



Discovering Docker

Get ready to explore the world of Docker, an open-source container technology that allows you to build, ship, and run applications anywhere. Let's dig in!



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What is Docker?

1 Container technology 🚀

Docker allows you to package an application together with its dependencies, libraries, and configuration files into a single container.

2 OS-level virtualization 🐳

Containers share the same OS kernel as the host machine, which makes them lightweight and fast to deploy.

3 Open-source platform ⭐

Docker has a large and active community that contributes to its development and maintenance.

The benefits of container technology



Portability

Containers can be deployed on any infrastructure, from local machines to cloud servers, without compatibility issues.



Resource efficiency

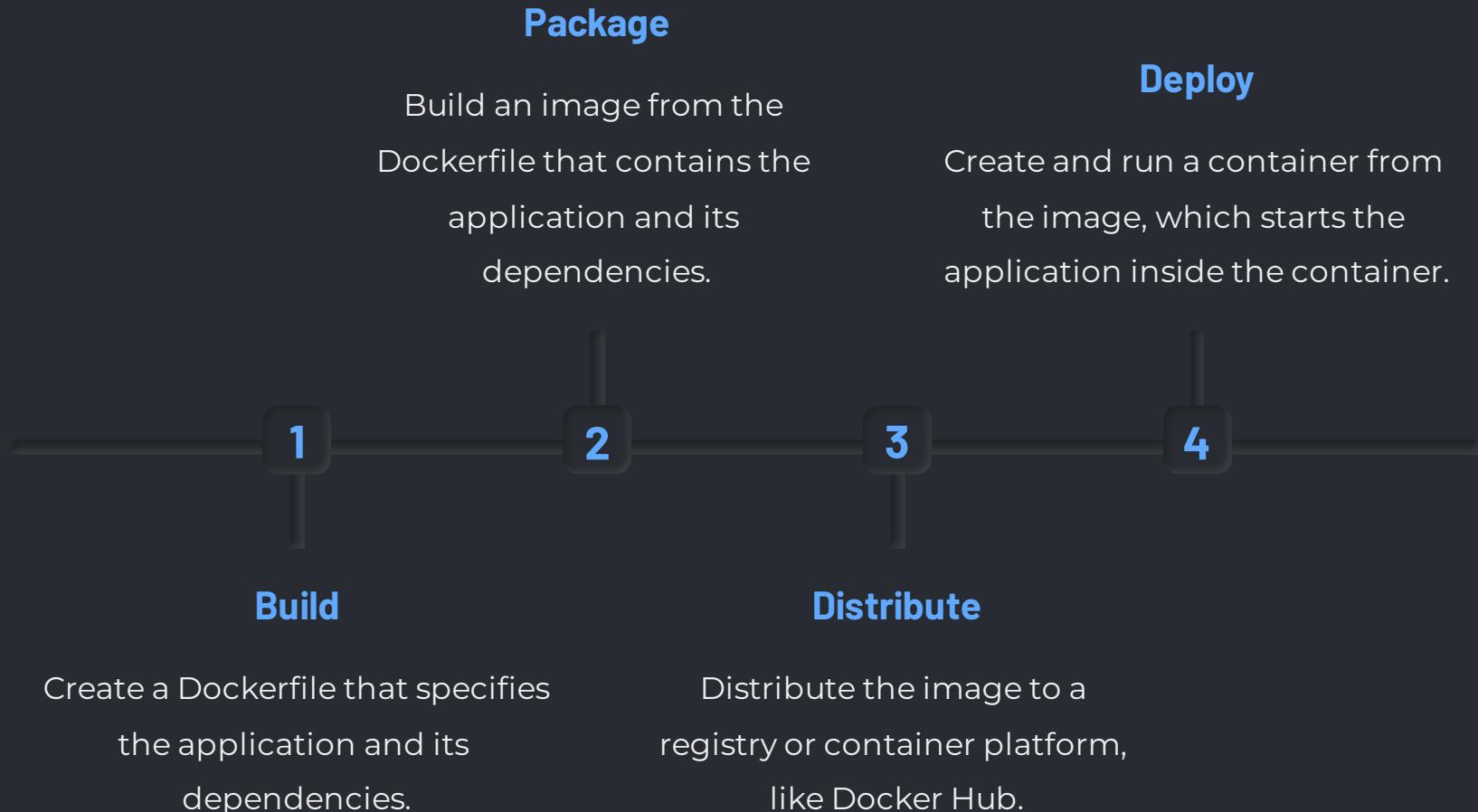
Containers share resources with the host machine, which allows you to run more applications with fewer resources.



Dependency isolation

Each container is an isolated environment that contains only the necessary components to run the application, which prevents conflicts between dependencies.

How Docker works



Docker images and containers

Images

An image is a read-only template that contains the instructions for creating a container.

Containers

A container is a lightweight and executable instance of an image that contains the application and its runtime dependencies.

Layers

An image is composed of multiple layers, which represent changes to the image file system.

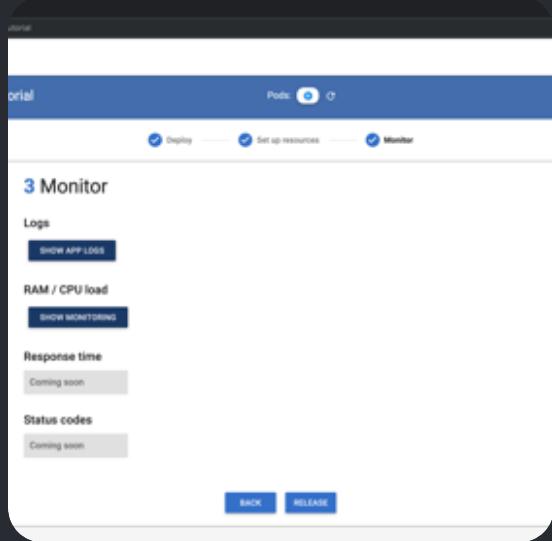
Registries

A registry is a public or private repository for storing and sharing Docker images.



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Docker-compose



Simplify complex applications

Docker-compose allows you to define and run multi-container applications with a simple YAML file.



Save time and effort

Docker-compose automates the process of starting and stopping containers and managing their dependencies.

Use cases and examples

Web applications

- Deploy a web application to a cloud server
- Automate continuous deployment with a CI/CD pipeline
- Build a development environment that matches production

Data science

Use Docker to create reproducible data science workflows and experiment with different datasets and models.

Internet of Things

Deploy a container for each IoT device and use Docker swarm to manage the entire fleet.

Essential Docker Commands

Get started with Docker by mastering these essential commands:

- `docker run`: Run a container from an image
- `docker ps`: List running containers
- `docker images`: List available images
- `docker build`: Build a Docker image from a Dockerfile
- `docker push`: Push an image to a Docker registry
- `docker pull`: Pull an image from a Docker registry
- `docker-compose up`: Start containers defined in a Compose file
- `docker-compose down`: Stop and remove containers defined in a Compose file
- `docker exec`: Run a command in a running container

With these commands, you'll be able to create, run, and manage Docker containers like a pro.

