

How to create .NET8 WebAPI and store the Docker image in my Google Cloud Artifact Registry

1. Create a Google Cloud Artifact Registry repo

To initialize gcloud run the command:

```
gcloud init
```

This will guide you through the initialization process, where you'll log in to your Google account, set your default project, and choose a default compute zone/region if necessary.

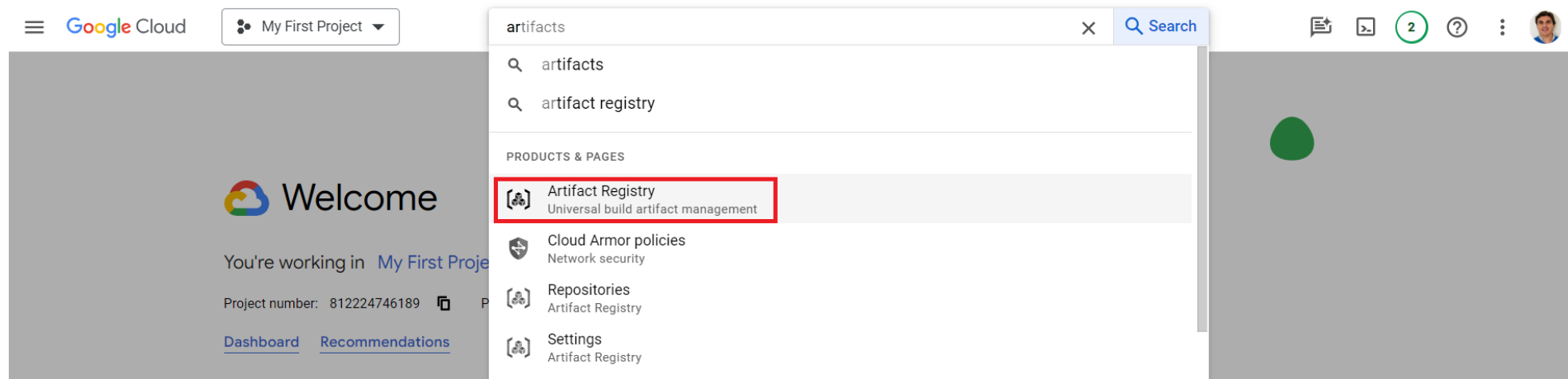
To update gcloud after initialization, you can update the Google Cloud SDK to the latest version by running the command:

```
gcloud components update
```

This command will check for the latest version and update the SDK components as needed.

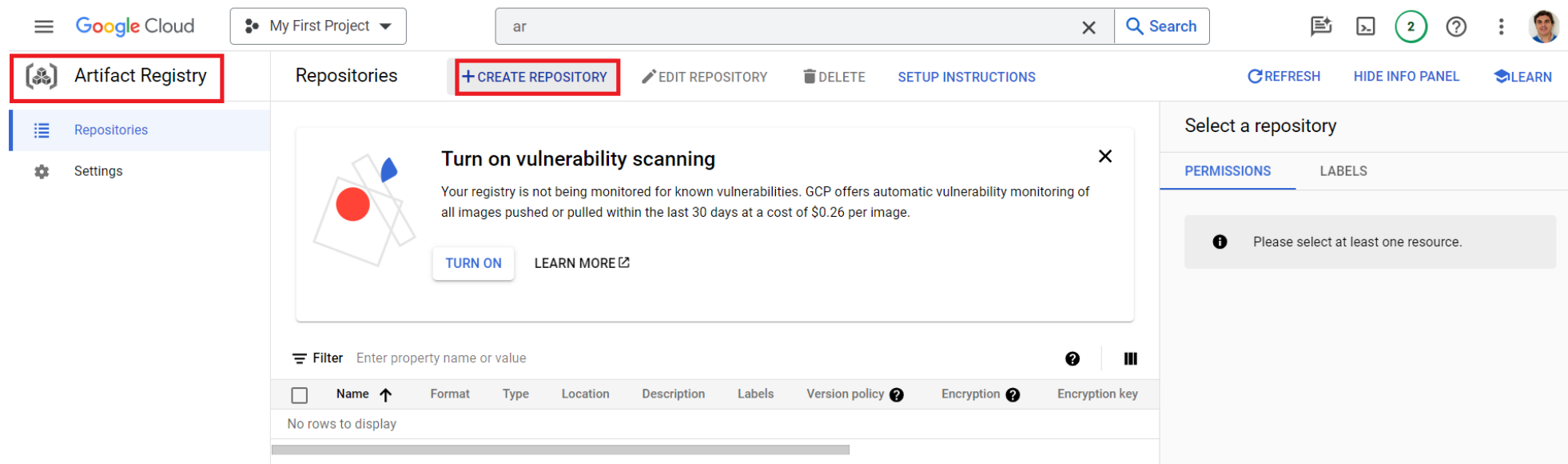
Now we can create a new Artifact Registry repo in Google Cloud

We log in to Google Cloud console and we search for **Artifact Registry**



We enable the Artifact Registry API

We create a new repo



We input the new repo data

Google Cloud

My First Project

ar

Search

Artifact Registry

Repositories

Settings

Create repository

LEARN

Name *

myfirstrepo

Format

☒ Docker

☐ Maven

☐ npm

☐ Python

☐ Apt

☐ Yum

☐ Kubeflow pipelines

☐ Go

Mode

☒ Standard

☐ Remote

☐ Virtual

Location type

☒ Region

☐ Multi-region

Region *

europa-southwest1 (Madrid)

Release notes

The screenshot shows the Google Cloud Artifact Registry interface. The top navigation bar includes the Google Cloud logo, a dropdown for 'My First Project', a search bar with 'ar' entered, and a 'Search' button. On the right, there are icons for help, a notification badge with the number '2', and a user profile. The left sidebar contains the 'Artifact Registry' menu with options for 'Repositories' (selected), 'Settings', and 'Release notes'. The main content area is titled 'Create repository' and features a 'Description' text field. Below this, the 'Labels' section has a '+ ADD LABEL' button. The 'Encryption' section explains that the resource is encrypted by default and offers two options: 'Google-managed encryption key' (selected, with 'No configuration required') and 'Customer-managed encryption key (CMEK)' (with a link to 'Google Cloud Key Management Service'). There is also an unchecked option for 'Immutable image tags' with a 'PREVIEW' label and a help icon. The 'Cleanup policies' section, also marked 'PREVIEW', defines policies for cleaning up artifacts and offers 'Delete artifacts' and 'Dry run' (selected) options. At the bottom, there is an 'ADD A CLEANUP POLICY' button and 'CREATE' and 'CANCEL' buttons.

We can verify the new repo in the Artifact Registry list

Google Cloud My First Project ar Search

Artifact Registry

Repositories + CREATE REPOSITORY EDIT REPOSITORY DELETE SETUP INSTRUCTIONS REFRESH LEARN HIDE INFO PANEL

Turn on vulnerability scanning

Your registry is not being monitored for known vulnerabilities. GCP offers automatic vulnerability monitoring of all images pushed or pulled within the last 30 days at a cost of \$0.26 per image.

TURN ON LEARN MORE

Select a repository

PERMISSIONS LABELS

Please select at least one resource.

Select all rows Enter property name or value

Name	Format	Type	Location	Description	Labels	Version policy	Enc
<input type="checkbox"/> myfirstrepo	Docker	Standard	europe-southwest1 (Madrid)				Go

To Set Up the repo we select it and we press in the **Setup Instructions** button

Google Cloud My First Project ar Search

Artifact Registry

Repositories + CREATE REPOSITORY EDIT REPOSITORY DELETE **SETUP INSTRUCTIONS** REFRESH LEARN HIDE INFO PANEL

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TURN ON LEARN MORE

myfirstrepo

PERMISSIONS LABELS

Edit or delete permissions below, or select 'Add principal' to grant new access.

+ ADD PRINCIPAL

Show inherited permissions

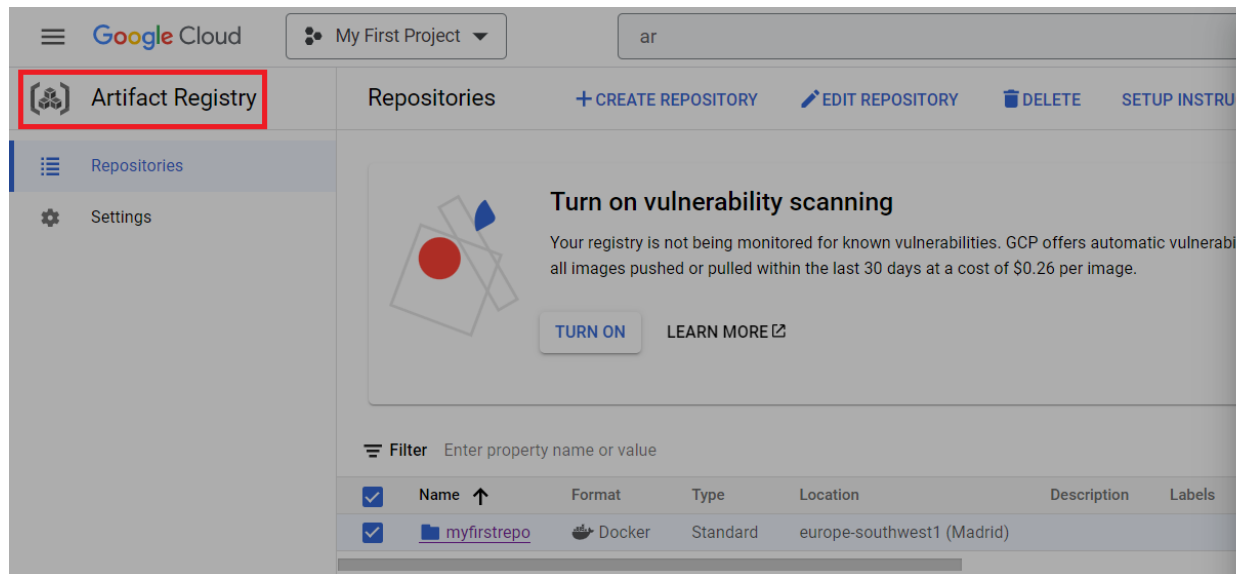
Filter Enter property name or value

Name	Format	Type	Location	Description	Labels	Version policy	Enc
<input checked="" type="checkbox"/> myfirstrepo	Docker	Standard	europe-southwest1 (Madrid)				Go

Role/Principal Inheritance

- App Engine Standard Environment Service Agent (1)
- Artifact Registry Service Agent (1)
- Editor (1)
- Owner (1)

See the command to Set Up our repo



Setup instructions

Follow the steps below to configure your client to push and pull packages using this repository. You can also [view more detailed instructions here](#). For more information about working with artifacts in this repository, see the [documentation](#).

Initialise gcloud

The [Google Cloud SDK](#) is used to generate an access token when authenticating with Artifact Registry. Make sure that it is installed and initialised with [Application Default Credentials](#) before proceeding.

Configure Docker

Run the following command to configure `gcloud` as the credential helper for the Artifact Registry domain associated with this repository's location:

```
$ gcloud auth configure-docker \
    europe-southwest1-docker.pkg.dev
```

```
gcloud auth configure-docker europe-southwest1-docker.pkg.dev
```

2. Create a .NET8 WebAPI and create the Dockerfile

Run Visual Studio 2022 Community Edition and create a .NET8 WebAPI

Add Docker support to the application

This is the Dockerfile created automatically:

#See <https://aka.ms/customizecontainer> to learn how to customize your debug container and how Visual Studio uses this Dockerfile

```
FROM mcr.microsoft.com/dotnet/aspnet:8.0 AS base
USER app
WORKDIR /app
EXPOSE 8080
EXPOSE 8081
```

```
FROM mcr.microsoft.com/dotnet/sdk:8.0 AS build
ARG BUILD_CONFIGURATION=Release
WORKDIR /src
COPY ["GoogleCloudWebAPI.csproj", "."]
RUN dotnet restore "../GoogleCloudWebAPI.csproj"
COPY . .
WORKDIR "/src/."
RUN dotnet build "../GoogleCloudWebAPI.csproj" -c $BUILD_CONFIGURATION -o /app/build

FROM build AS publish
ARG BUILD_CONFIGURATION=Release
RUN dotnet publish "../GoogleCloudWebAPI.csproj" -c $BUILD_CONFIGURATION -o /app/publish /p:UseAppHost=false

FROM base AS final
WORKDIR /app
COPY --from=publish /app/publish .
ENTRYPOINT ["dotnet", "GoogleCloudWebAPI.dll"]
```

3. Create the Docker image

Open Terminal window and create the Docker image running this command:

```
docker build -t your-webapi-image-name .
```

4. Tag the Docker image

my-location: europe-southwest1

my-gcloud-project: extreme-axon-381209

my-repo: myfirstrepo

my-imagename: your-webapi-image-name:v1.0

Original imagename:myimagename:latest

Final imagename:my-location-docker.pkg.dev/my-gcloud-project/my-repo/my-imagename:v1.0

```
docker tag myimagename:latest my-location-docker.pkg.dev/my-gcloud-project/my-repo/my-imagename:v1.0
```

```
docker tag your-webapi-image-name:latest europe-southwest1-docker.pkg.dev/extreme-axon-381209/myfirstrepo/your-webapi-image-name:
```



5. Push the Docker image to Google Cloud Artifact Registry repo

5.1. Authenticate gcloud:

Make sure you're authenticated with the Google Cloud SDK and that you're using the correct project. Run:

```
gcloud auth login
```

```
gcloud config set project extreme-axon-381209
```

5.2. Configure Docker to Use gcloud as a Credential Helper:

Run the following command to configure Docker to use gcloud as the credential helper:

```
gcloud auth configure-docker europe-southwest1-docker.pkg.dev
```


This command updates your Docker configuration to use gcloud as the credential helper for repositories in europe-southwest1-docker.pkg.dev

5.3. Push Docker image to Google Cloud Artifact Registry repo

```
docker push europe-southwest1-docker.pkg.dev/extreme-axon-381209/myfirstrepo/your-webapi-image-name:v1.0
```

5.4. Verify the Google Cloud Docker image in Docker Desktop

We pull the Docker image from Google Cloud Artifact Registry repo

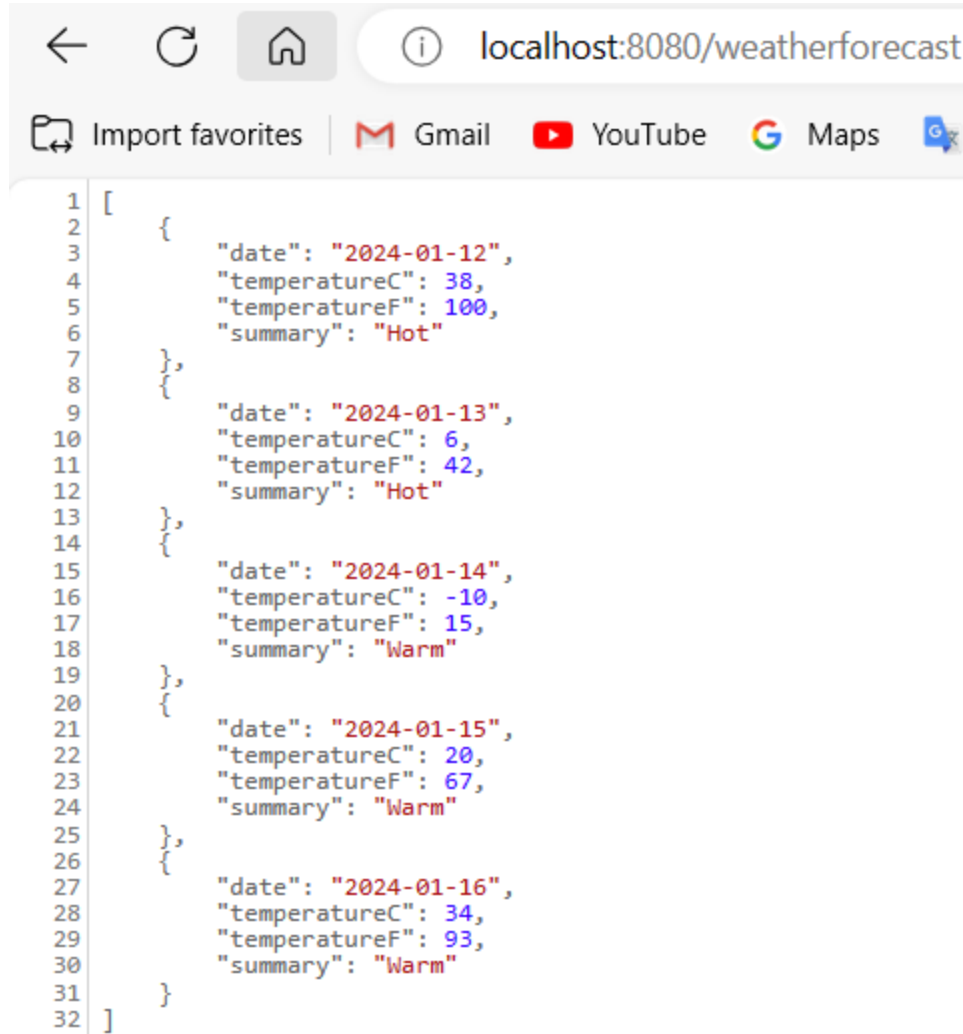
```
docker pull europe-southwest1-docker.pkg.dev/extreme-axon-381209/myfirstrepo/your-webapi-image-name:v1.0
```

We run the Docker image in Docker Destop

```
docker run -p 8080:8080 -p 8081:8081 europe-southwest1-docker.pkg.dev/extreme-axon-381209/myfirstrepo/your-webapi-image-name:v1.0
```



<http://localhost:8080/weatherforecast>



```
1 [
2   {
3     "date": "2024-01-12",
4     "temperatureC": 38,
5     "temperatureF": 100,
6     "summary": "Hot"
7   },
8   {
9     "date": "2024-01-13",
10    "temperatureC": 6,
11    "temperatureF": 42,
12    "summary": "Hot"
13  },
14  {
15    "date": "2024-01-14",
16    "temperatureC": -10,
17    "temperatureF": 15,
18    "summary": "Warm"
19  },
20  {
21    "date": "2024-01-15",
22    "temperatureC": 20,
23    "temperatureF": 67,
24    "summary": "Warm"
25  },
26  {
27    "date": "2024-01-16",
28    "temperatureC": 34,
29    "temperatureF": 93,
30    "summary": "Warm"
31  }
32 ]
```

6. Deploying the Docker image

```
gcloud run deploy --image europe-southwest1-docker.pkg.dev/extreme-axon-381209/myfirstrepo/your-webapi-image-name:v1.0
```