

BlackLinux

Docker Compose on Ubuntu 20

Get started with Docker Compose

In this tutorial, you build a simple python web application running on Docker Compose. The application uses the Flask Framework and maintains a hit counter in Redis.

Prerequisites

- Make sure you have already installed both Docker Engine and Docker Compose. You don't need to install python or Redis, as both are provided by Docker Images.

Following Commands :

Define the application dependencies:

1. Create a directory for the project:

```
# mkdir composetest
```

```
# cd composetest
```

BlackLinux

2. Create a file called app.py in you project directory and paste this in:

```
import time

import redis
from flask import Flask
app = Flask(__name__)
cache = redis.Redis(host='redis', port=6379)
def get_hit_count():
    retries = 5
    while True:
        try:
            return cache.incr('hits')
        except redis.exceptions.ConnectionError as exc:
            if retries == 0:
                raise exc
            retries -= 1
            time.sleep(0.5)
@app.route('/')
def hello():
    count = get_hit_count()
    return 'Hello World! I have been seen {} times.\n'.format(count)
```

3. Create another file called requirements.txt in your project directory and paste this in.

```
flask
redis
```

BlackLinux

Create a Dockerfile:

1. In your project directory, create a file named Dockerfile and paste the following:

```
# syntax=docker/dockerfile:1

FROM python:3.7-alpine
WORKDIR /code
ENV FLASK_APP=app.py
ENV FLASK_RUN_HOST=0.0.0.0
RUN apk add --no-cache gcc musl-dev linux-headers
COPY requirements.txt requirements.txt
RUN pip install -r requirements.txt
EXPOSE 5000
COPY . .
CMD ["flask", "run"]
```

2. This tells docker to:

- Build an image starting with the **Python 3.7** image.
- Set the working directory to **/code**.
- Set environment variables used by the **flask** command.
- Install **gcc** and other dependencies
- Copy **requirements.txt** and install the Python dependencies.
- Add metadata to the image to describe that the container is listening on port **5000**
- Copy the current directory **.** in the project to the **workdir** **.** in the image.
- Set the default command for the container to **flask run**.

BlackLinux

3. Define services in a compose file.

- Create a file called `docker-compose.yml` in your project directory and paste the following:

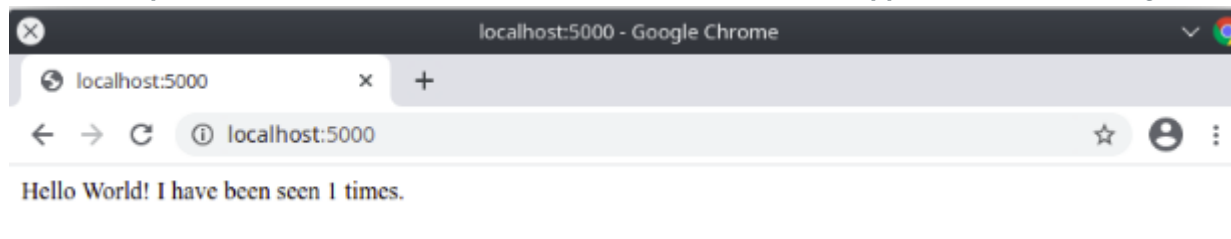
```
version: "3.9"
services:
  web:
    build: .
    ports:
      - "5000:5000"
  redis:
    image: "redis:alpine"
```

4. Build and run your app with compose.

- From your project directory, start up your application by running `docker-compose up`.

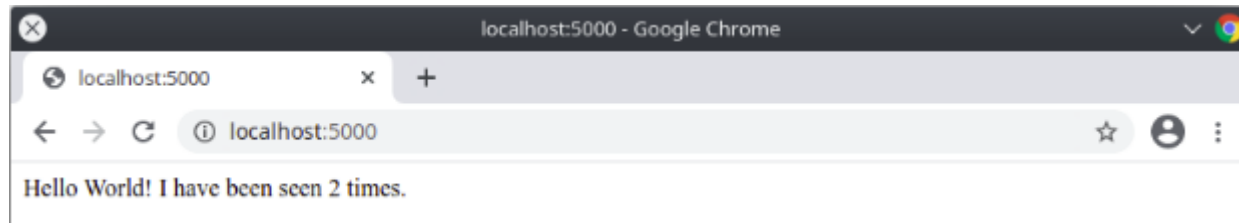
`docker-compose up`

- Enter `http://localhost:5000/` in a browser to see the application running.



BlackLinux

- Refresh the page.



- i. The number should increase.

Hello World! I have been seen 2 times.

5. Edit the Compose file to add a bind mount

- Edit `docker-compose.yml` in your project directory to add a `bind mount` for the web service:

```
version: "3.9"
services:
  web:
    build: .
    ports:
      - "5000:5000"
    volumes:
      - ./code
    environment:
      FLASK_ENV: development
  redis:
    image: "redis:alpine"
```

BlackLinux

6. Re-build and run the app with compose.

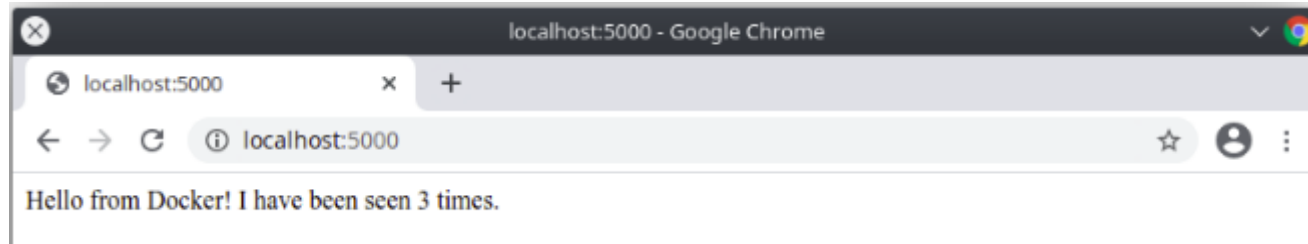
```
# docker-compose up
```

7. Update the application

- Change the greeting in `app.py` and save it. For example, change the `Hello World!` message to `Hello from Docker!`:

```
return 'Hello from Docker! I have been seen {} times.\n'.format(count)
```

- Refresh the app in your browser. The greeting should be updated, and the counter should still be incrementing.



8. Experiment with some other commands:

- If you want to run your service in the background, you can pass the `-d` flag (for “detached” mode) to `docker-compose up` and use `docker-compose ps` to see what is currently running:

```
# docker-compose up -d
```

BlackLinux

```
# docker-compose ps
```

Name	Command	State	Ports
composetest_redis_1	docker-entrypoint.sh redis ...	Up	6379/tcp
composetest_web_1	flask run	Up	0.0.0.0:5000->

```
# docker-compose stop
```

```
# docker-compose rm
```

```
# docker-compose down --volumes
```