

if(kakao)2021

# 혼자서 퍼블릭 클라우드 전체를 배포하는 방법

쿠버네티스 기반의 CI/CD로 오픈스택을 배포하는 방법을 소개합니다

김지원 Jay.Won  
카카오엔터프라이즈

퍼블릭 클라우드

쿠버네티스와 오픈스택

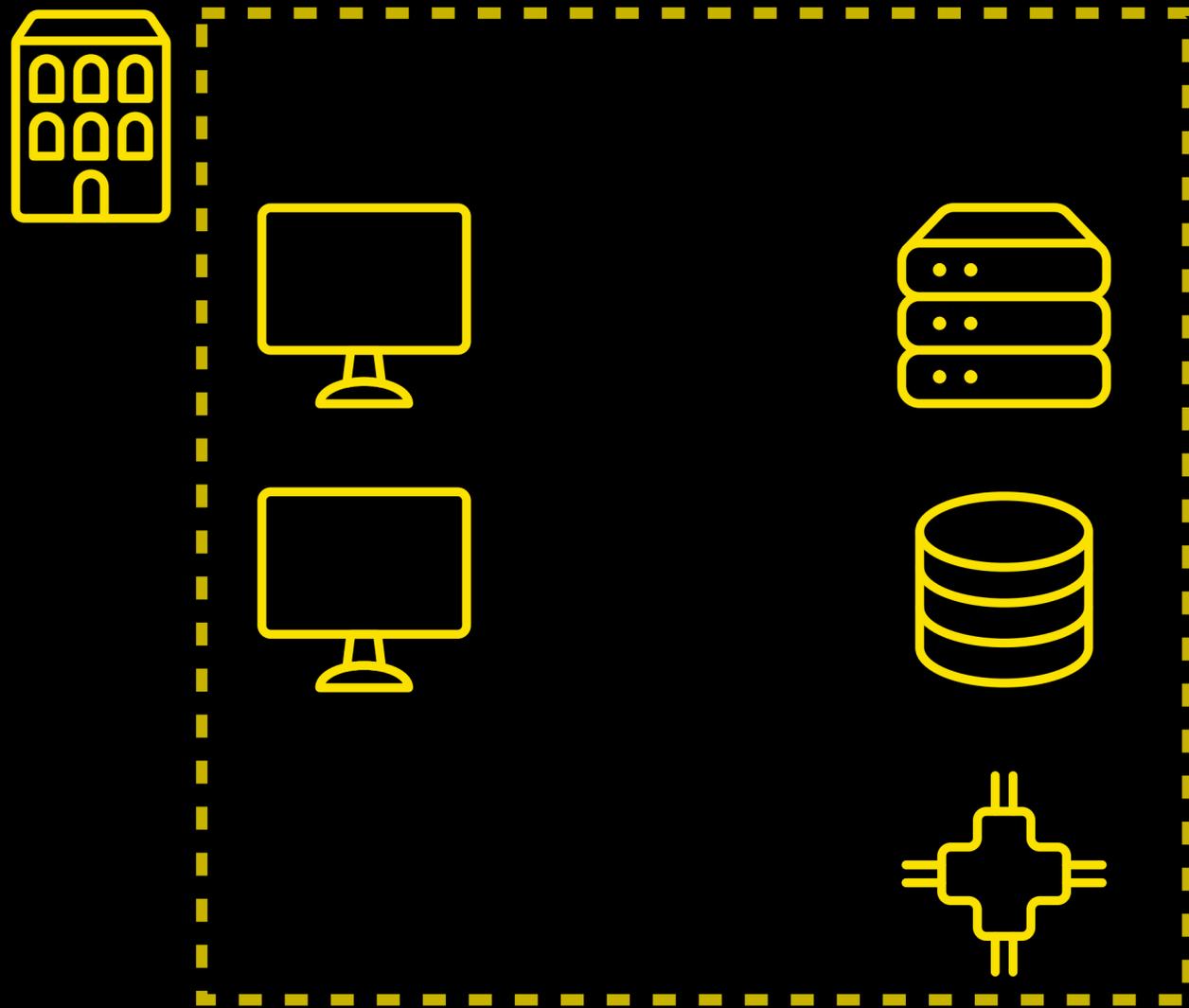
Cloud 네이티브한 CI/CD

클라우드 전체를 배포하는 방법

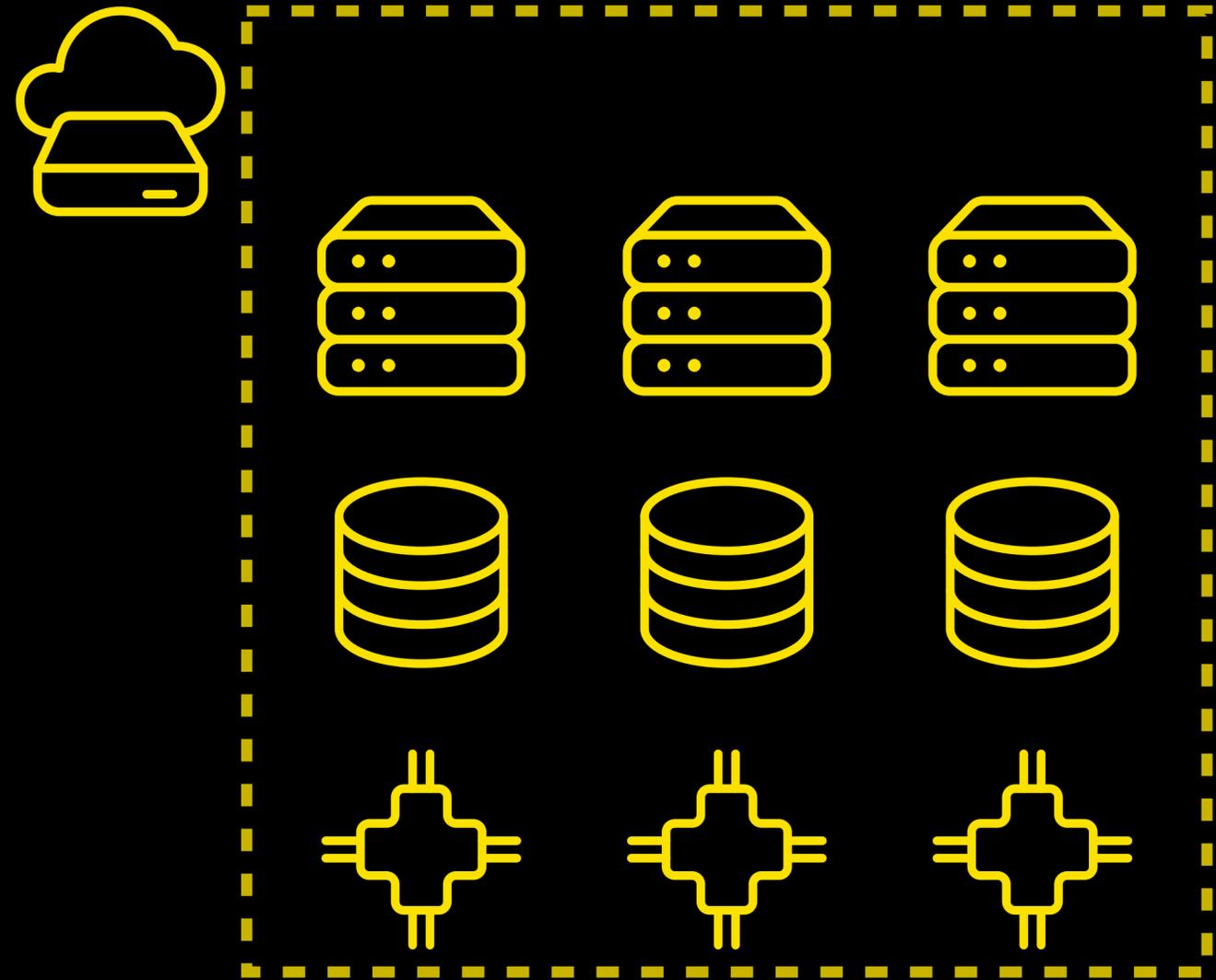
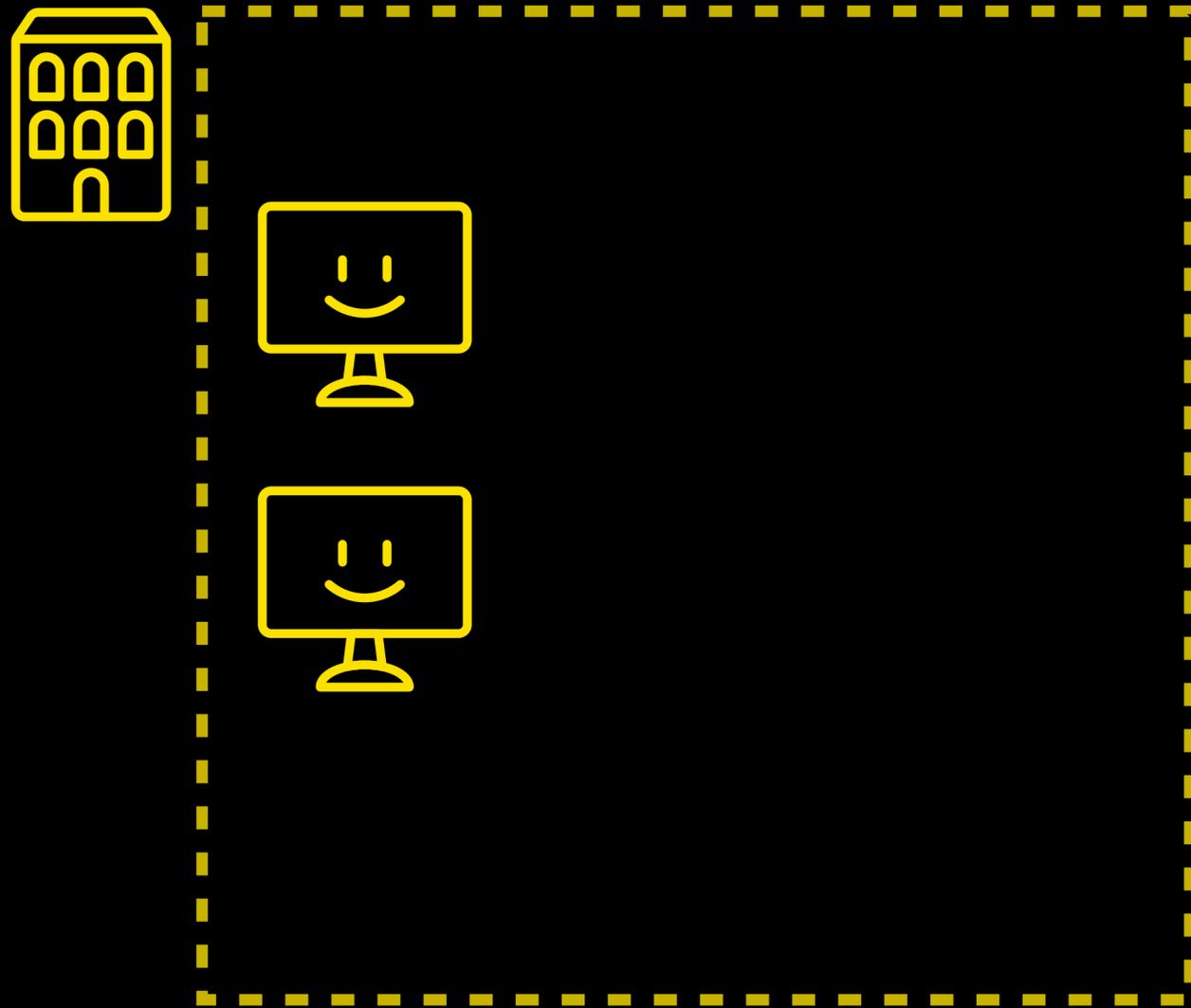
향후 방향

**퍼블릭 클라우드**

# 서버실



# 퍼블릭 클라우드

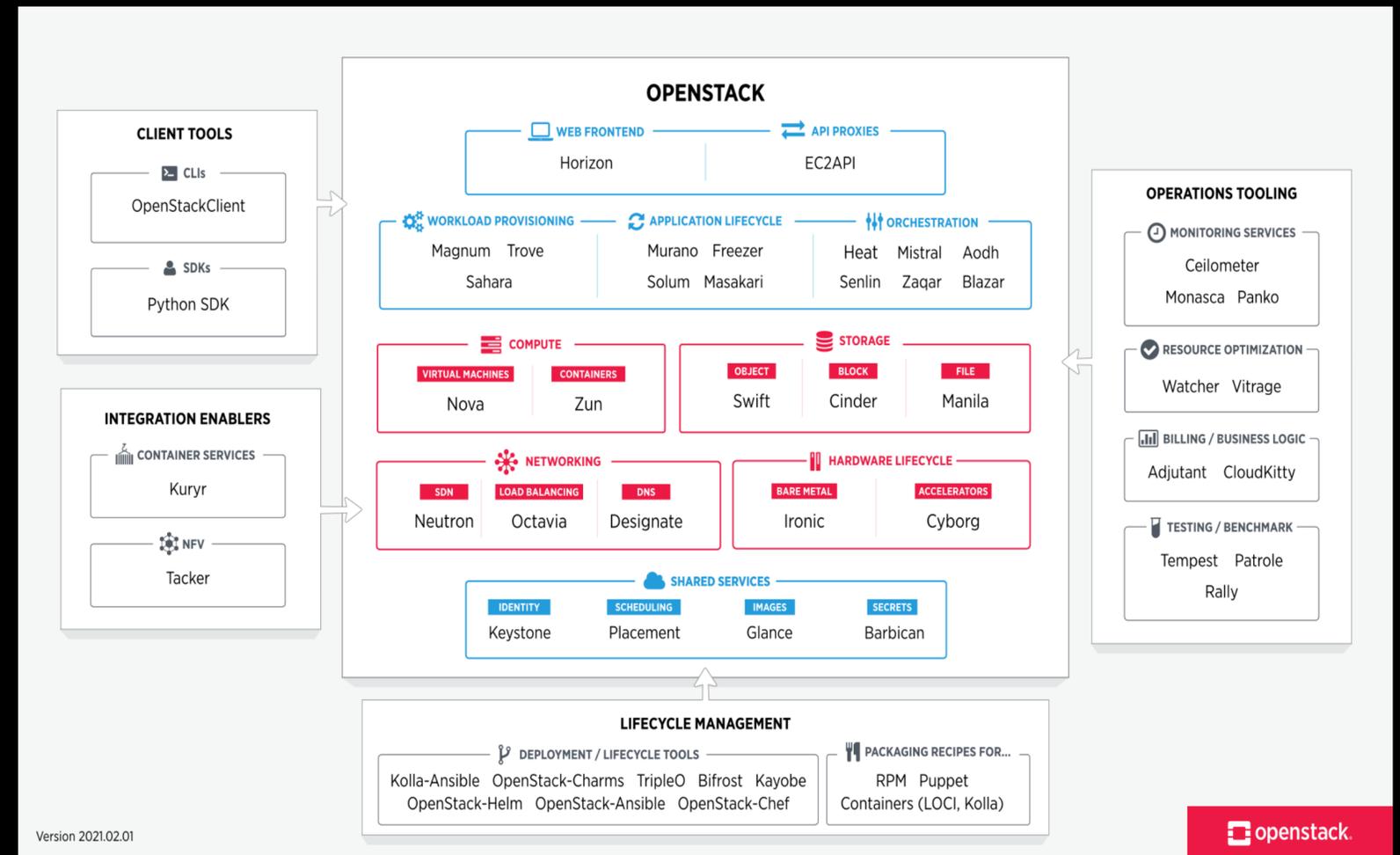


# 쿠버네티스와 오픈스택

# 쿠버네티스와 오픈스택

- 오픈스택: 클라우드 인프라스트럭처에 서비스를 제공하는 소프트웨어 집합

- 오픈스택으로 다양한 IT resources 제공 가능



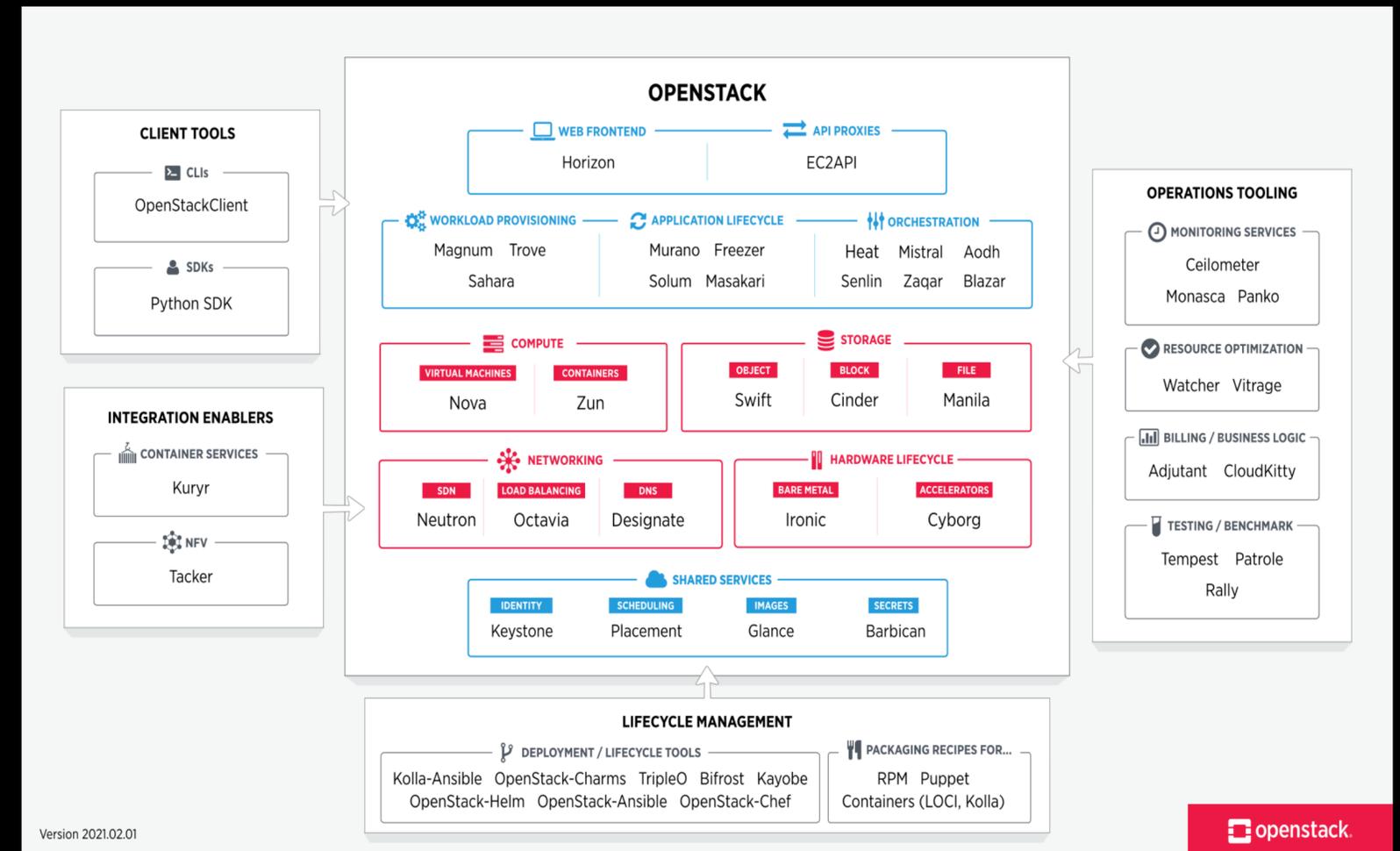
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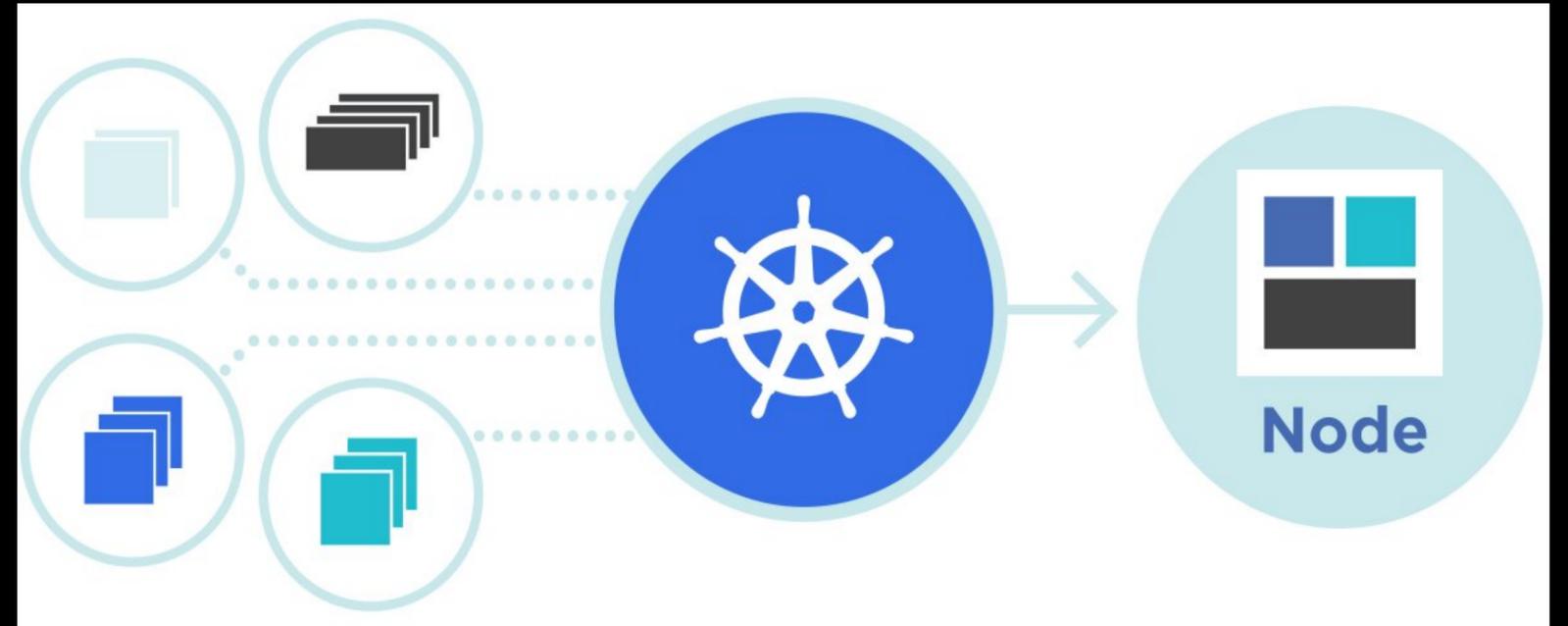
- SDN, virtual machine, object storage, block storage... 20여 개 서비스를 배포해야 함

- 오픈스택이 microservice 구조를 가져 관리가 어려움



# 쿠버네티스와 오픈스택

- 쿠버네티스: 컨테이너화된 워크로드와 서비스를 실행하고 관리하기 위한 프레임워크
- 애플리케이션의 확장과 장애 조치를 처리하고, 배포 패턴 등을 제공



# How?

"어떻게 쿠버네티스로 오픈스택을 관리할까?"

# OpenStack-Helm

쿠버네티스로 오픈스택 서비스를 관리

참고: [Kubernetes-native Datacenter](#)

Cloud 네이티브한 CI/CD

# Cloud 네이티브한 애플리케이션

동적인 클라우드 환경에서 실행되는 scalable한 애플리케이션<sup>1)</sup>

Containers, service meshes, microservices, immutable infrastructure, and declarative APIs

1) CNCF, "charter", 2021년 8월 25일, <https://github.com/cncf/foundation/blob/master/charter.md>

# Cloud 네이티브한 애플리케이션

동적인 클라우드 환경에서 실행되는 scalable한 애플리케이션<sup>1)</sup>

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따라서 Kubernetes 네이티브한 애플리케이션은

쿠버네티스 환경에서 관리되며 쿠버네티스의 이점을 누릴 수 있는 애플리케이션

1) CNCF, "charter", 2021년 8월 25일, <https://github.com/cncf/foundation/blob/master/charter.md>

# 오픈스택 배포를 위한 CI/CD 애플리케이션

- 20여 개의 서비스를 함께 배포할 수 있어야 함
- 각 서비스들 간의 의존성을 고려해서 배포할 수 있어야 함

# CI/CD 애플리케이션 비교

정보들은 배포 프로세스에 따라 가변적일 수 있습니다.

	Argo CD	Tekton	Github Actions
Cloud 네이티브	O	O	X
배포 방식	선언적인 배포에 유리	절차적인 배포에 유리	-
GitOps	O	O	GithubOps
오픈소스	O	O	X
권한 관리	O	X	O

# CI/CD 애플리케이션 비교

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Cloud 네이티브	○	○	×
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GitOps	○	○	GithubOps
오픈소스	○	○	×
권한 관리	○	×	○

# CI/CD 애플리케이션 비교

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권한 관리	O	X	O

# CI/CD 애플리케이션 비교

Argo CD

Automates the deployment of the desired application states

Tekton

Create CI/CD systems to build, test, and deploy workflow

Github Actions

Create workflows with GitHub events

# Tekton

WhenExpressions, runAfter, finally

**클라우드 전체를 배포하는 방법**

CI/CD

DEV 환경 배포

STAGE/PROD 환경 배포

# CI/CD(Git and Github)

- Source Code Management(SCM)
- Helm charts and values

# CI/CD(Prow를 이용한 CI)

- chatOps, 코드 리뷰

- periodic, postsubmit, presubmit

- 릴리즈노트 생성

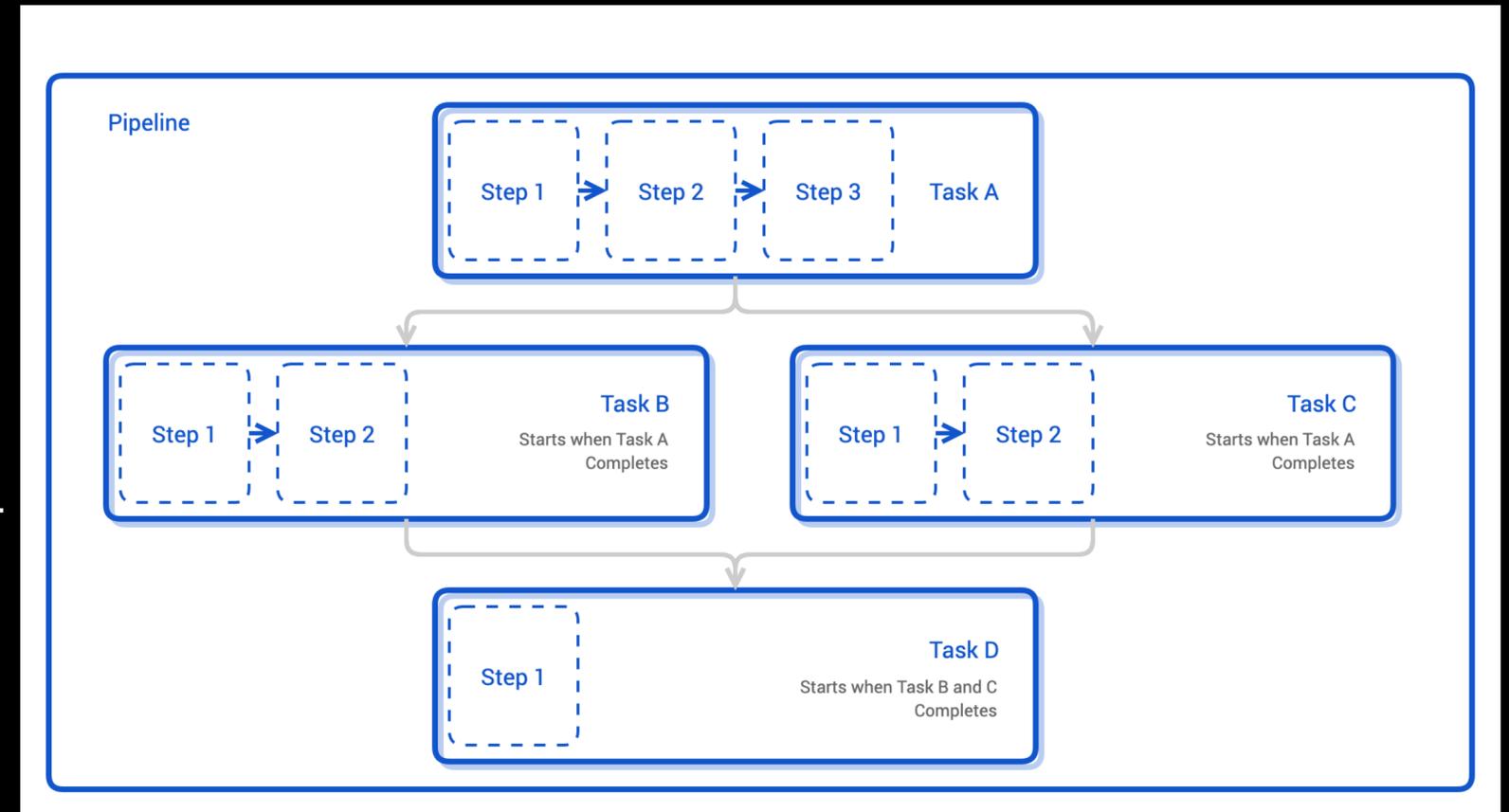


# CI/CD(Tekton을 이용한 배포 pipeline)

- pipeline: 클라우드

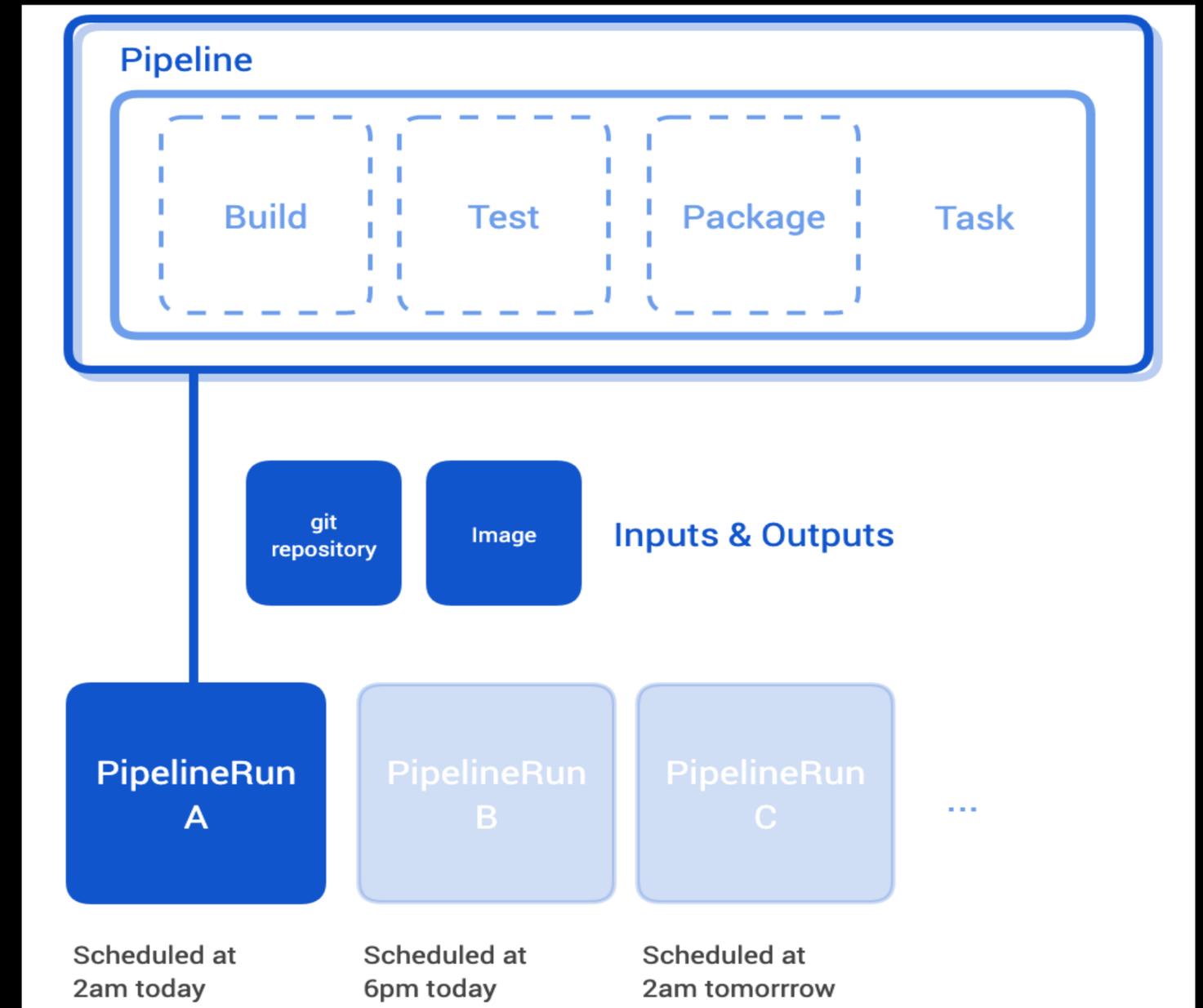
- task(pod based): 오픈스택 서비스

- steps(container based): 각 서비스를 위한 작업들



# CI/CD(Tekton을 이용한 배포 pipeline)

동작시에는 pipelinerun, taskrun이 생성됨

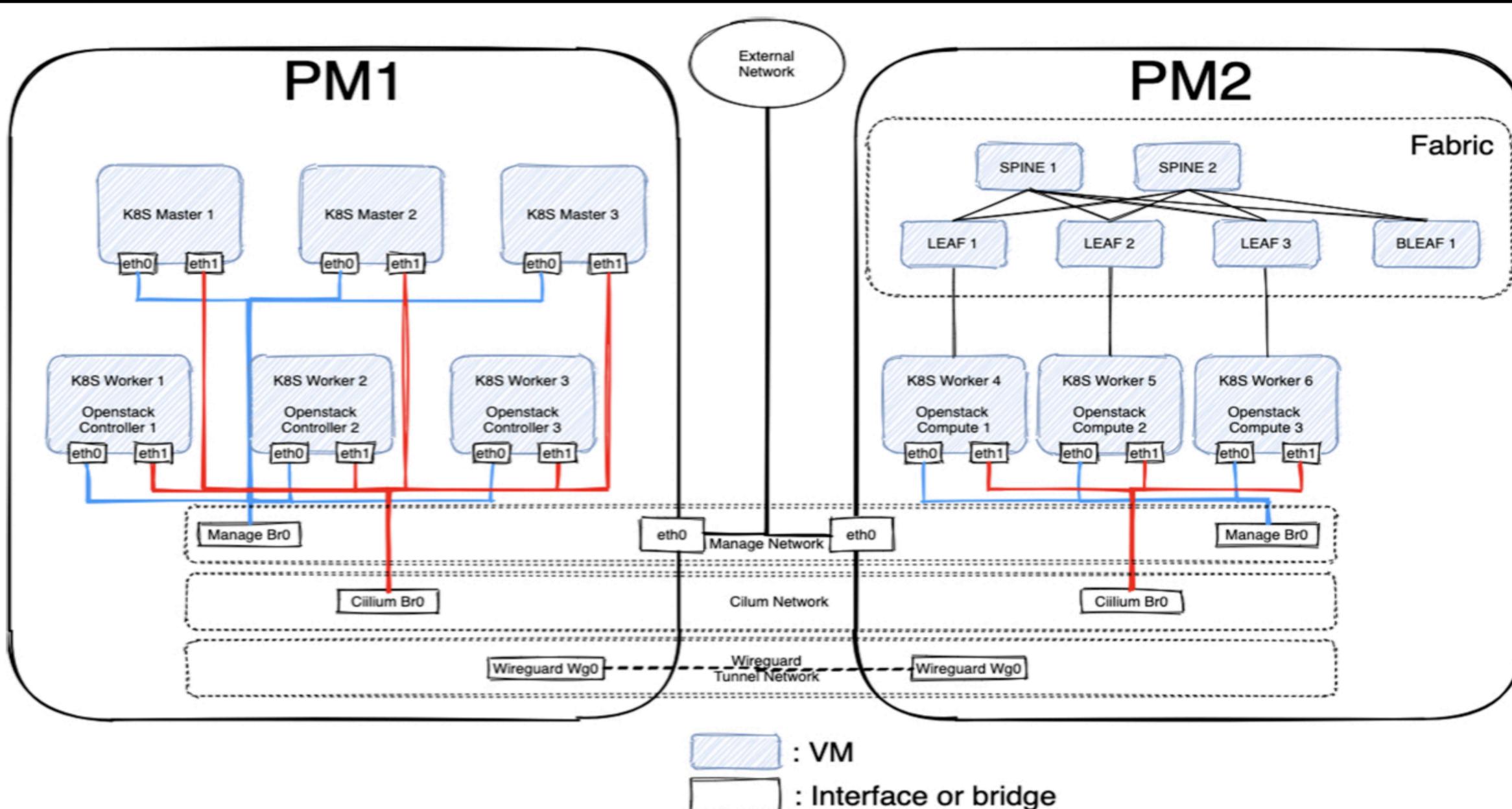


CI/CD

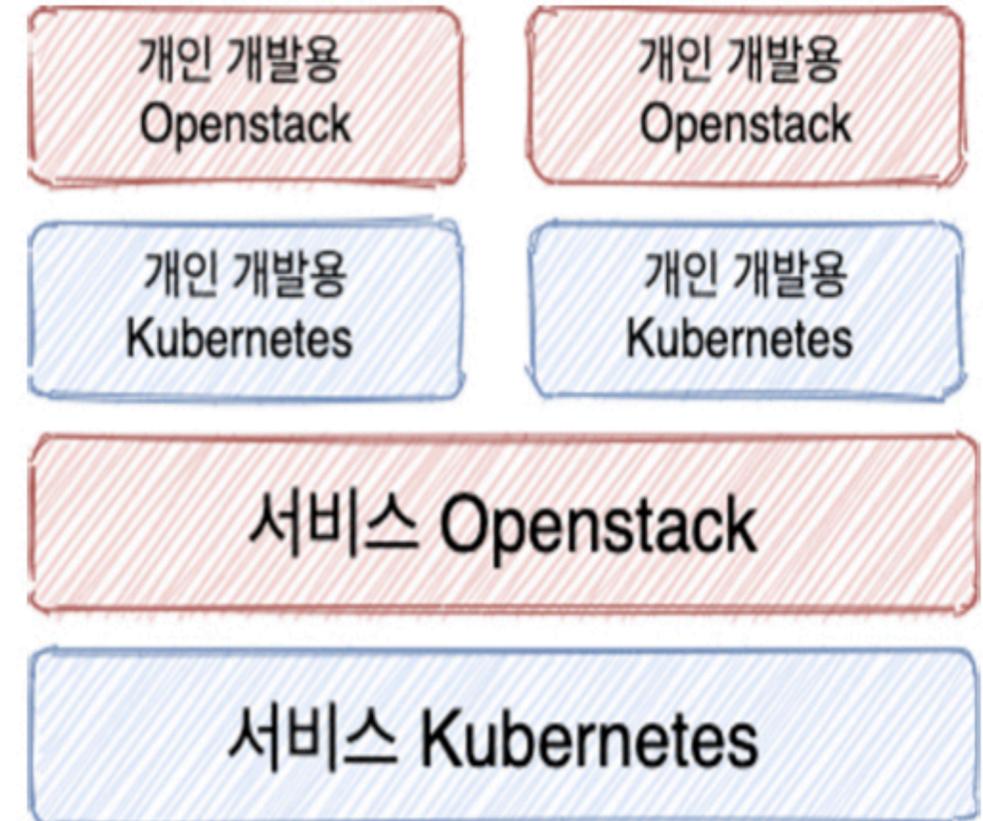
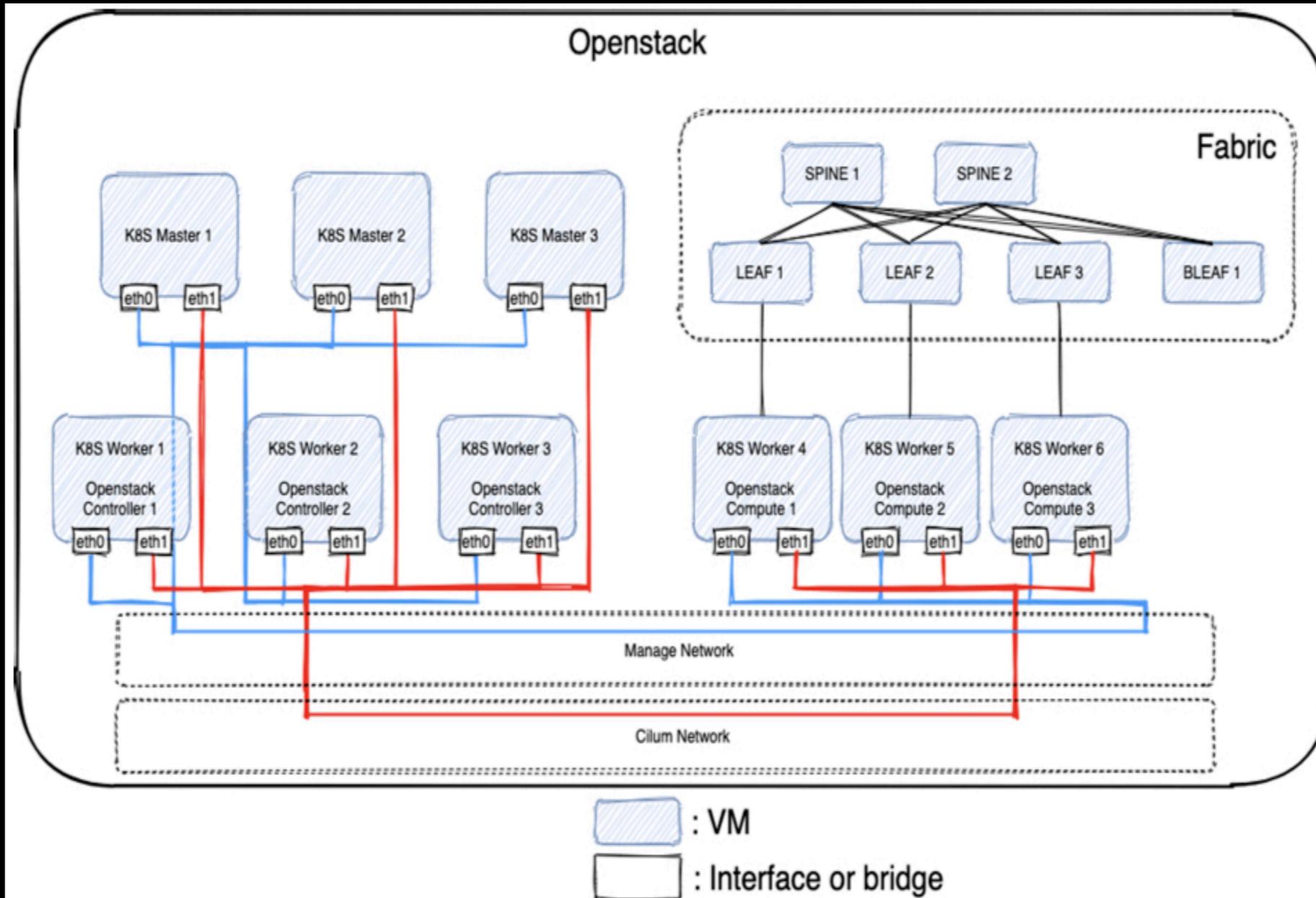
**DEV 환경 배포**

STAGE/PROD 환경 배포

# DEV 환경 배포(netdev)



# DEV 환경 배포(bigmac)



# DEV 환경 배포(개발 프로세스)

```
TARGET_SITE="alienship-netdev" ./run.sh
```

```
# 종락
```

Tekton is available on this host at the following URL:

```
http://DOMAIN:32443
```

You need to run **command** by yourself.

```
sed 's/DEV_SITE/alienship-netdev/' ~/alienware/tekton/pipelineruns/dev-deploy-  
pipelinerun.yaml | kubectl apply -f -
```

# DEV 환경 배포(협업 프로세스)

The screenshot displays the Tekton Dashboard interface. On the left, a sidebar menu lists various resources: Tekton resources, Pipelines, PipelineRuns (highlighted), PipelineResources, Tasks, ClusterTasks, TaskRuns, Conditions, EventListeners, TriggerBindings, ClusterTriggerBindings, and TriggerTemplates. Below this is an 'About' section.

The main content area shows a pipeline run titled 'dashboard-release-nightly-drt9f' which occurred '2 days ago'. The status is 'Succeeded' with 'Tasks Completed: 2 (Failed: 0, Cancelled 0), Skipped: 0'. A dropdown menu is set to 'build'. A list of tasks is shown, all with a green checkmark and 'Completed' status:

- publish-images
- create-dir-builtashb... Completed
- create-dir-bucket-for... Completed
- create-dir-dashboard... Completed
- source-copy-dashboa... Completed
- create-dir-bucket-for... Completed
- fetch-bucket-for-das... Completed
- link-input-bucket-to-... Completed
- ensure-release-dirs-... Completed
- dashboard-run-ko Completed
- copy-to-latest-bucket Completed
- tag-images Completed
- image-digest-exporte... Completed
- source-mkdir-bucket... Completed
- source-copy-bucket-f... Completed
- upload-bucket-for-da... Completed

The 'dashboard-run-ko' task is expanded to show its details. It is 'Completed' with a duration of '7 minutes 31 seconds'. Below the task name are tabs for 'Logs', 'Status', and 'Details'. The 'Logs' tab is active, displaying the following terminal output:

```
+ gcloud auth activate-service-account '--key-file=/secret/release.json'
Activated service account credentials for: [release-right-meow@tekton-releases.iam.gserviceaccount.com]
+ gcloud auth configure-docker
Adding credentials for all GCR repositories.
WARNING: A long list of credential helpers may cause delays running 'docker build'. We recommend passing the registry name to
After update, the following will be written to your Docker config file
located at [/tekton/home/.docker/config.json]:
{
  "credHelpers": {
    "gcr.io": "gcloud",
    "us.gcr.io": "gcloud",
    "eu.gcr.io": "gcloud",
    "asia.gcr.io": "gcloud",
    "staging-k8s.gcr.io": "gcloud",
    "marketplace.gcr.io": "gcloud"
  }
}
Do you want to continue (Y/n)?
Docker configuration file updated.
+ date '+%s'
+ export 'SOURCE_DATE_EPOCH=1611112427'
+ cd /workspace/go/src/github.com/tektoncd/dashboard
+ sed -i s/devel/v20210120-00551e3b76/g /workspace/go/src/github.com/tektoncd/dashboard/base/300-deployment.yaml
+ sed -i s/devel/v20210120-00551e3b76/g /workspace/go/src/github.com/tektoncd/dashboard/base/300-service.yaml
+ which ko
/usr/local/bin/ko
+ ko version
2021/01/20 03:13:47 NOTICE!
-----
Please install ko from github.com/google/ko.

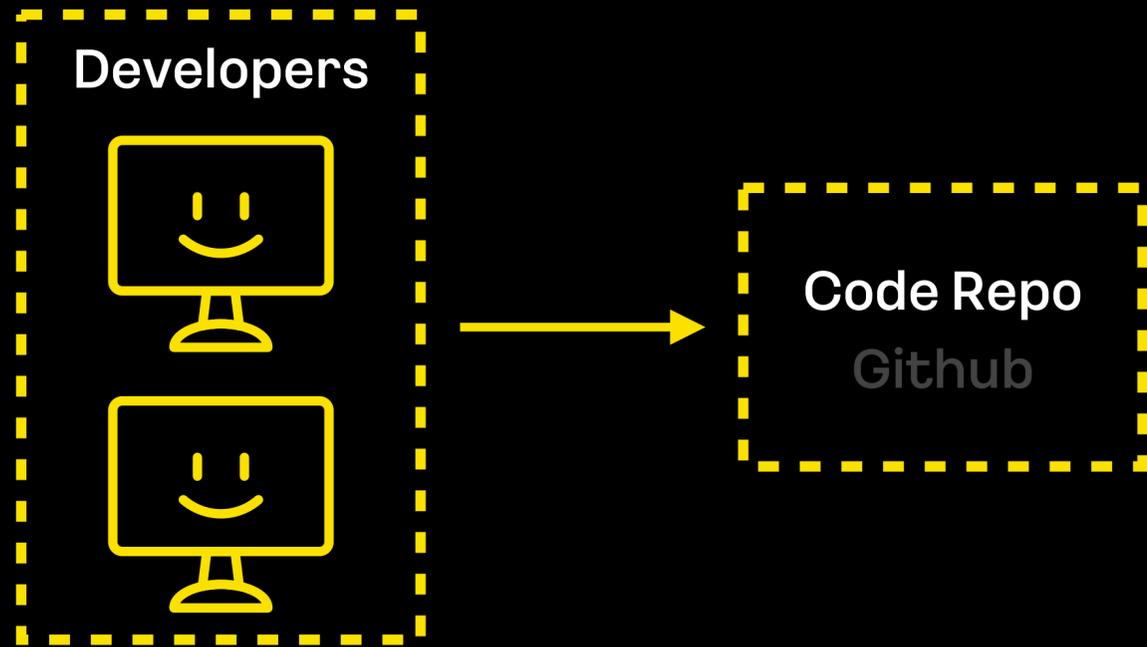
For more information see:
https://github.com/google/ko/issues/258
-----
```

CI/CD

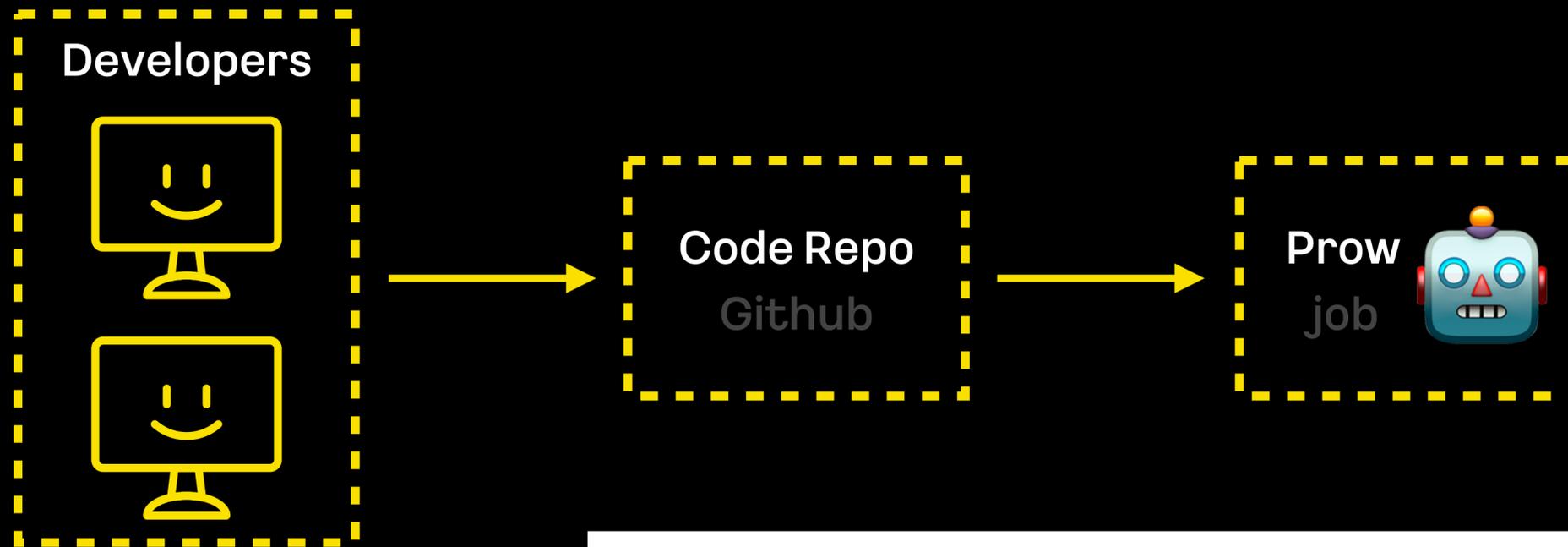
DEV 환경 배포

**STAGE/PROD 환경 배포**

# STAGE/PROD 환경 배포(Prow on k8s)



# STAGE/PROD 환경 배포(Prow on k8s)



DEPLOYMENT-PR Deploy stage #278 Edit

Open cloud-robot wants to merge 1 commit into `cloud:master` from `cloud-robot:DEPLOYMENT-PR-stage` 📄

Conversation 1 Commits 1 Checks 0 Files changed 1 +1 -1

cloud-robot commented 12 days ago • edited ▾

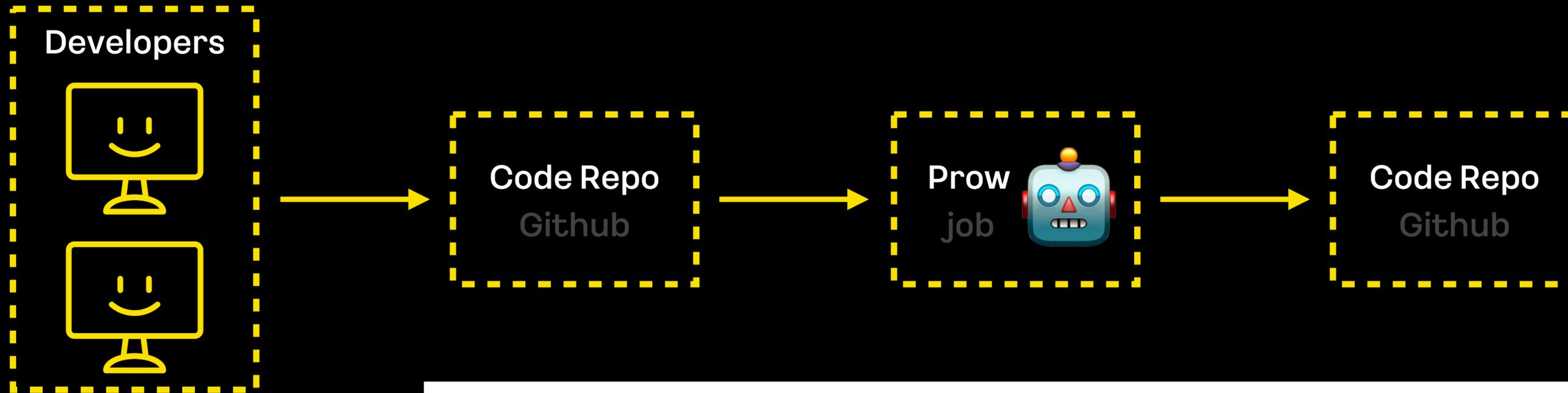
Alienware changes: `bc0683a...b81226b`  
If you want to deploy this site, please set a label "area/alienware/stage"

cloud-robot added the `release-note-none` label 12 days ago

**Reviewers** ⚙️  
No reviews  
Still in progress? Convert to draft

**Assignees** ⚙️  
 jay-won  
 tyger-k

# STAGE/PROD 환경 배포(Prow on k8s)



DEPLOYMENT-PR Deploy stage #278 Edit

Open cloud-robot wants to merge 1 commit into `cloud:master` from `cloud-robot:DEPLOYMENT-PR-stage`

Conversation 1 | Commits 1 | Checks 0 | Files changed 1 | +1 -1

cloud-robot commented 12 days ago • edited

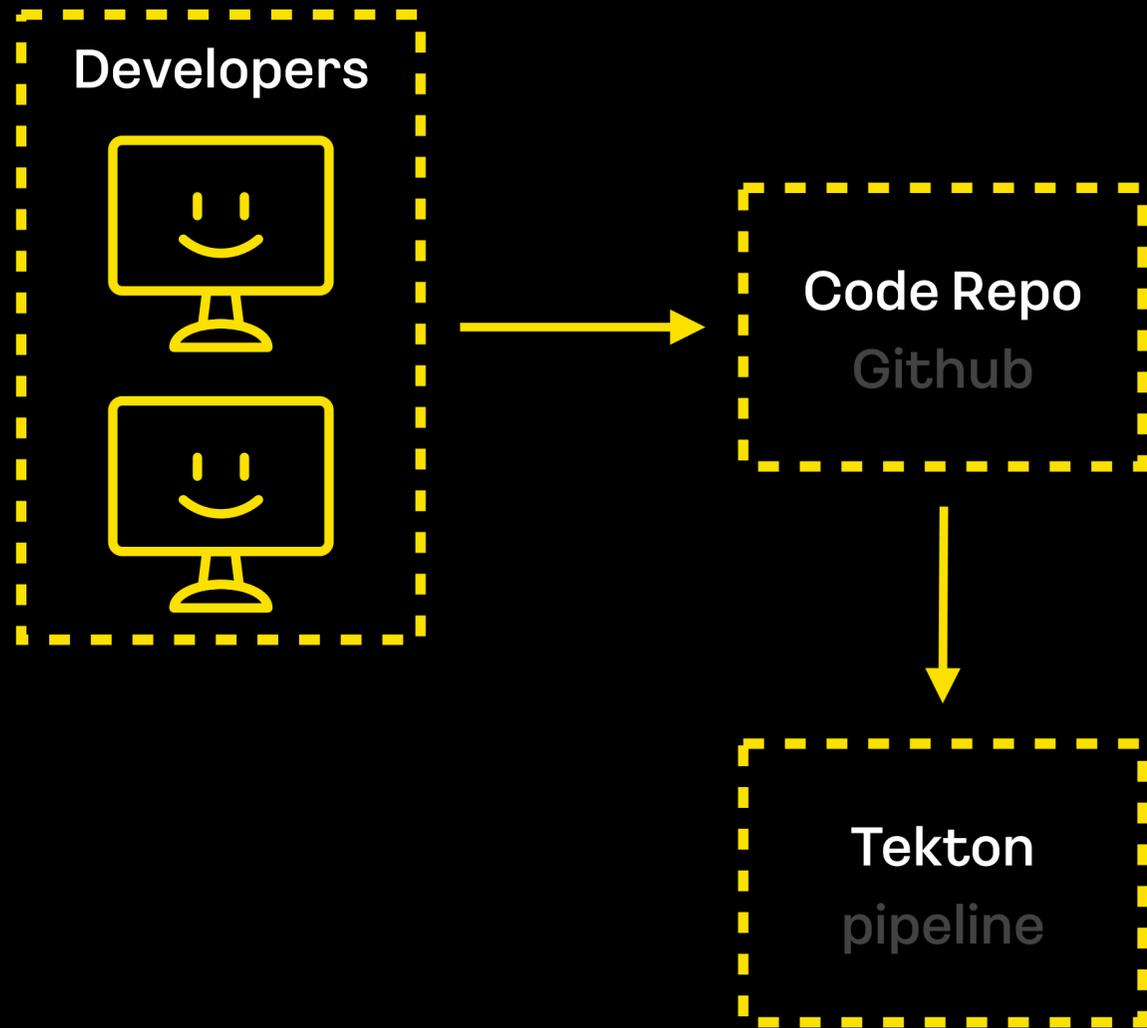
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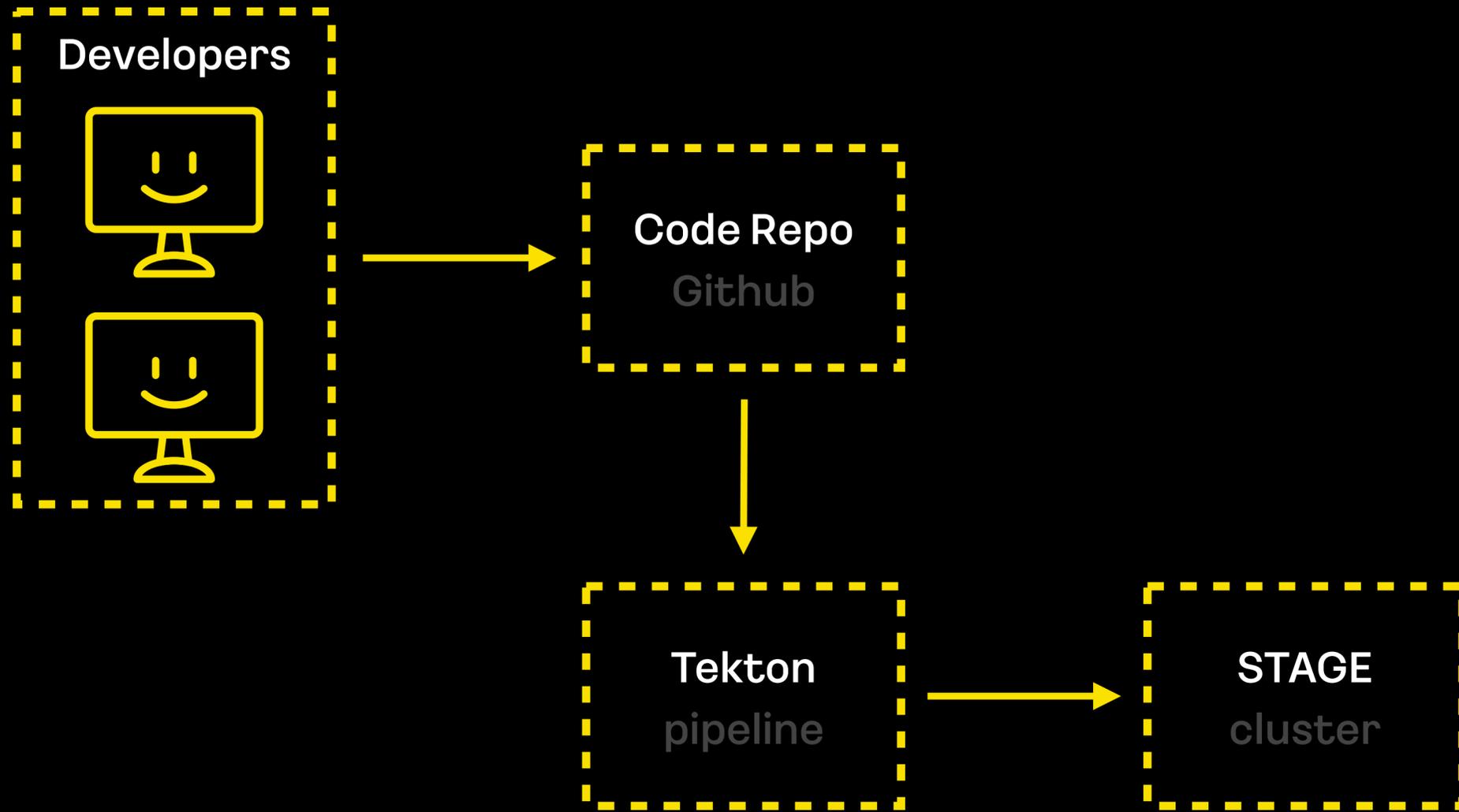
Reviewers: No reviews. Still in progress? Convert to draft

Assignees: jay-won, tyger-k

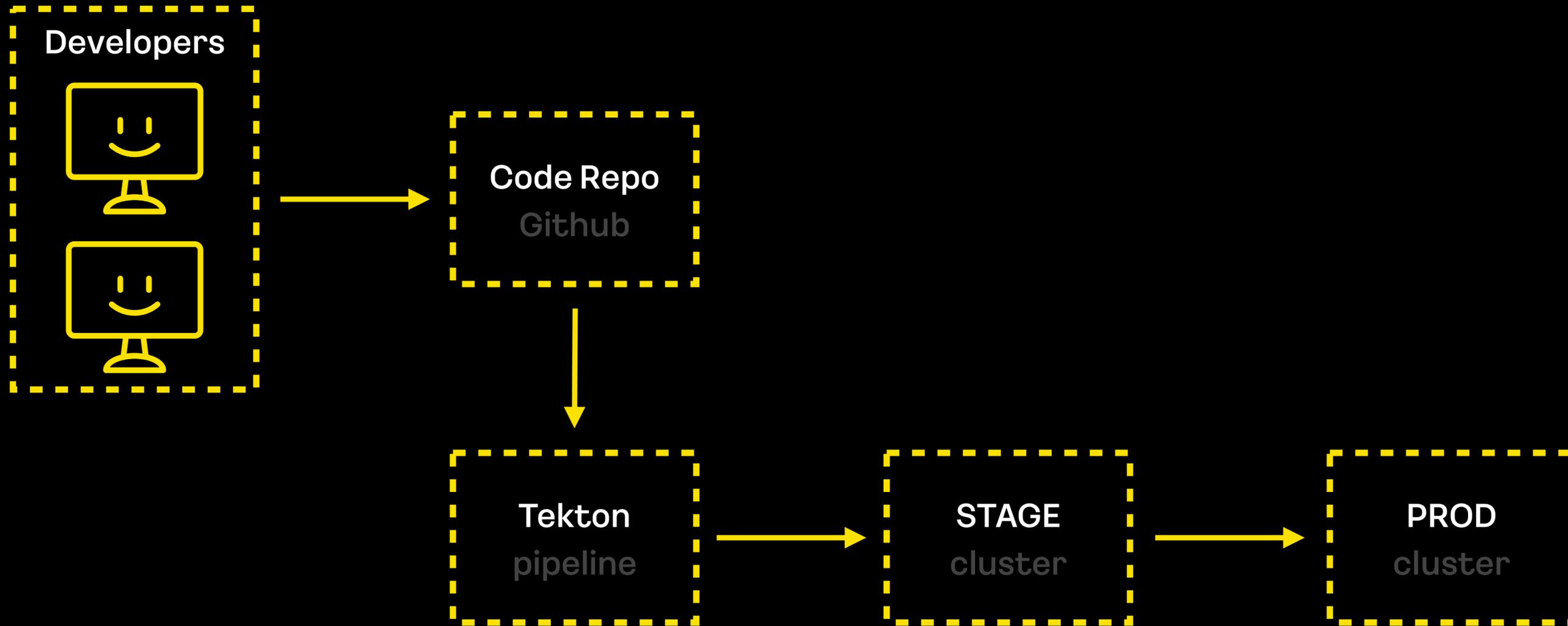
# STAGE/PROD 환경 배포(Tekton on k8s)



# STAGE/PROD 환경 배포(Tekton on k8s)



# STAGE/PROD 환경 배포(Tekton on k8s)



# STAGE/PROD 환경 배포(Tagging and Releasenote)

## KEPCLOUD-1833 Add cleanup task template #213 Edit

**Merged** cloud-robot merged 3 commits into `cloud:master` from `jay-won:KEPCLOUD-1833-add-cleanup-task-template` 28 days ago

Conversation 7 Commits 3 Checks 0 Files changed 3 +77 -8

**jay-won** commented on 19 Jul • edited -

이 PR은 어떤 종류의 PR 입니까?:  
/kind feature

이 PR이 필요한 이유에 대한 설명이 필요하다면 적어주세요.:  
tekton run CRD들이 축적되고 있어 이를 정리할 수 있는 task를 추가했습니다.  
깃헙 웹훅이 trigger되면 함께 작동합니다.

JIRA ticket 번호를 적어주세요.:  
JIRA: KEPCLOUD-1833

만약 릴리즈 노트가 필요하다면 작성해 주세요.:  
tekton run CRD들이 축적되고 있어 이를 정리할 수 있는 task를 추가

**Reviewers**  
harold-finch  
gonzales-son

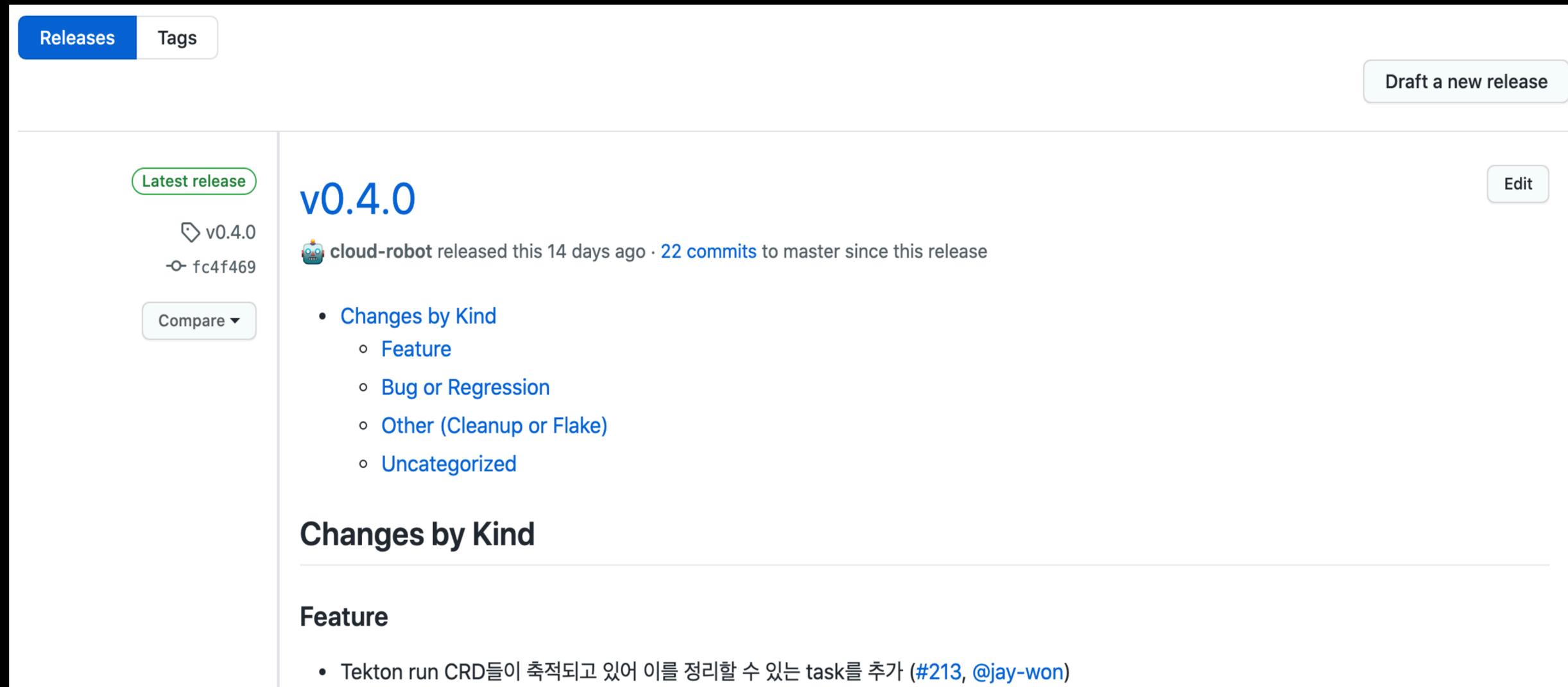
**Assignees**  
gonzales-son

**Labels**  
approved kind/feature lgtm  
release-note size/M

**Projects**  
None yet

**Milestone**

# STAGE/PROD 환경 배포(Tagging and Releasenote)



The screenshot shows the GitHub Releases page for a repository. At the top, there are tabs for 'Releases' and 'Tags', with 'Releases' being the active tab. A 'Draft a new release' button is located in the top right corner. The main content area displays the release 'v0.4.0', which is marked as the 'Latest release'. Below the version number, it shows the release was made by 'cloud-robot' 14 days ago, with 22 commits to master since this release. A 'Compare' button is visible on the left side. The release notes are organized by kind, with a section for 'Feature' containing a single item: 'Tekton run CRD들이 축적되고 있어 이를 정리할 수 있는 task를 추가 (#213, @jay-won)'. An 'Edit' button is located in the top right corner of the release details area.

Releases Tags

Draft a new release

Latest release

v0.4.0  
fc4f469

Compare

v0.4.0

cloud-robot released this 14 days ago · 22 commits to master since this release

Edit

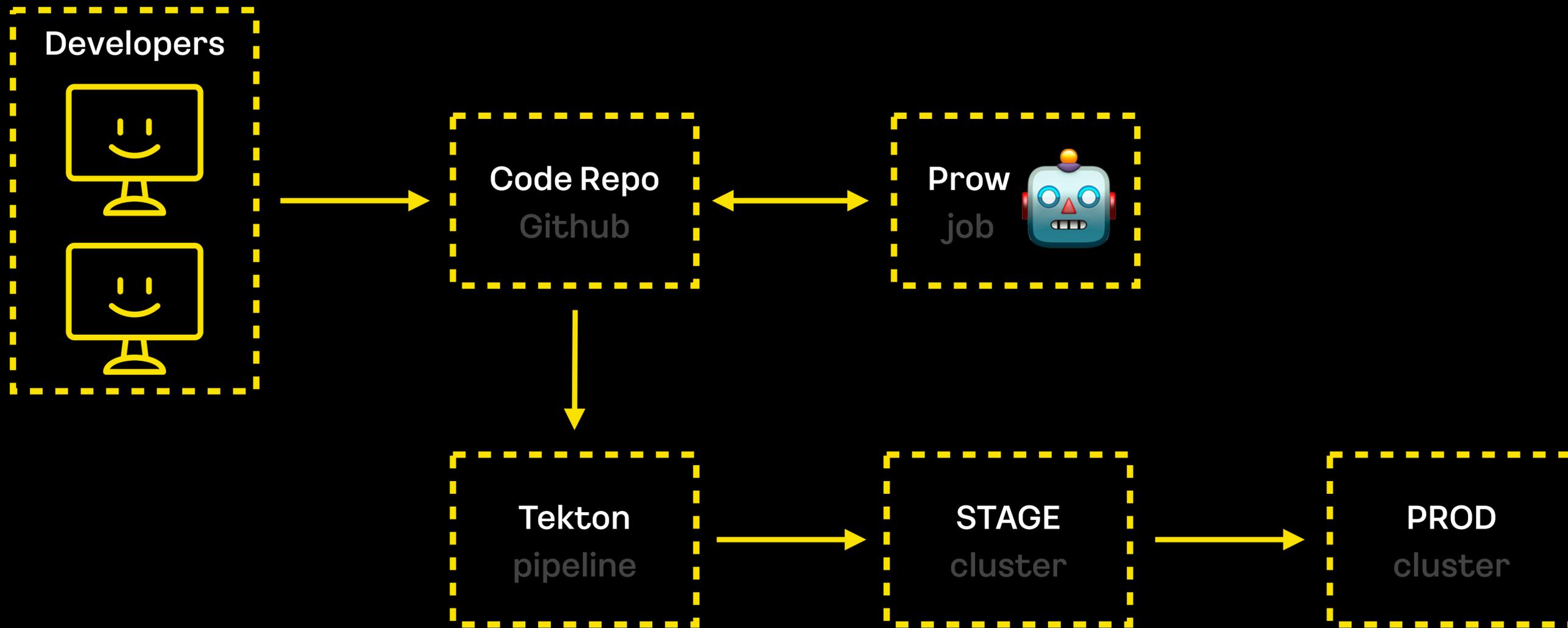
- Changes by Kind
  - Feature
  - Bug or Regression
  - Other (Cleanup or Flake)
  - Uncategorized

### Changes by Kind

#### Feature

- Tekton run CRD들이 축적되고 있어 이를 정리할 수 있는 task를 추가 (#213, @jay-won)

# STAGE/PROD 환경 배포(CI/CD on k8s)



향후 방향

# 향후 방향

- 수천 개 노드와 여러 리전의
- 리전별 맞춤형 배포 파이프라인에 의한
- 더 안정적인 퍼블릭 클라우드 서비스를 위한
- 확장성 있는 배포 프로세스

감사합니다