Google Cloud

Day 4 CI/CD

Date 2021

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CI/CD GCP Tools

Date 2021

Components

- Cloud Source Repository
- Cloud Artifact Registry
- Cloud Build

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Cloud Source Repository

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Cloud Source Repository

- A single place for your team to store, manage, and track code.
- Design, develop, and securely manage your code
- Collaborate easily on a fully featured, scalable, and private Git repository
- Extend your Git workflow by connecting to other Google Cloud tools
- Check in and Check out code using “git” commands

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Artifact Registry

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Artifact Registry

- As the evolution of Container Registry, Artifact Registry is a single place for your organization to manage **container images** and **language packages (such as Maven and npm)**. It is fully integrated with Google Cloud's tooling and runtimes and comes with support for native artifact protocols. This makes it simple to integrate it with your CI/CD tooling to set up automated pipelines.

Artifacts

- Artifacts are files created by software development processes, such as packages, containers, configuration files, or documents.
- The output of a build such as container images or software packages
- Dependencies that you need in order to build or deploy an application, such as a base image or an open source package
- Configuration files, such as a Helm chart

Create a Artifact Registry

- Create a Docker repository in Artifact Registry
- Set up authentication
- Push an image to the repository
- Pull the image from the repository

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Cloud Build

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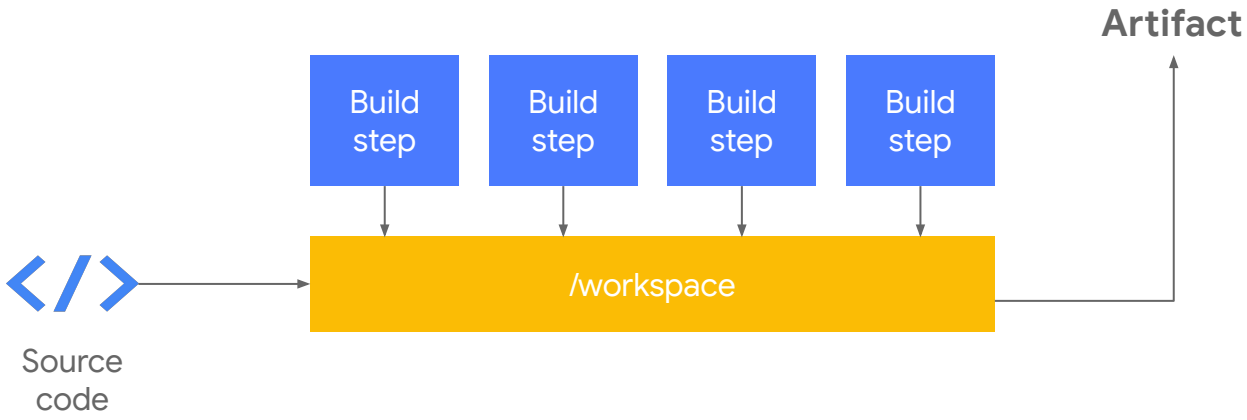
What is Cloud Build?

- Serverless CI/CD platform
- Source from Cloud Source Repositories, GitHub, or Bitbucket
- Trigger automatically from branch or tag commits to create CI/CD pipelines
- Build as a series of build steps based off custom tooling or prebuilt steps
- Deploy to most Google Cloud Services, or provide a custom image to deploy externally.
- Create artifacts - Docker images, Java archives, Go applications, and more



Cloud Build

Cloud Build is a service that executes your builds on Google Cloud Platform's infrastructure.

Cloud Build can import source code from a variety of repositories or cloud storage spaces, execute a build to your specifications, and produce artifacts such as Docker containers or Java archives.

Cloud Build uses Docker to execute builds. For each build step, Cloud Build executes a Docker container as an instance of `docker run`. Currently, Cloud Build is running Docker engine version 19.03.8.

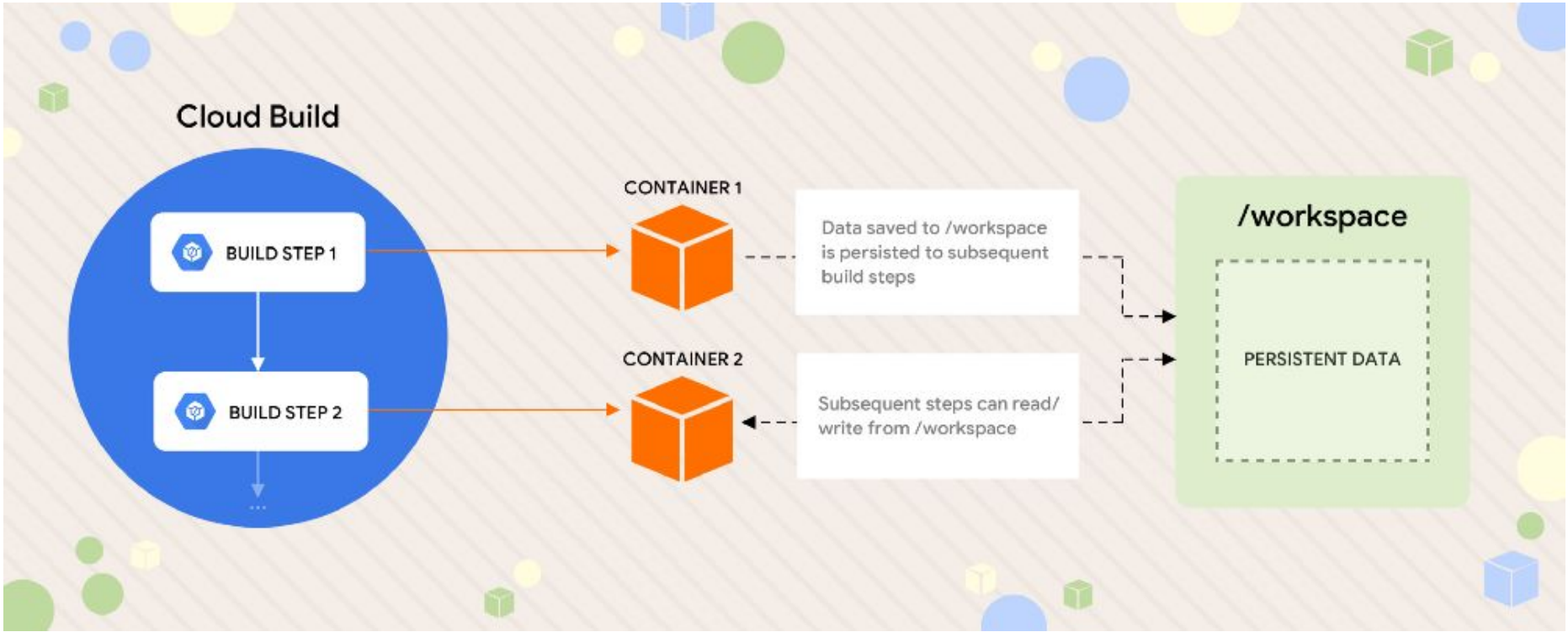
Cloud Build

1. Prepare your application code and any needed assets.
2. Create a build config file in YAML or JSON format, which contains instructions for Cloud Build/Steps.
3. Submit the build to Cloud Build.
4. Cloud Build executes your build based on the build config you provided.
5. If applicable, any built artifacts are pushed to Artifact Registry.

Cloud Build Steps

- **Build steps provided by Cloud Build**: Cloud Build has published a set of supported open-source build steps for common languages and tasks.
- **Community-contributed build steps**: The Cloud Build user community has provided open-source build steps.
- **Custom build steps**: You can create your own build steps for use in your builds.

Cloud Build Steps



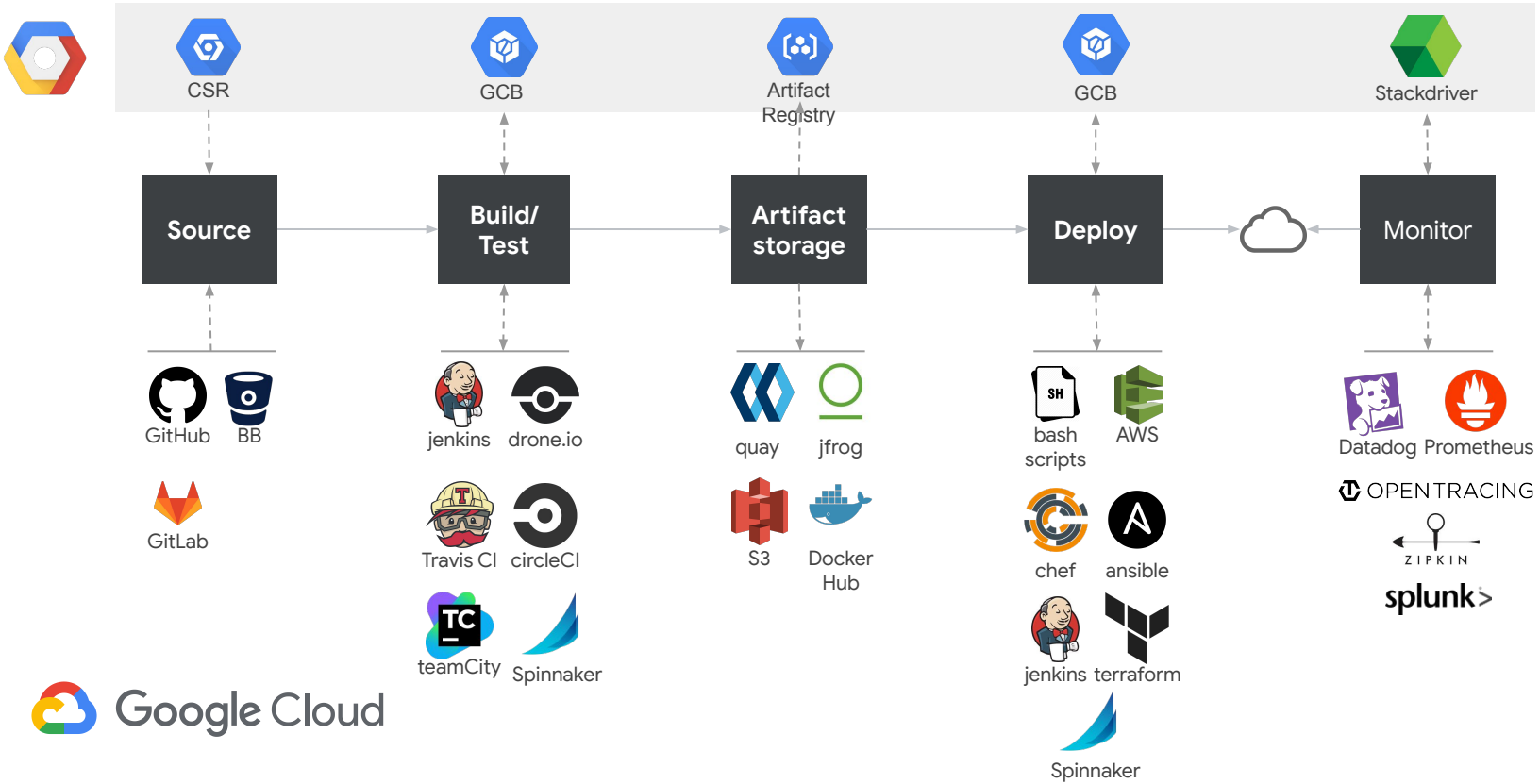
Cloud Builders

- Container images that run the build process
- Packaged with common languages and tools
- Google-managed, community-managed, public Docker Hub images
- Run specific commands inside builder containers
- Can also use custom build steps
- https://github.com/GoogleCloudPlatform/cloud-builders

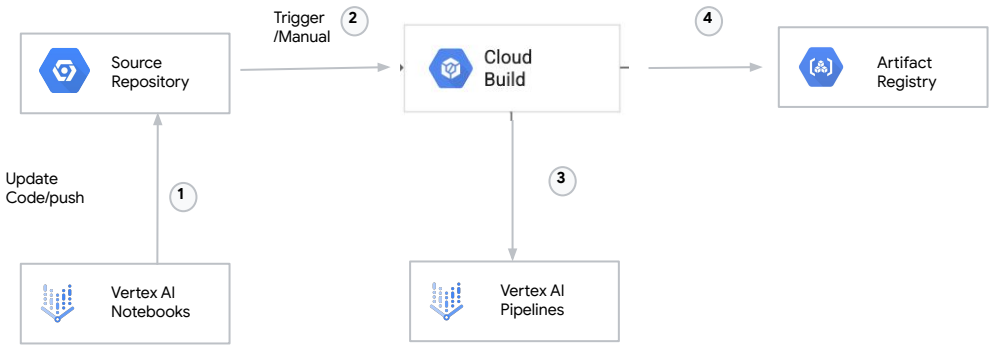
cloudbuild.yaml

```
steps:
- name: NAME_OF_STEP
  args:
  env:
  dir:
  id:
  waitFor:
  entrypoint:
  secretEnv:
  volumes:
- name: NAME_OF_STEP
  ...
- name: NAME_OF_STEP
...
timeout:
logsBucket:
options:
substitutions:
tags:
secrets:
images:
- [IMAGE_NAME_, IMAGE_NAME, ...]
```

CI/CD tools, generally



Demo Flow



Thank You