

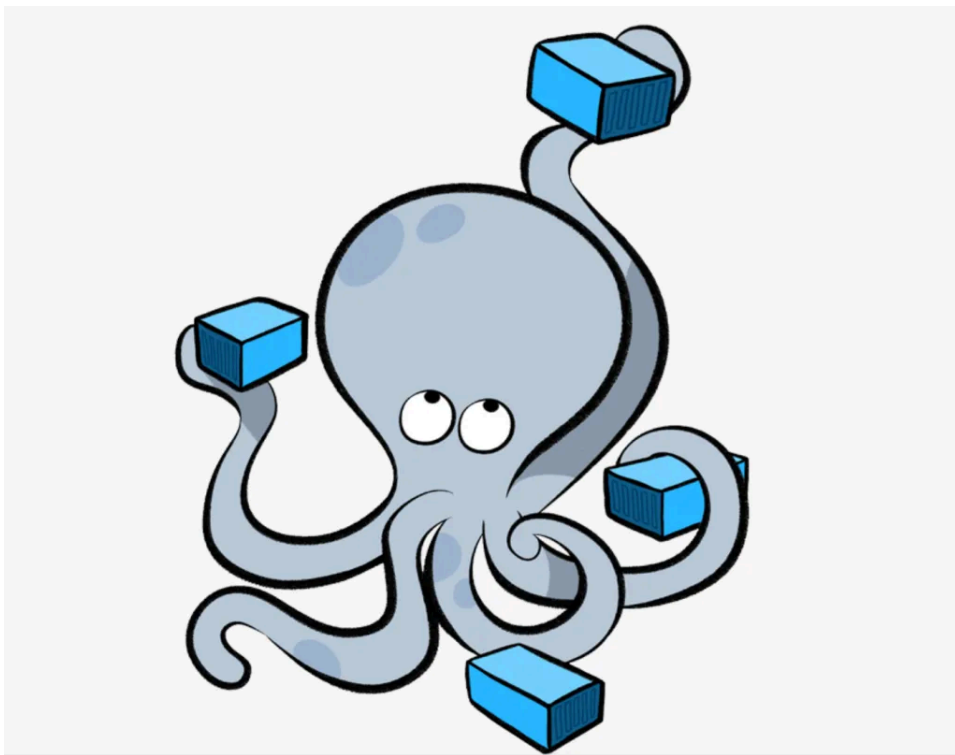


# Docker Compose

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# Goals



- Run multiple containers
- Have containers communicate with each other
- Easily to bring a whole system up and down

# The Good

- Already included with Docker Desktop
- Easy to run
- Can be used on dev machines

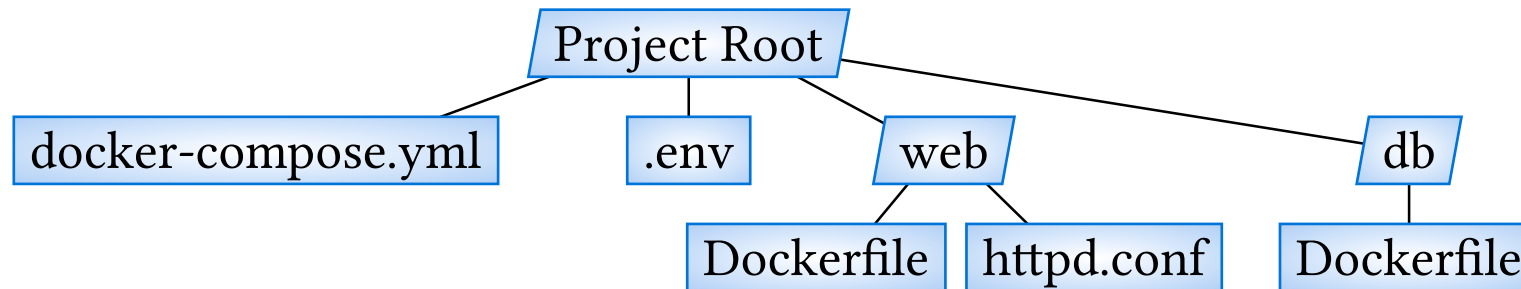


# The Bad



- Strange persistence choices
- Difficult to run on multiple machines
- Not considered production stable
- Path name issues

# Setup



- `docker-compose.yml` in the root of the project
- `.env` file will be loaded, environment variables can be used
- directories are used for individual parts of system

What goes in the docker-  
compose.yml?

### **version**

info only, not required  
or recommended

### **services**

containers that will be  
run, with options

### **networks**

individual networks to  
be created, if omitted  
one network linking all  
services will be created

### **volumes**

persistent data stores

### **configs**

volumes for config files

### **secrets**

configs for sensitive data

# Services

- largest part of a docker-compose.yml file
- most options in the compose file spec
- services can be resolved by their name internally



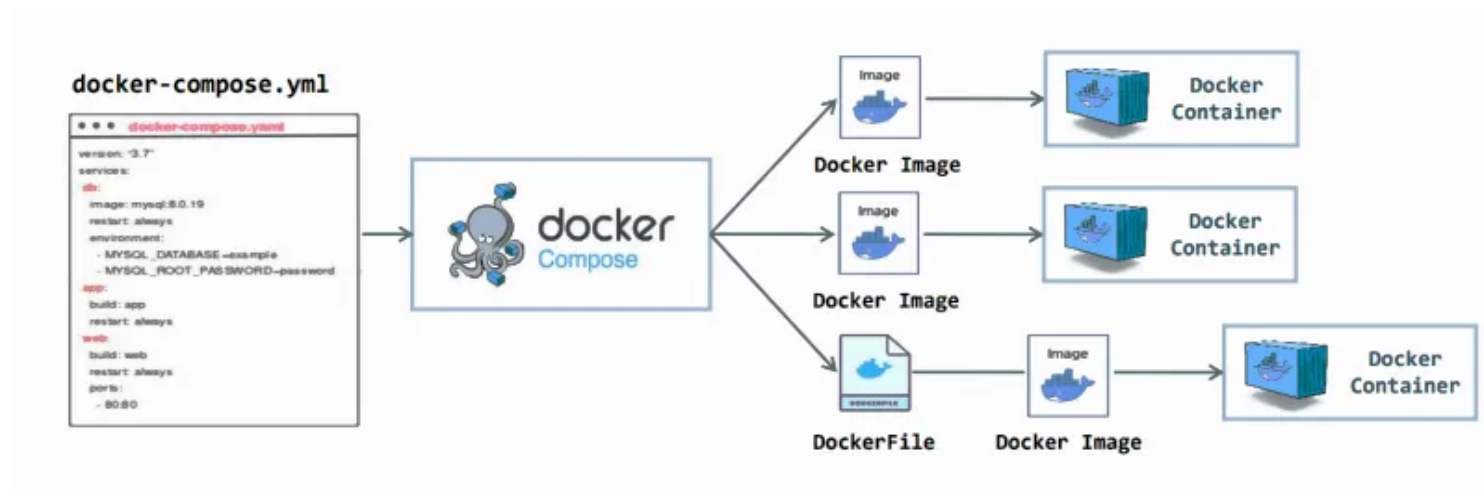
# Service Example

```
pihole:
  container_name: pihole
  image: pihole/pihole:latest
  ports:
    - "53:53/tcp"
    - "53:53/udp"
    - "67:67/udp"
    - "8080:80/tcp"
    - "8443:443/tcp"
  environment:
    - TZ=${TIMEZONE}
    - PIHOLE_DNS_=172.20.0.2#5054;1.1.1.1 # referencing by name results in "Invalid IP detected in PIHOLE_DNS_: cloudflared#5054"
    - WEBPASSWORD=${PIHOLE_PW}
    - REV_SERVER=true
    - REV_SERVER_TARGET=${PIHOLE_ROUTER_IP}
    - REV_SERVER_DOMAIN=${PIHOLE_NETWORK_DOMAIN}
    - REV_SERVER_CIDR=${PIHOLE_REVERSE_DNS}
    - ServerIP=${PIHOLE_HOST_IP}
    - ServerIPv6=${PIHOLE_HOST_IPV6}
  #dns:
    #- 127.0.0.1 # "Sets your container's resolve settings to localhost so it can resolve DHCP hostnames [...]" - github.com/pi-hole/docker-pi-hole
    #- 1.1.1.1 # Backup server
  volumes: # store your data between container upgrades
    - "/etc/pihole/:/etc/pihole/"
    - "/etc/dnsmasq.d/:/etc/dnsmasq.d/"
  cap_add:
    - NET_ADMIN # Recommended but not required (DHCP needs NET_ADMIN) https://github.com/pi-hole/docker-pi-hole#note-on-capabilities
  depends_on:
    - "cloudflared"
  restart: always
  networks:
    - dns-net
```

# Running

- similar options to `docker` command but with a few things fixed
- `docker-compose.yml` expected to be in the direction where you are running `docker compose`
- `docker compose up` brings everything up in the foreground
- `docker compose down` (Ctrl-C if running) brings things down (gracefully, hopefully)
- `docker compose build` builds all custom Docker images, don't forget!
- `docker compose exec <service>` run something on a running service
- `docker compose run <service>` run a running container

# Resources



- [Full Compose File Spec](#)
- [Docker Compose CLI reference](#)
- [Awesome Compose](#) (curated list of cool Docker Compose examples)