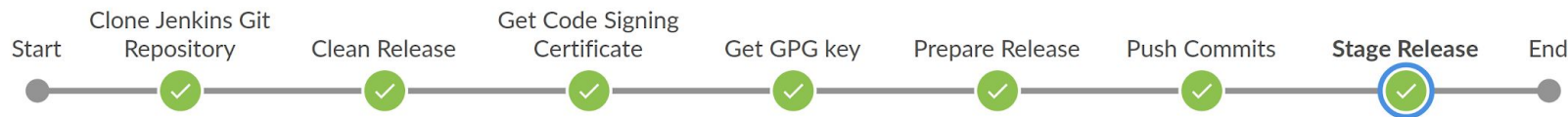
No changes

Commit: 8623218

Branch: master

🕒 18 days ago

Started by user olblak



# Packaging



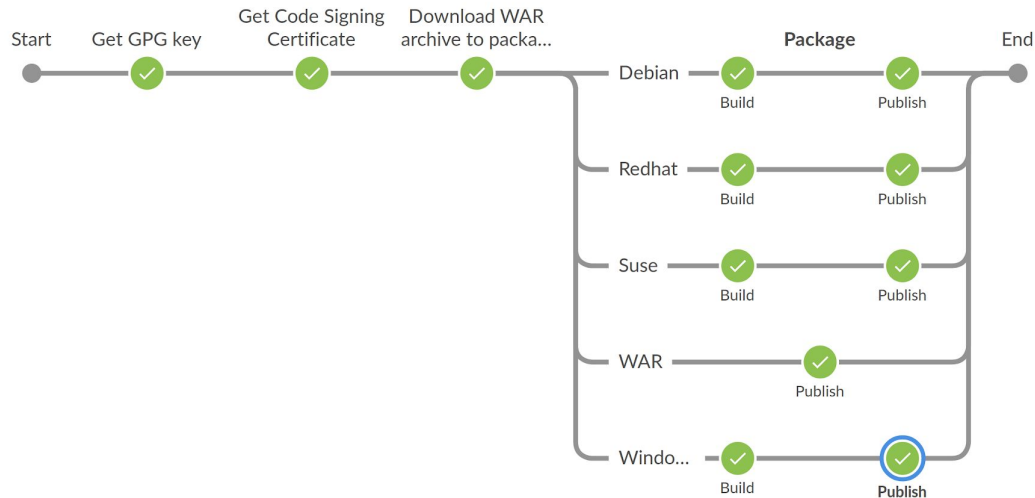
[jenkins-infra/release](https://jenkins-infra.github.io/release)  
[jenkinsci/packaging](https://jenkinsci.org/packaging)

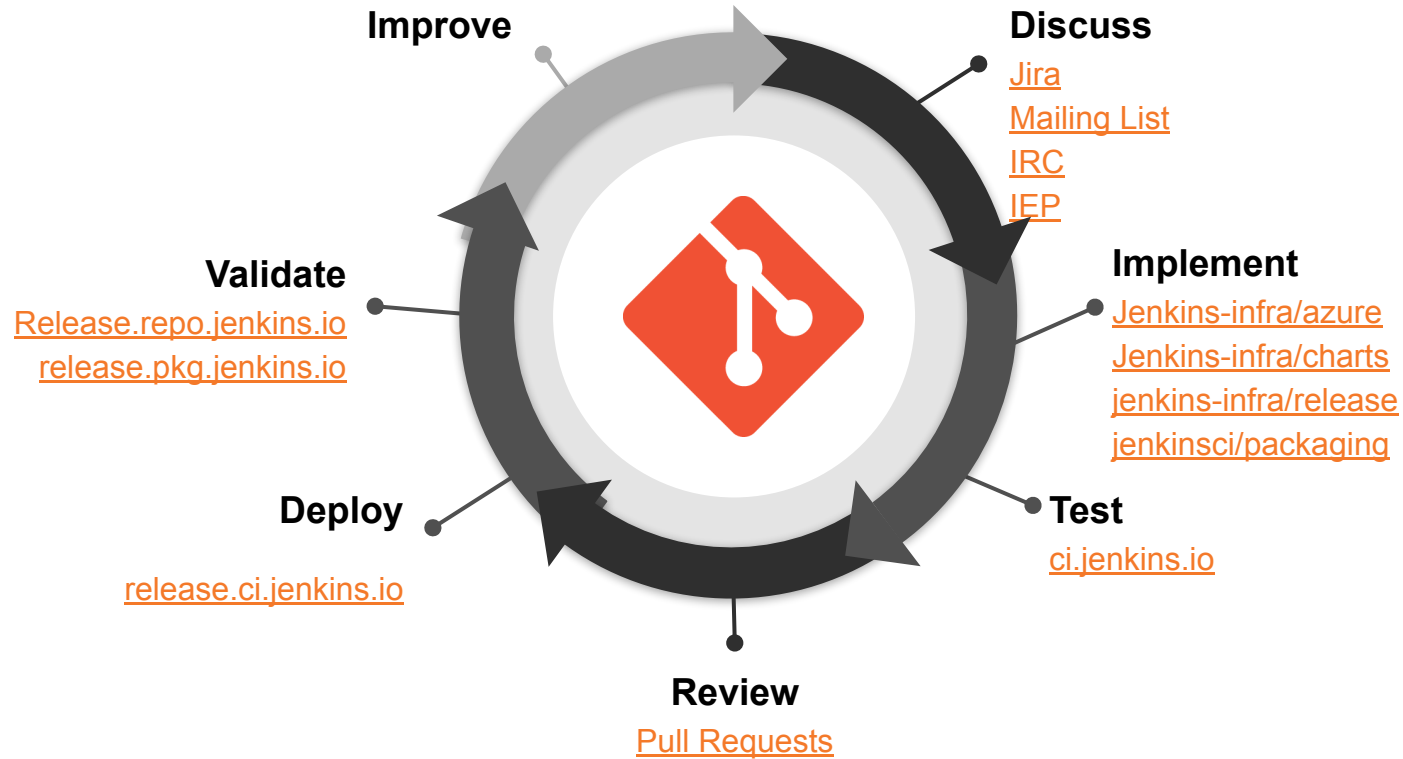
✓ Core Package < 19

Pipeline Changes Tests Artifacts ↺ ✎ ⚙️ ➡️ Logout ✕

Branch: master ☒ 6m 4s Changes by olblak

Commit: d0ca208 2 days ago Started by user olblak







DevOps World



Jenkins World

Thanks

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