



Want to Kubernetes? You MUST know Containers!

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Developer Advocate



**DEVOPS
WORLD**
by CloudBees

Agenda

- Intro
- Kubernetes : K8s
- Skill : Sets
- Docker : Decomposed
- Recap



Hi I'm **Angel**

Developer Advocate.

My job is to **inspire**
developers!



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A person is seen from behind, leaning over the side of a boat, looking out at a body of water under a cloudy sky. The image is tinted with a dark blue color. Overlaid on the image is a white diagrammatic structure consisting of a horizontal line with two vertical lines extending downwards from it, each ending in an arrow pointing towards the text 'Kubernetes : K8s'.

Kubernetes : K8s

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why : Kubernetes : ?

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common : reasons

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The background features a dark blue gradient with a large, faint, circular arrow graphic in the center, indicating a continuous cycle. Surrounding this are several circular icons: a group of people (top right), a clipboard with a checklist (middle right), a 3D box (bottom right), and a person icon (bottom left). On the left side, there is a flow diagram with three circular nodes: 'Stakeholders Inputs' at the top, 'Client' at the bottom left, and 'Team' at the bottom middle. Arrows point from 'Stakeholders Inputs' down to 'Client', and from 'Client' to 'Team'.

faster : software
dev : cycles

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cut : infrastructure : costs

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improved : availability : scalability

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Kubernetes : intro

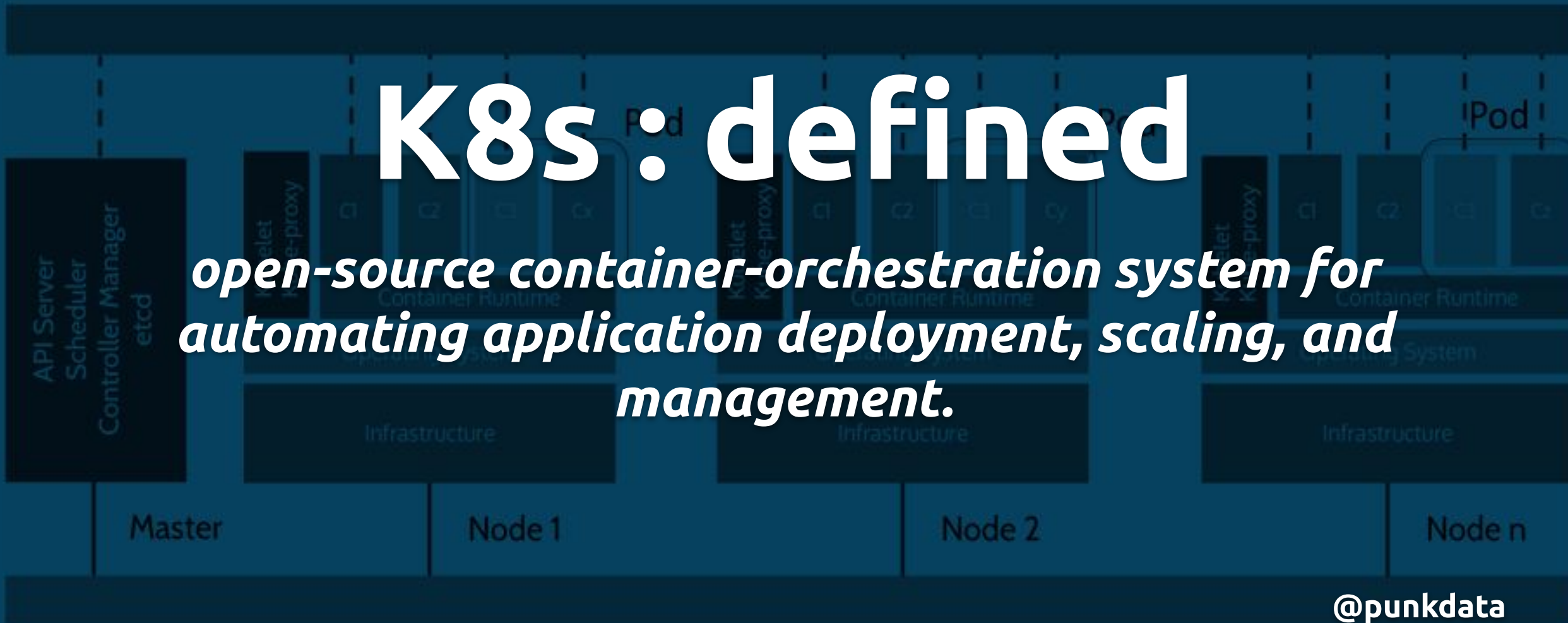
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Kubernetes Architecture

Overlay Network (Flannel/OpenVSwitch/Weave)

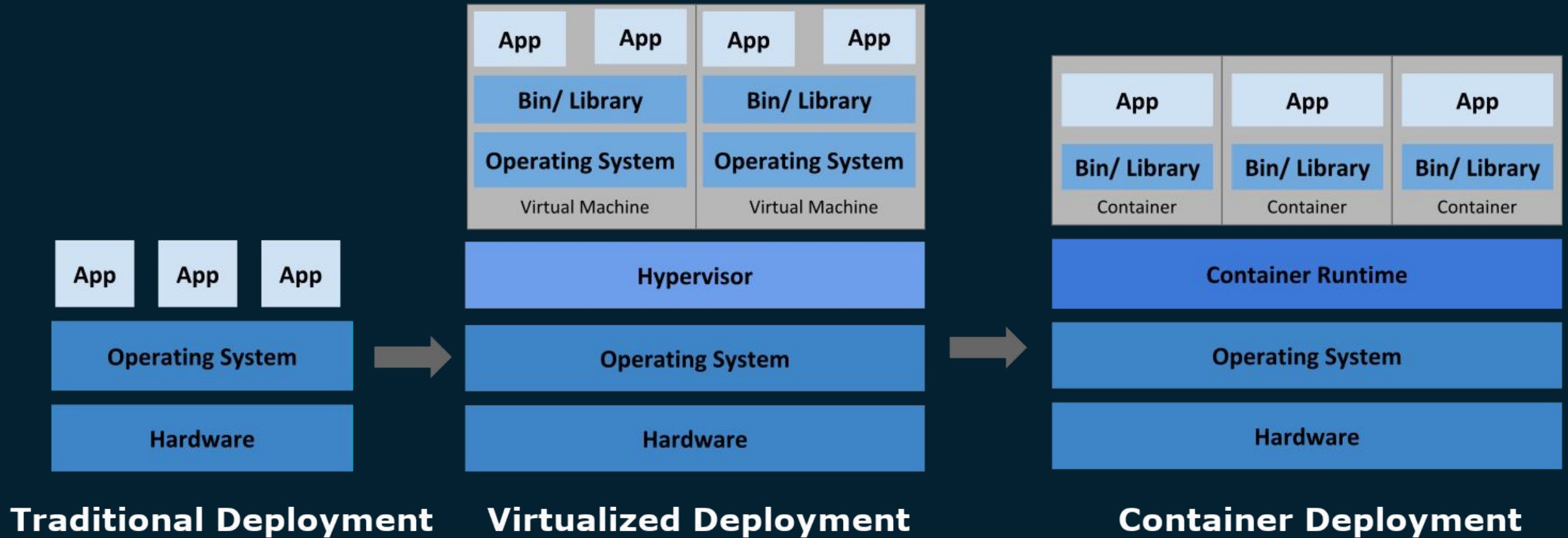
K8s : defined

open-source container-orchestration system for automating application deployment, scaling, and management.



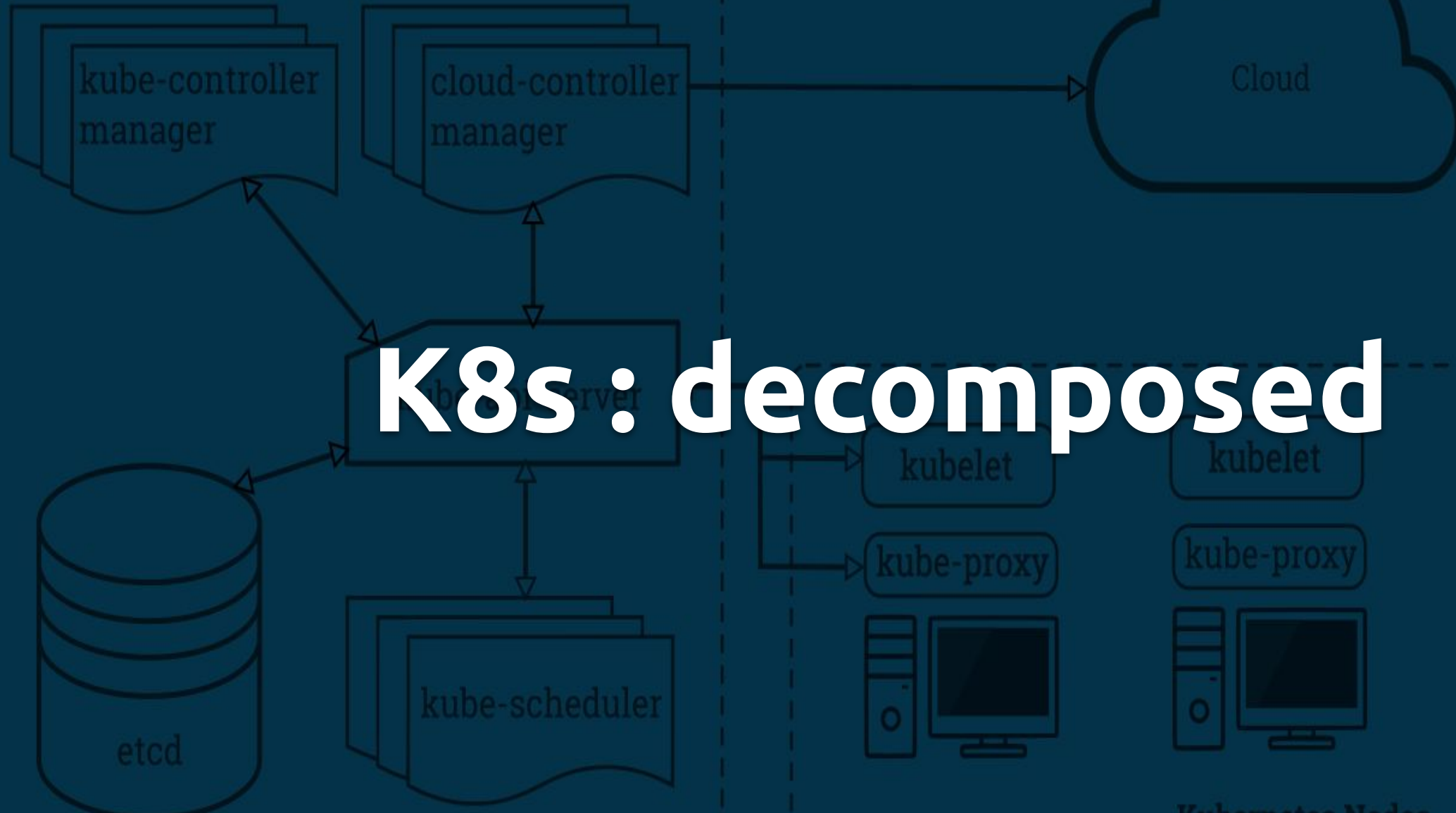
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deployments : evolution



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Kubernetes Control Plane

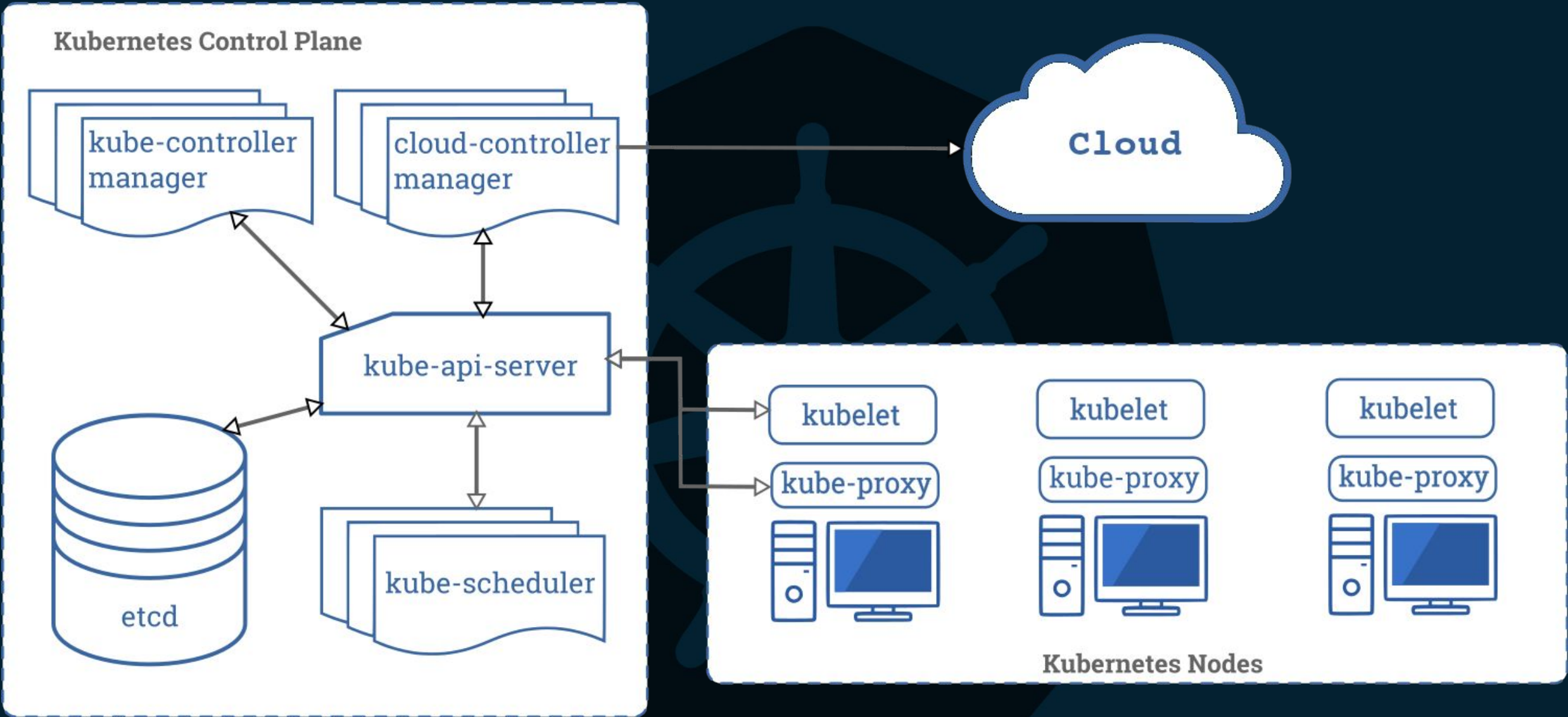


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K8s : cluster

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Primary
node

Worker node

Pod

Container

Container

K8s : Primary : nodes control : plane

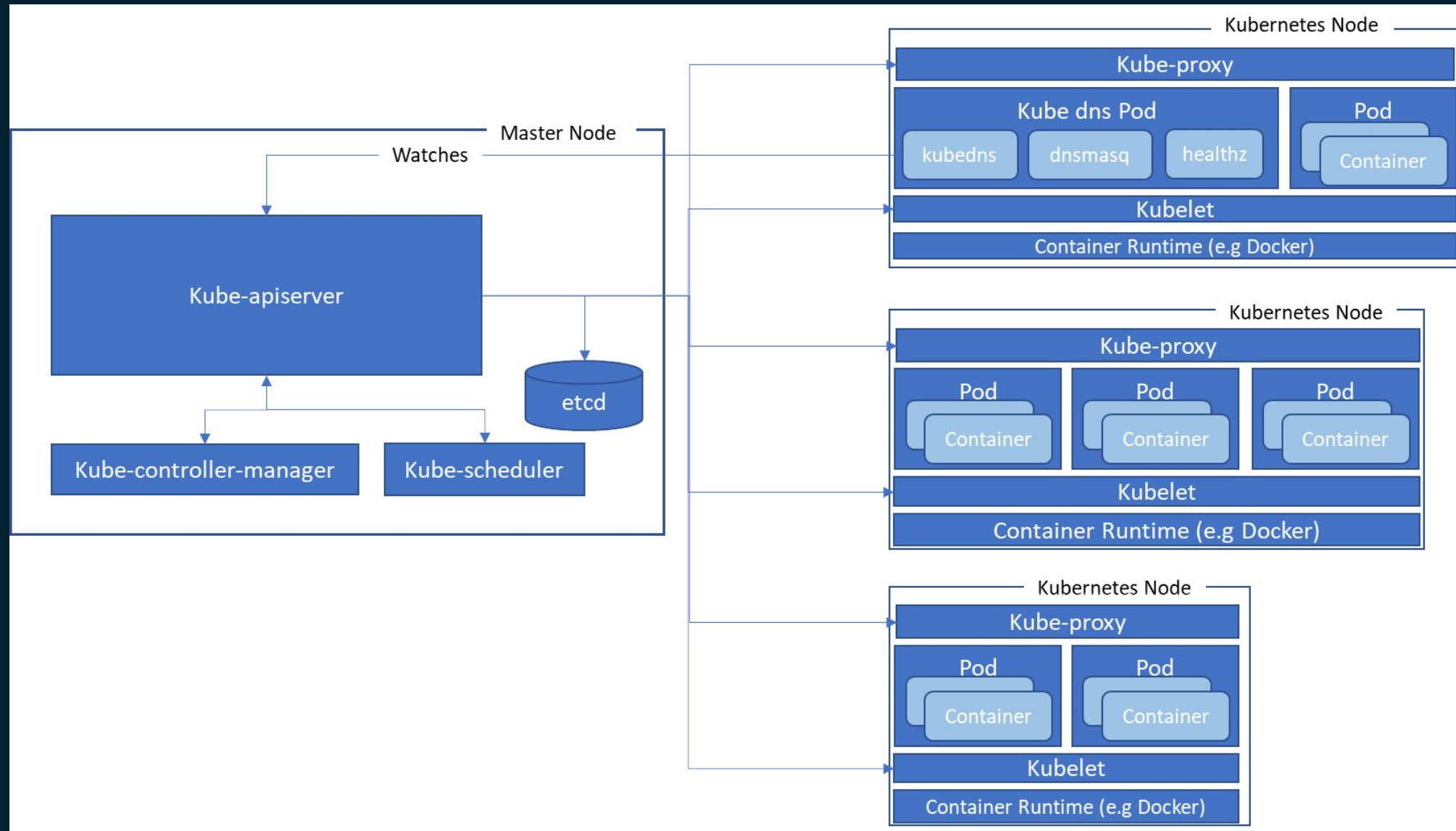
C

Pod

Container

Container

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Primary
node

Worker node

Pod

Container

Container

K8s : worker : nodes

Worker node

Pod

Container

Container

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Primary
node

Worker node

Pod

Container

Container

C

K8s : pods

Worker node

Pod

Container

Container

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K8s : container : runtime

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skill : sets

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ci/cd : devops : practices

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secure : test : build : **deploy**
monitor : iterate

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security : rbac



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networking : fundamentals

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monitoring : logging

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The diagram illustrates a data persistence architecture. At the top, two cloud shapes represent 'Content Manager' and 'Consumers'. Below them, a central circle contains two boxes: 'File Puller' and 'Web Server', each with a gear icon. At the bottom, a cylinder represents 'Volume'. Arrows show data flow from the Content Manager to the File Puller, from the File Puller to the Volume, from the Volume to the Web Server, and from the Web Server to the Consumers. There is also a feedback arrow from the Consumers back to the Content Manager.

persistence : storage

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application : programming : interfaces API(s)

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yaml

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infrastructure : as : code

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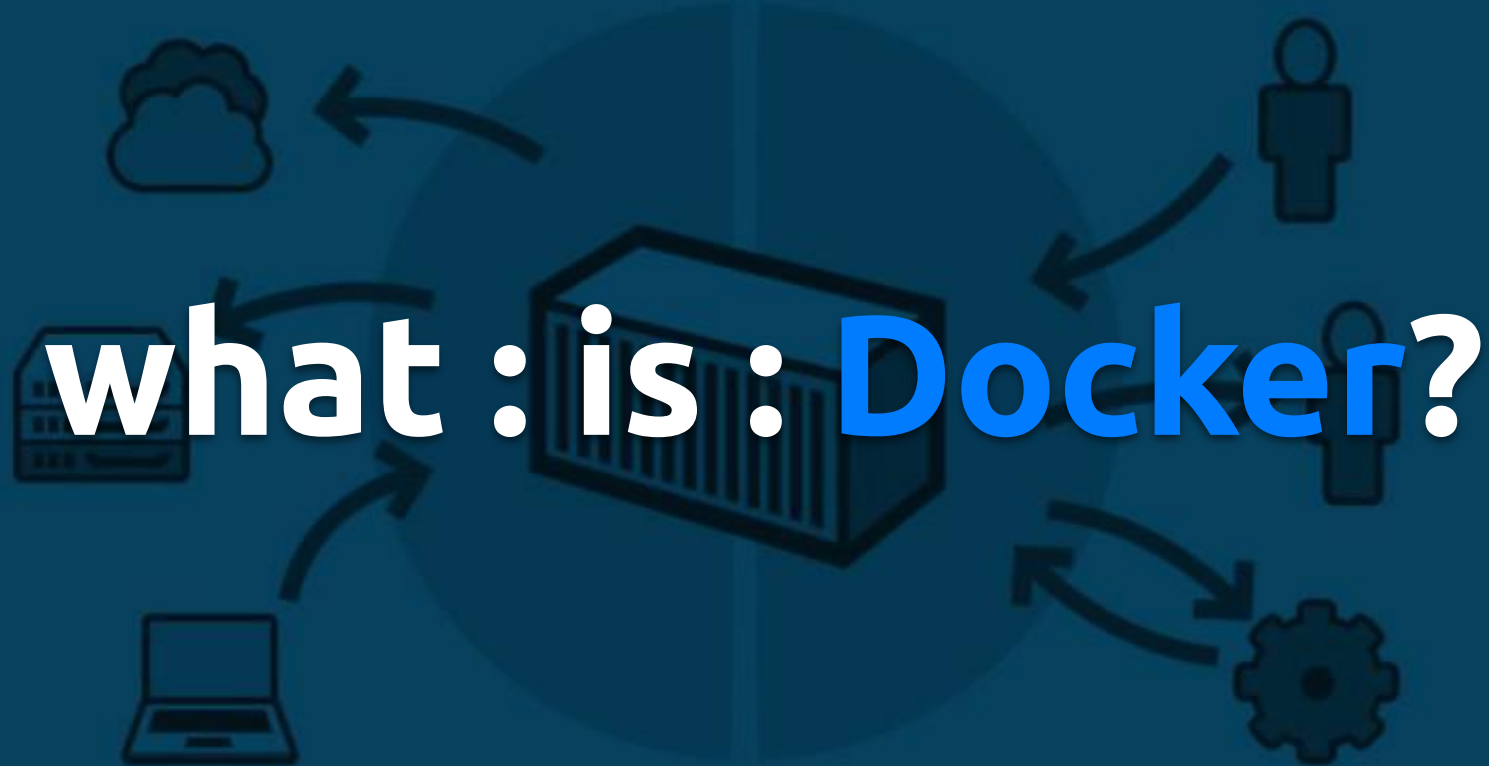


deep : understanding : containers

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What Is Docker?

An open platform for distributed applications



Docker Engine

A portable, lightweight application runtime and packaging tool.

Docker Hub

A cloud service for sharing and automating workflows.

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Docker is a platform for developers and sysadmins to develop, deploy, and run applications using containers.

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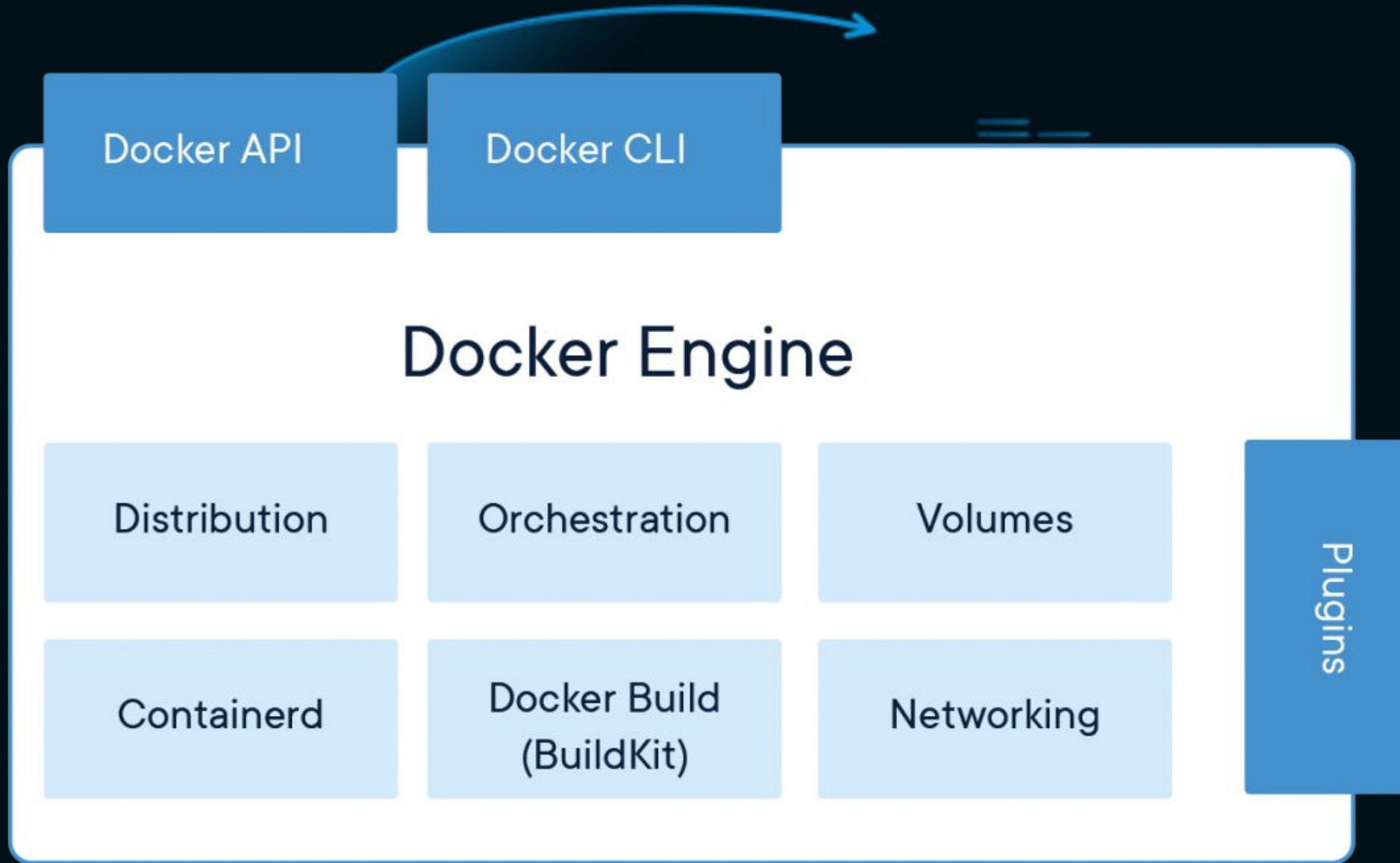
docker : decomposed

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docker : engine

The background is a dark blue gradient with stylized illustrations. In the center, there is a tall server rack with four units. To the right, a person with glasses and a bun is holding a tablet. Below the server rack, there is a large gear icon. The overall theme is DevOps and cloud computing.

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The background features a dark blue gradient. On the left, a stylized white whale is depicted, carrying a stack of four blue container units on its back. On the right, a dark silhouette of a port crane is shown lifting a blue container. Several other stacks of blue containers are positioned around the crane and whale. The text 'docker : images' is centered in a large, white, sans-serif font.

docker : images

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docker : build

SEARCH



Innovation
Branding
Solution
Marketing
Analysis
Ideas
Success
Management

Logistics



INDUSTRY

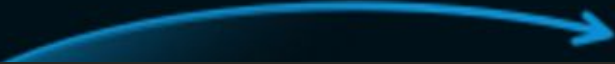
Manufacturing
Supply chain
Product
Cargo
Customer
Delivery
Inventory
Management
Freight

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The background is a dark blue illustration. In the center, a large whale is depicted, its body composed of various colored shipping containers. The whale is swimming towards the left, with a small blue eye and a curved tail. In the background, a city skyline is visible, featuring several buildings, including a prominent one with a pointed roof. The sky is dark blue with a few white clouds. The water is dark blue with small white waves.

docker : build : Dockerfile

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```
FROM node:12
```

```
# Create app directory  
WORKDIR /usr/src/app
```

```
# Install app dependencies  
# A wildcard is used to ensure both package.json AND package-lock.json are copied  
# where available (npm@5+)  
COPY package*.json ./
```

```
RUN npm install --only=production  
# If you are building your code for production  
# RUN npm install --only=production
```

```
# Bundle app source  
COPY . .
```

```
EXPOSE 5000  
CMD [ "npm", "start" ]
```



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demo : docker : build

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docker : containers

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demo : docker : run

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container : deployments

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recap : docker : **images**

- **docker pull** : downloads image from Docker repository
- **docker images** : lists Docker images found locally
- **docker build** : creates a Docker image from Dockerfile
- **Dockerfile** : stops an existing container
- **docker rmi** : deletes Docker images

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recap : docker : containers

- `docker ps` : lists running Docker containers.
- `docker rm` : deletes containers
- `docker start` : starts an existing container
- `docker stop` : stops an existing container
- `docker run` : runs a command in a new container
- `docker logs` : fetches a container's logs

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skill : sets : K8s

- ci/cd : devops : practices
- security : rbac
- networking : fundamentals
- monitoring : logging
- persistence : storage
- application : programming : interfaces
- yaml
- infrastructure : as : code
- deep : understanding : containers

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developer : K8s : resources

docker : <https://docs.docker.com/>

microk8s : <https://microk8s.io/>

minikube : <https://kubernetes.io/docs/tasks/tools/install-minikube/>

community : <https://kubernetes.io/community/>

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thank : you

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