Building Containers

Cloud Run accepts container images built with any tool capable of building container images, as long as they respect the container contract (https://cloud.google.com/run/docs/reference/container-contract). In particular, your code must listen for HTTP requests on the port defined by the `PORT` environment variable. This `PORT` environment variable is automatically injected by Cloud Run into your container.

In this page, we describe two ways to build container images: using Docker and using Cloud Build.

Before building your sources into a container image ("containerizing"), you need a Dockerfile (https://docs.docker.com/engine/reference/builder/) to be present along your sources. The Build and deploy (https://cloud.google.com/run/docs/quickstarts/build-and-deploy) quickstart contains sample applications and Dockerfiles in many popular languages.

Building using Cloud Build

You can build your image on Google Cloud by using Cloud Build (https://cloud.google.com/cloud-build/docs/):

1. Navigate to the folder containing your sources and Dockerfile.
2. Run the command:

```
gcloud builds submit --tag gcr.io/[PROJECT-ID]/[IMAGE]
```

   Replace `[PROJECT-ID]` with your Google Cloud project ID and replace `[IMAGE]` with the image name of your choice.

For tips on improving build performance, see Speeding up your Builds (https://cloud.google.com/cloud-build/docs/speeding-up-builds)

Building locally and pushing using Docker

If you have Docker installed locally (https://docs.docker.com/install/), you can use `docker build` (https://docs.docker.com/engine/reference/commandline/build/) instead of using Cloud Build.

To build your container image using Docker:

1. Navigate to the folder containing your sources and `Dockerfile`.
2. Run the command:

   ```
   docker build . --tag gcr.io/[PROJECT-ID]/[IMAGE]
   ```

   Replace `[PROJECT-ID]` with your Google Cloud project ID and replace `[IMAGE]` with the image name of your choice.
3. If you have not yet configured Docker to use the gcloud command-line tool to authenticate requests to Container Registry, do so now using the command:

   ```
   gcloud auth configure-docker
   ```

   You need to do this before you can push or pull images using Docker. You only need to do it once.
4. Push the container image to Container Registry:

   ```
   docker push gcr.io/[PROJECT-ID]/[IMAGE]
   ```

   Replace `[PROJECT-ID]` with your Google Cloud project ID and replace `[IMAGE]` with the image name you chose when you invoked `docker build`.

To exclude local files from this process, follow the `.dockerignore` configuration file (https://docs.docker.com/engine/reference/builder/#dockerignore-file) instructions.

What's next

- To learn more about the contract your containers must respect to be deployed to Cloud Run, see Container Contract (https://cloud.google.com/run/docs/reference/container-contract).
- To deploy your built containers to Cloud Run, follow Deploying Services (https://cloud.google.com/run/docs/deploying).

- To automate the builds and deployments of your Cloud Run services using Cloud Build Triggers, set up Continuous Deployment (https://cloud.google.com/run/docs/continuous-deployment)

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