

Docker Compose - Concept Overview

1. What is Docker Compose?

- **Docker Compose** is a tool to define and run multi-container applications using a single YAML file (`docker-compose.yml`).
- Instead of running multiple `docker run` commands manually, you describe your services, networks, and volumes in one file.

Then you start everything with:

Bash

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

It's especially useful for **microservices**, where multiple containers need to work together.

2. Why Use Docker Compose?

- A. **Simplifies commands:** No need to type long `docker run` commands for each service.
- B. **Service orchestration:** Automatically starts containers in the right order (`depends_on`).
- C. **Networking built-in:** Creates a custom network so containers can talk to each other by name.
- D. **Configuration management:** Environment variables, ports, restart policies all defined in one place.
- E. **Portability:** Share the `docker-compose.yml` file with others, and they can spin up the same environment instantly.

3. Your Docker Compose File Explained

Yaml

```
version: '3.7'
services:
  currency-exchange:
    image: souravdevopsdev/currency-exchange:0.0.1
    ports:
      - "8000:8000"
    restart: always
    networks:
      - currency-compose-network

  currency-conversion:
    image: souravdevopsdev/currency-conversion:0.0.1
    ports:
      - "8100:8100"
    restart: always
    environment:
      CURRENCY_EXCHANGE_SERVICE_HOST: http://currency-exchange
    depends_on:
      - currency-exchange
    networks:
      - currency-compose-network
  networks:
    currency-compose-network:
```

Breakdown:

version: '3.7' → Compose file format version.

services → Defines the containers:

currency-exchange: Runs on port 8000.

currency-conversion: Runs on port 8100, depends on currency-exchange.

environment → Passes

CURRENCY_EXCHANGE_SERVICE_HOST=http://currency-exchange into the conversion service.

depends_on → Ensures currency-exchange starts before currency-conversion.

networks → Defines a custom network (currency-compose-network) so both services can communicate by name.

4. How This Replaces Manual Commands

Instead of typing:

Bash

```
docker run -d -p 8000:8000 --name=currency-exchange --  
network=currency-network souravdevopsdev/currency-  
exchange:0.0.1docker run -d -p 8100:8100 --env  
CURRENCY_EXCHANGE_SERVICE_HOST=http://currency-exchange --  
name=currency-conversion --network=currency-network  
souravdevopsdev/currency-conversion:0.0.1
```

You just run:

Bash

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

- **The networks:** section in the YAML automatically creates the bridge network (currency-compose-network) and attaches both services to it. So the **network creation command is embedded inside the file.**