Containerization

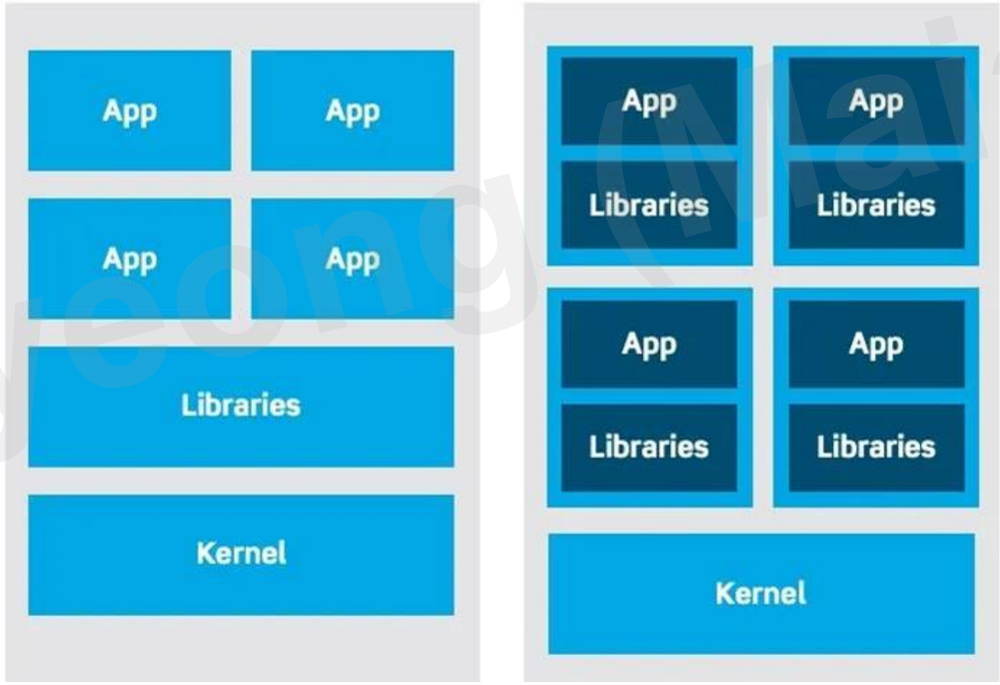
Docker & Kubernetes

Seoyeong (Maia) Oh

Agenda

What is Containerization?

Containerization is a method of packaging applications so they run consistently across different machines without the need for configuration.



The old way: Applications on host

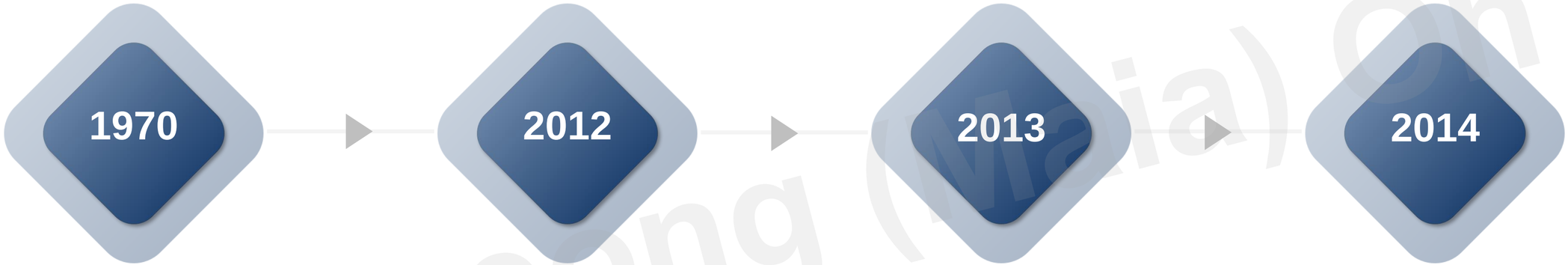
- Heavyweight, non-portable
- Relies on OS package manager

The new way: Deploy containers

- Small and fast, portable
- Uses OS-level virtualization

IMG SRC: platform9.com

Brief History Of Containerization



Early containers created an isolated environment

Containers got a big usability boost

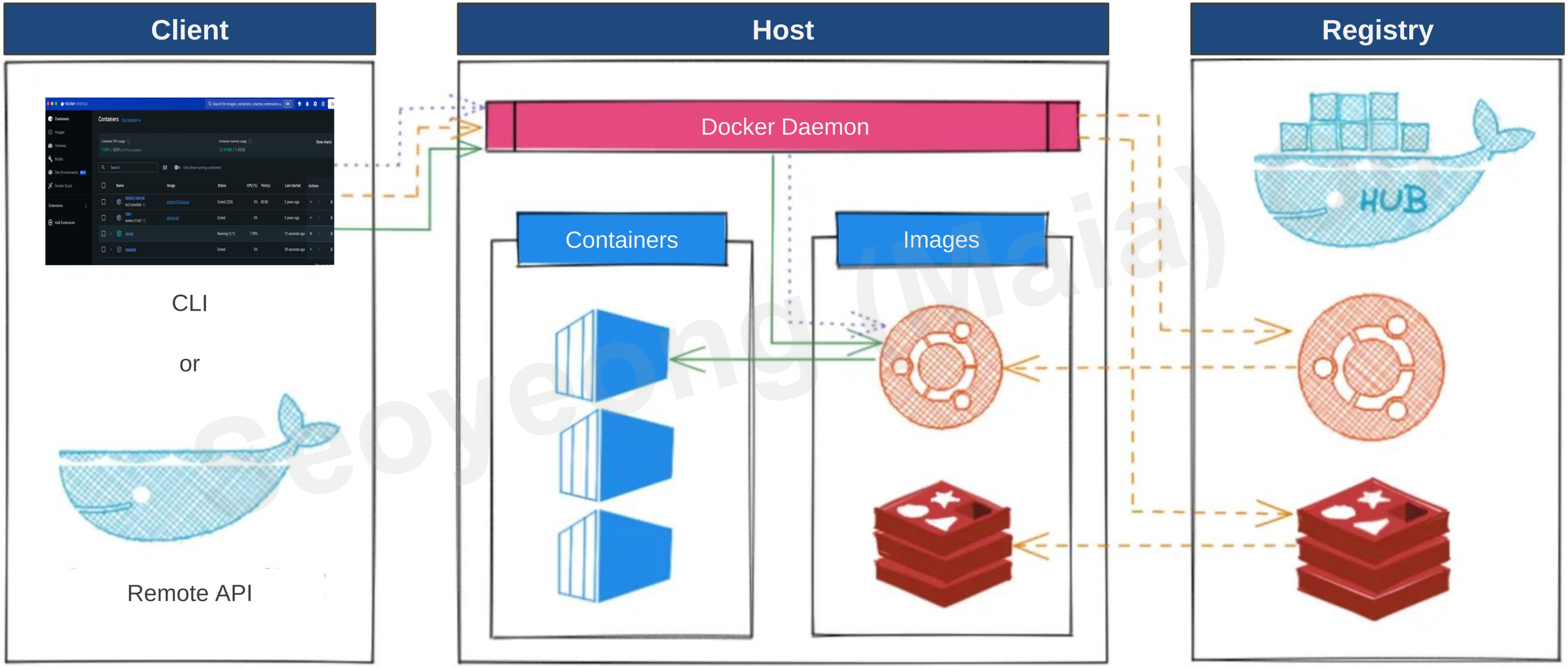
Docker’s debut

Kubernetes’ debut

What Is Docker?

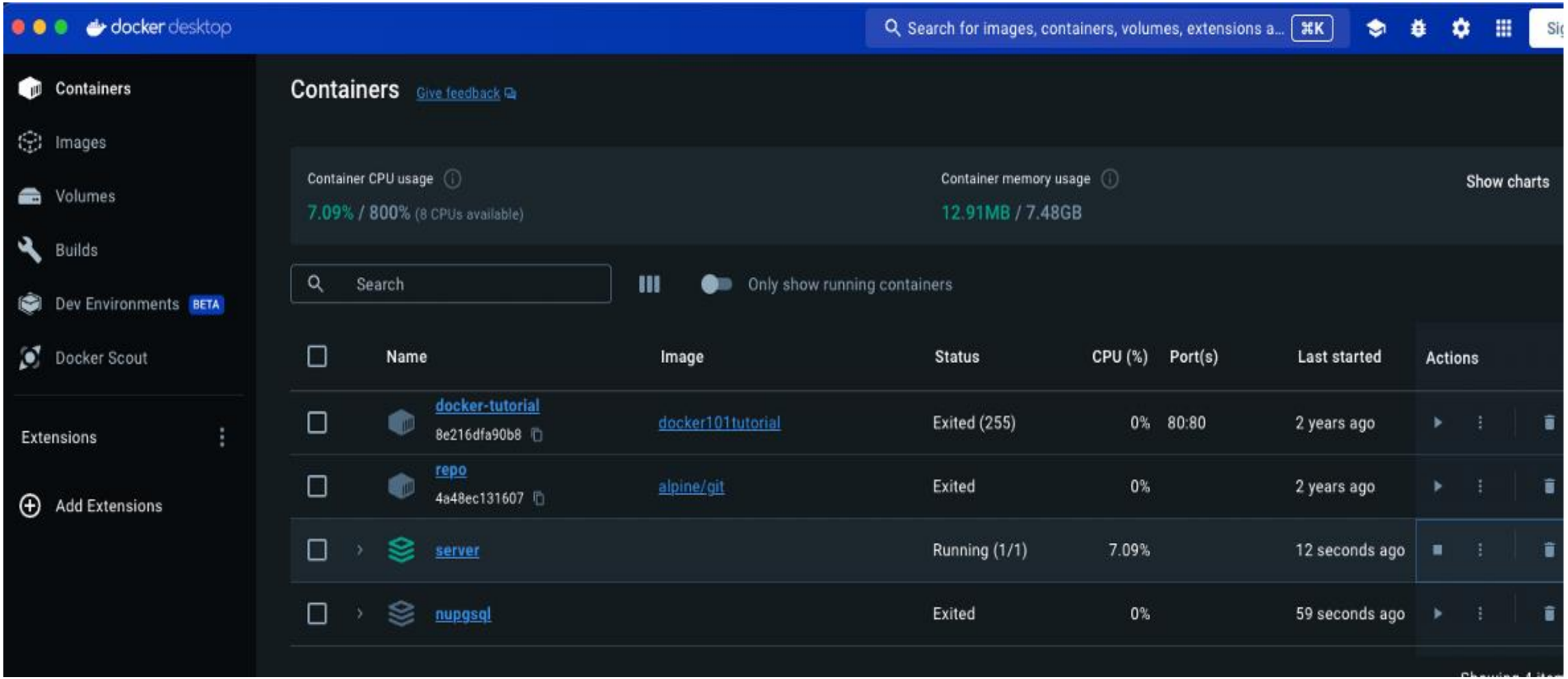
Docker is a way to package software into containers so it can run on any hardware.

How Docker Works



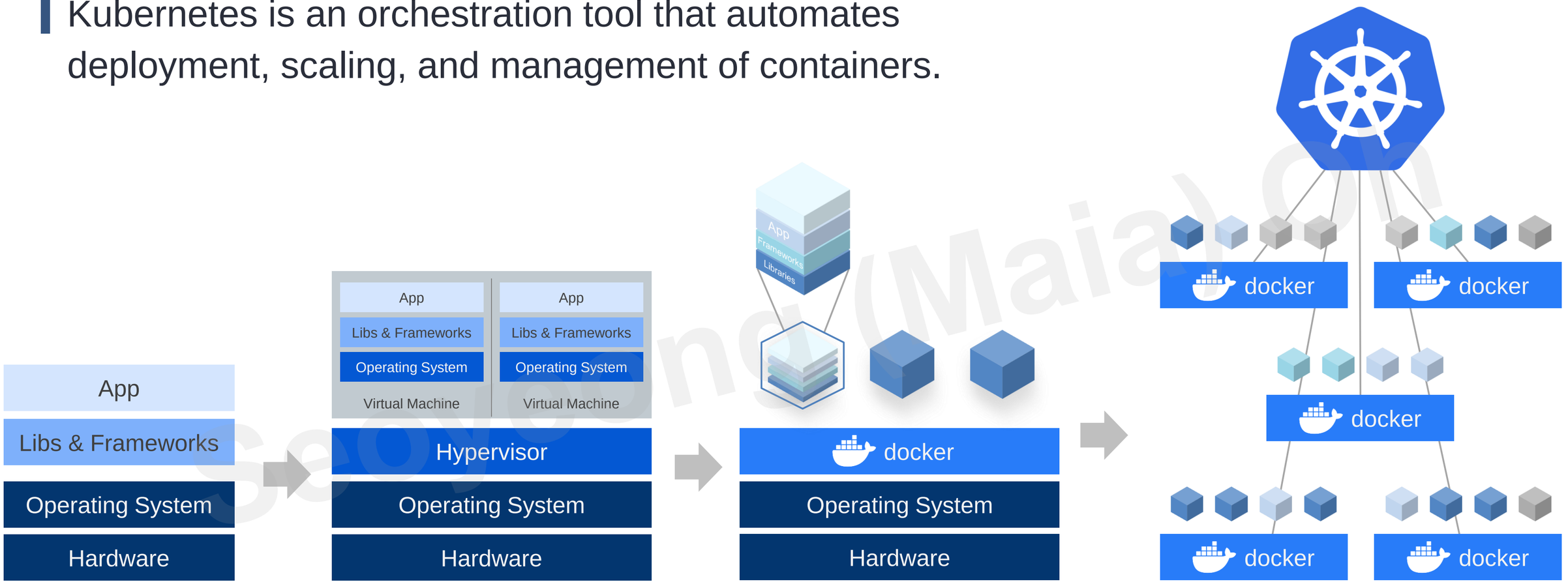
IMG SRC: Medium.com

How Docker Works



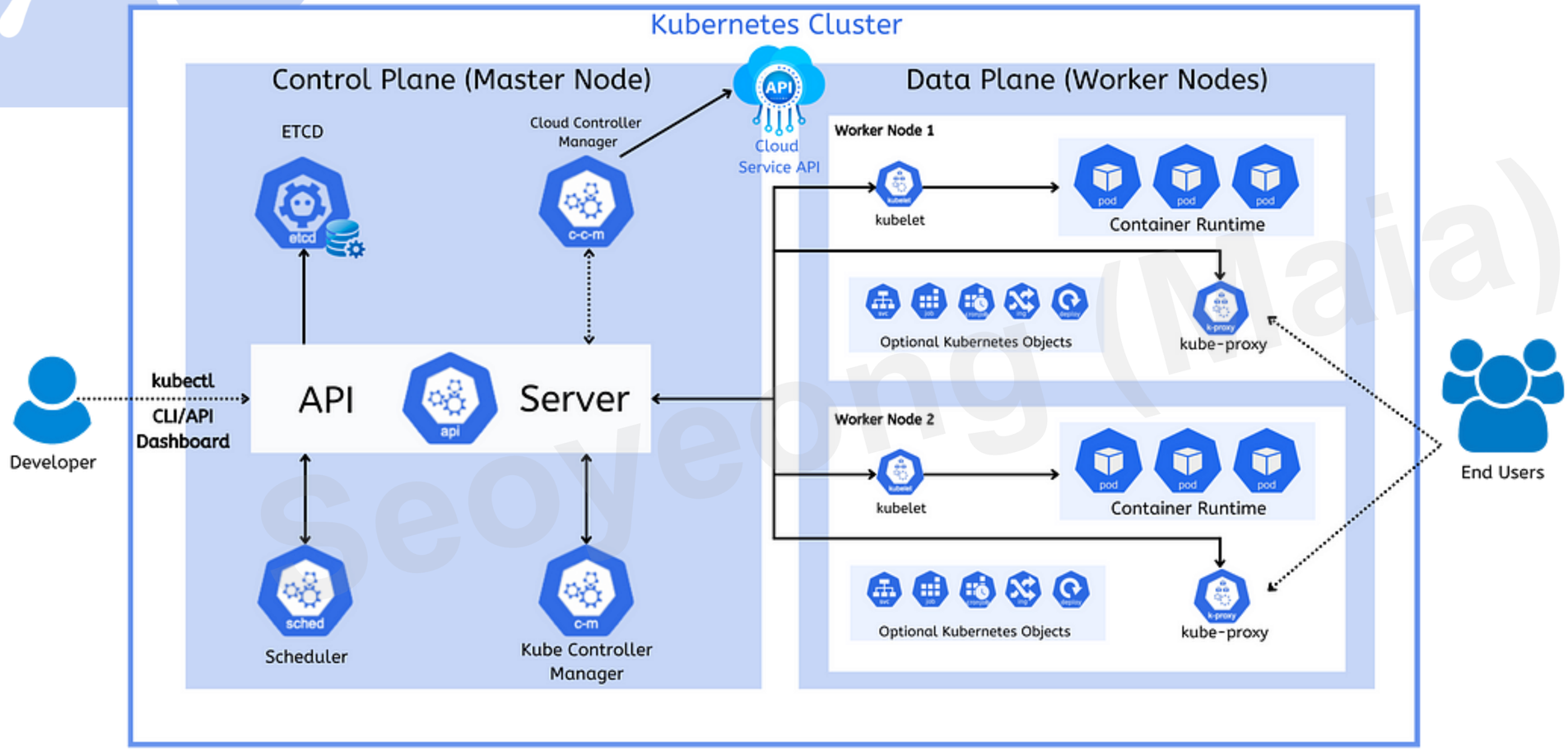
What Is Kubernetes?

Kubernetes is an orchestration tool that automates deployment, scaling, and management of containers.



IMG SRC: medium.com

Key Components of Kubernetes



IMG SRC: Medium.com

Pods
Smallest units that run containers

Nodes
Machines that run pods

Cluster
Group of nodes working together

Control Plane
Manages the cluster, including scheduling and health checks

Pros & Cons of Containerization

Pros

Portability

Efficiency

Consistency

Scalability

Isolation

Cons

Complexity

Debugging

Networking

Container Sprawl

Resource Overhead

Works Cited

- https://blog.risingstack.com/the-history-of-kubernetes/
- https://cloud.google.com/learn/what-is-kubernetes
- https://d2iq.com/blog/brief-history-containers#:~:text=The%20original%20idea%20of%20a,to%20better%20isolate%20application%20code
- https://youtu.be/gAkwW2tuIqE?si=GTzGq3uF_kXuHViH
- https://medium.com/@sakshiinfoway/introduction-to-containerization-docker-and-kubernetes-explained-a3f7c4b4c606

Thank You!

Seoyeong Oh