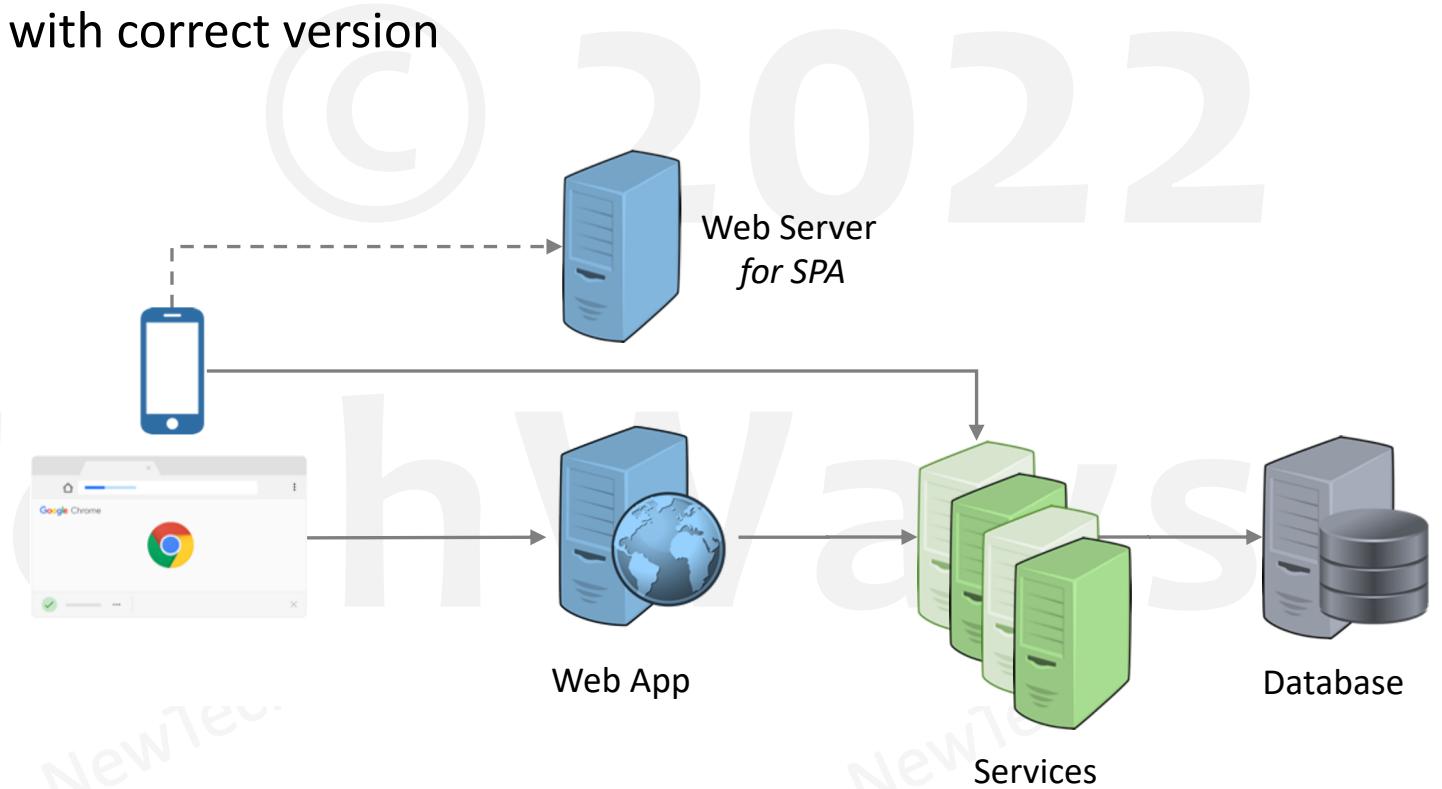


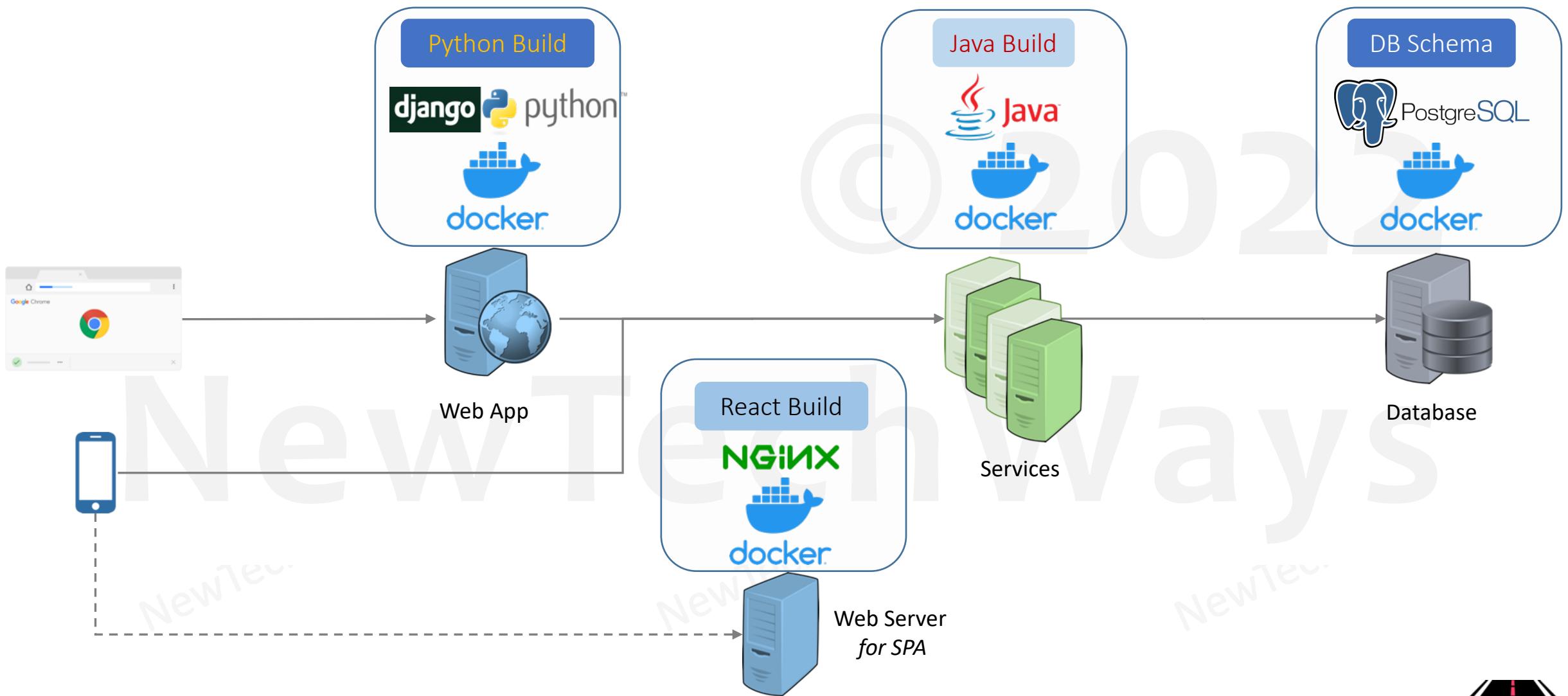
Containerization of System Components

System Issues

- For All Environments – Dev, Test, Production
 - OS and its version needs to be consistent
 - Installation of required software with correct version
 - Web – Python, Gunicorn
 - Services – Java
 - Database – Postgres
 - SPA – Nginx
 - Configure Env Variables
- In Production Environment
 - Start instances
 - Monitor liveliness
 - Restart on failures



System with Docker Containers



Web App as a Container

Build Container Image:

```
docker build -f Dockerfile -t ntw/web .
```

Run Container:

```
docker run -dt --name web --network host ntw/web
```

View logs:

```
docker logs -f web
```

Execute command:

```
docker exec -it web bash
```

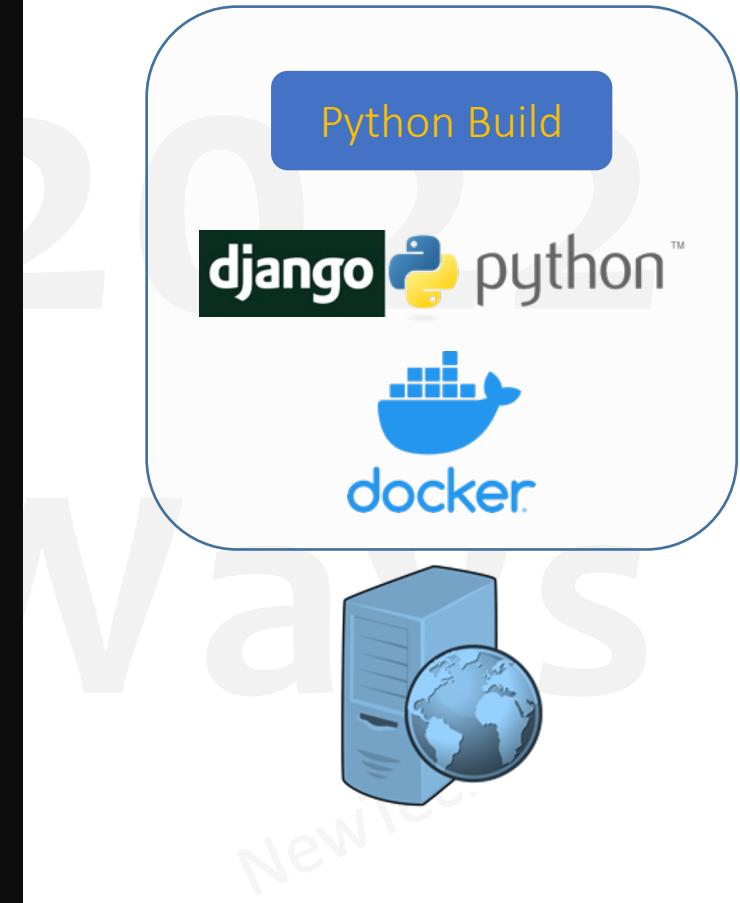


Web App Container with Docker Compose

```
version: '3.5'

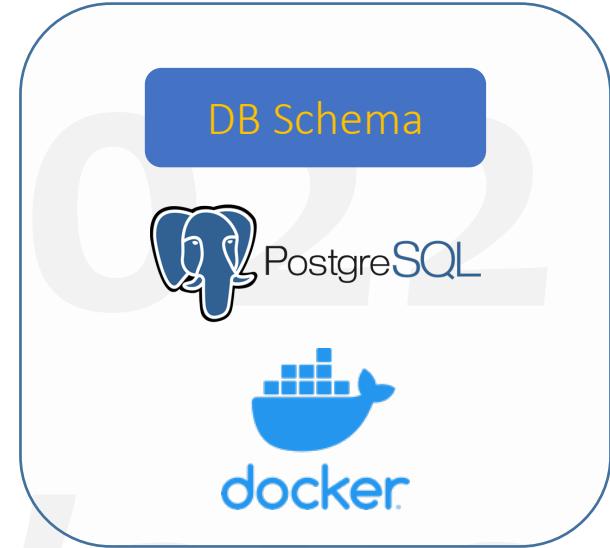
services:

  web:
    build:
      context: ./web
      dockerfile: Dockerfile
    image: ntw/web
    container_name: web
    hostname: web
    network_mode: host
    command: python3 manage.py runserver 0.0.0.0:8000
```



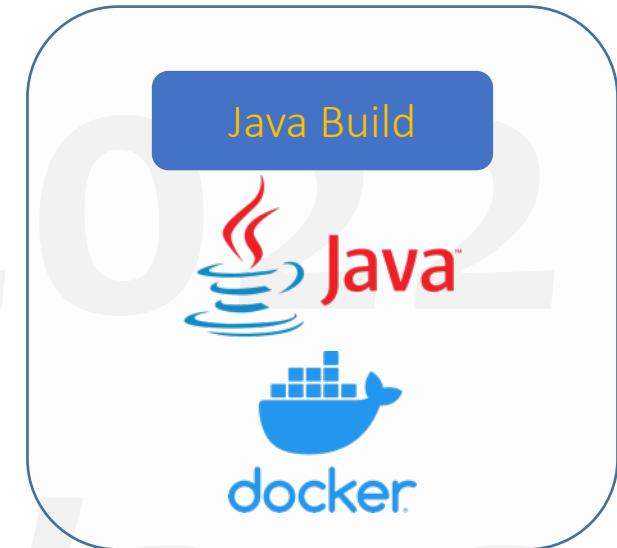
Postgres Database Container

```
services:  
  
postgres:  
  build:  
    context: ./postgres  
    dockerfile: Dockerfile  
  image: ntw/postgres  
  container_name: postgres  
  hostname: postgres  
  network_mode: host  
  environment:  
    - POSTGRES_USER=postgres  
    - POSTGRES_PASSWORD=postgres
```



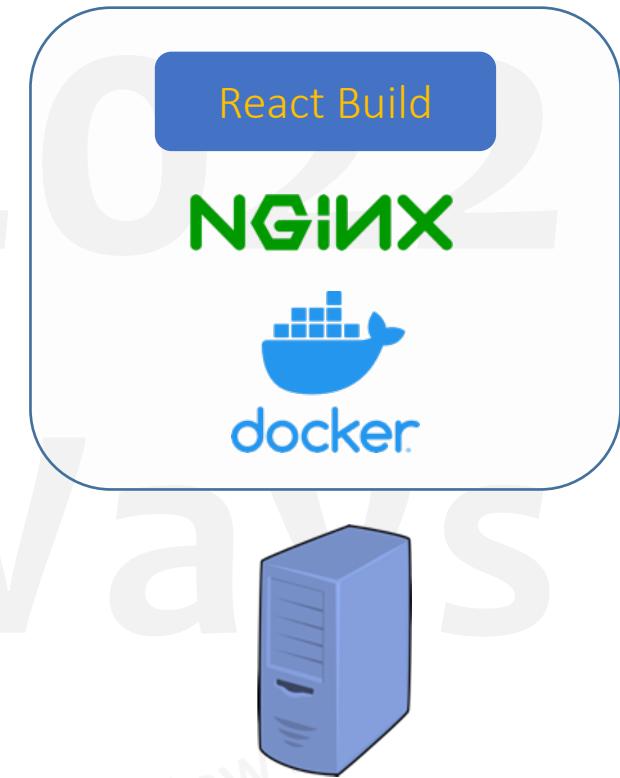
Services Container

```
services:  
  
  services:  
    build:  
      context: ./services  
      dockerfile: Dockerfile  
      image: ntw/services  
      container_name: services-build  
  
    auth-svc:  
      image: ntw/services  
      container_name: auth-svc  
      hostname: auth-svc  
      network_mode: host  
      command: auth  
      environment:  
        - server.port=8082  
        - database.postgres.host=localhost
```

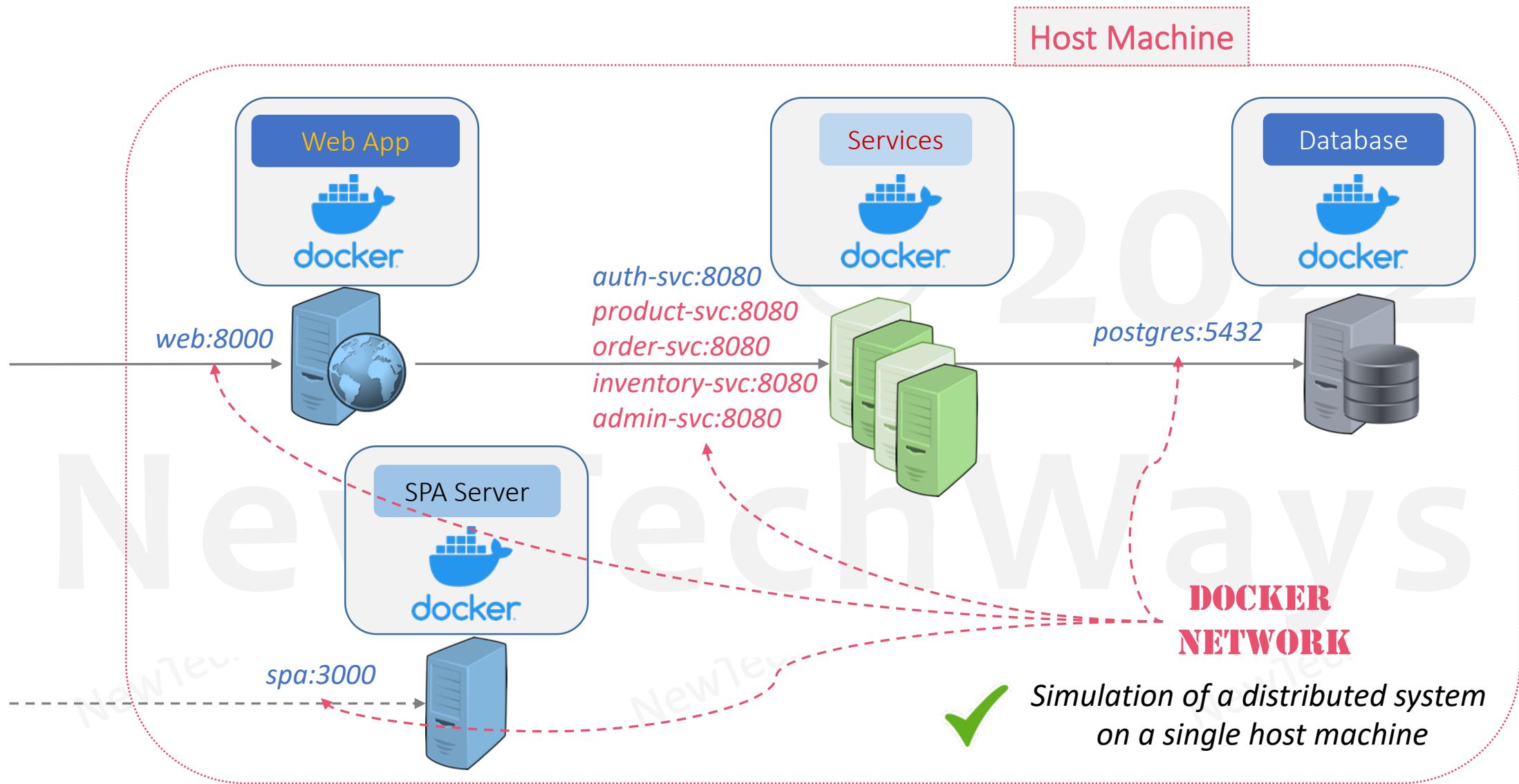


React App Container

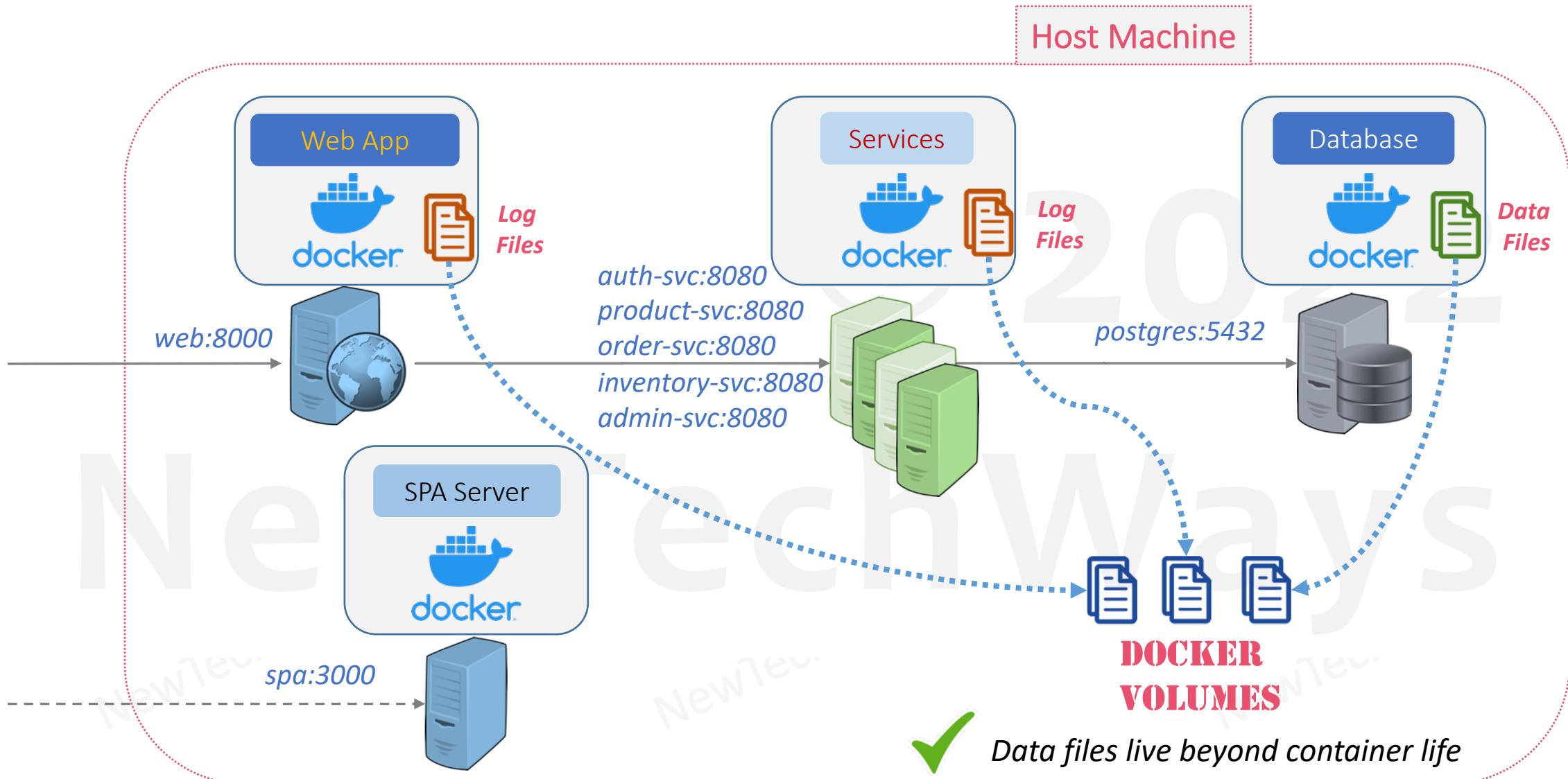
```
services:  
  
spa:  
  build:  
    context: ./spa  
    dockerfile: Dockerfile  
    image: ntw/spa  
    container_name: spa  
    hostname: spa  
    network_mode: host
```



Docker Network



Docker Volumes



Gains of Containerization

- For All Environments – Dev, Test, Production
 - OS and its version needs to be consistent
 - Installation of required software with correct version
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 - Services – Java
 - Database – Postgres
 - SPA – Nginx
 - Configure Env Variables
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