

DT/NT : DT

LESSON : DevOps

SUBJECT: Docker 3
Network

BATCH: 149

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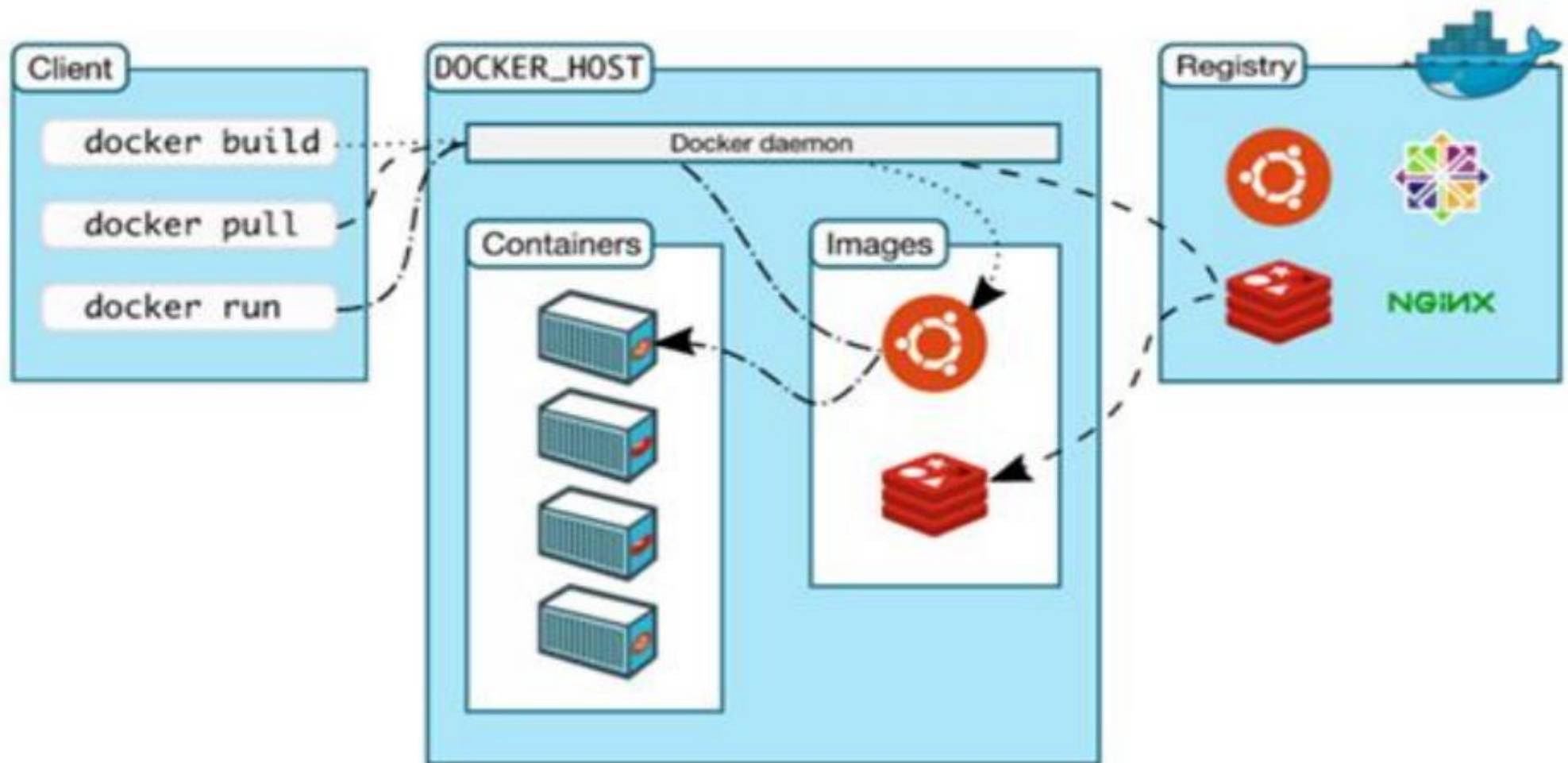
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Docker Architecture



Docker Networking



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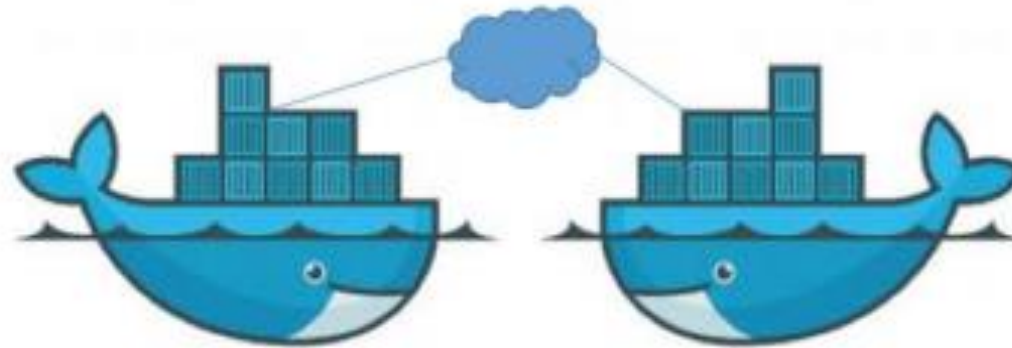
Networking overview

A **network** is two or more computer systems linked together by some form of the transmission medium.



Networking overview

- One of the reasons Docker containers and services are so powerful is that you can connect them together, or connect them to non-Docker workloads.
- Whether your Docker hosts run Linux, Windows, or a mix of the two, you can use Docker to manage them in a platform-agnostic way.

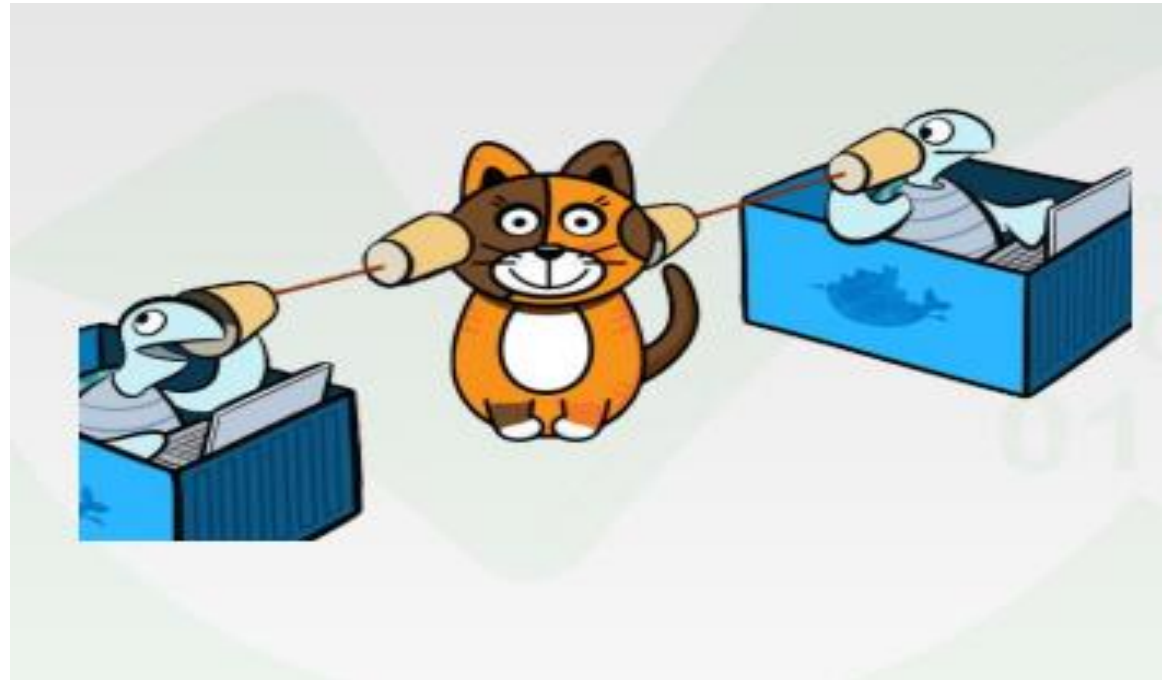


Docker networks

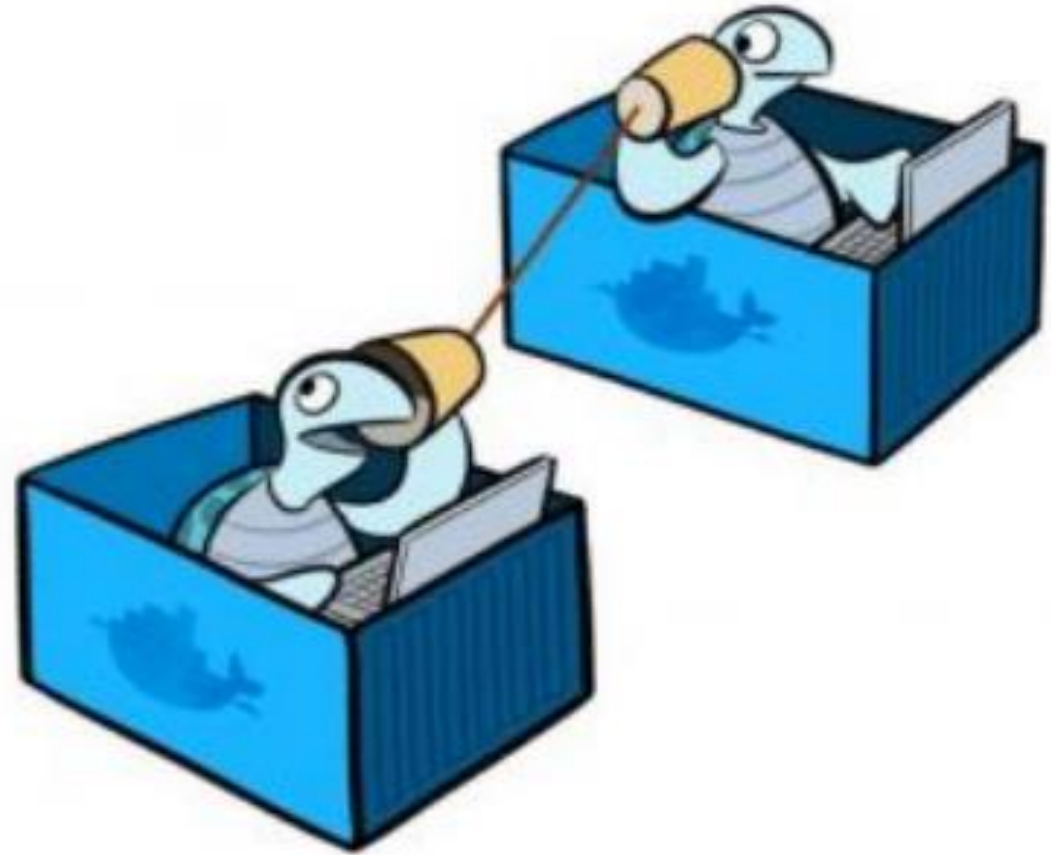
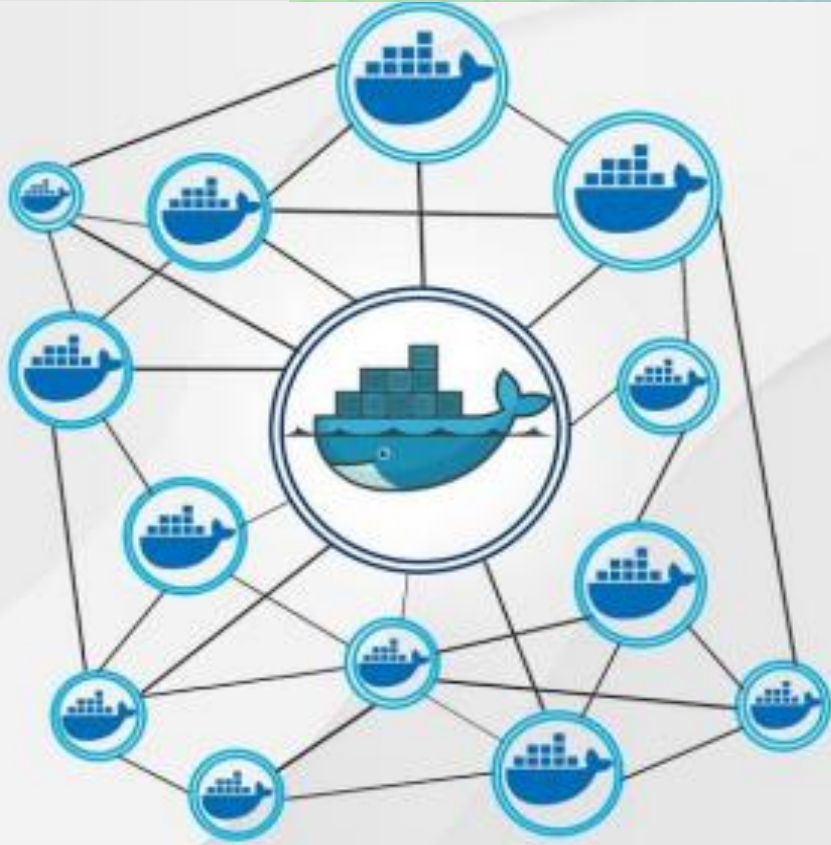
Network drivers

As default, docker has three network drivers.

- ❑ Bridge
- ❑ Host
- ❑ none

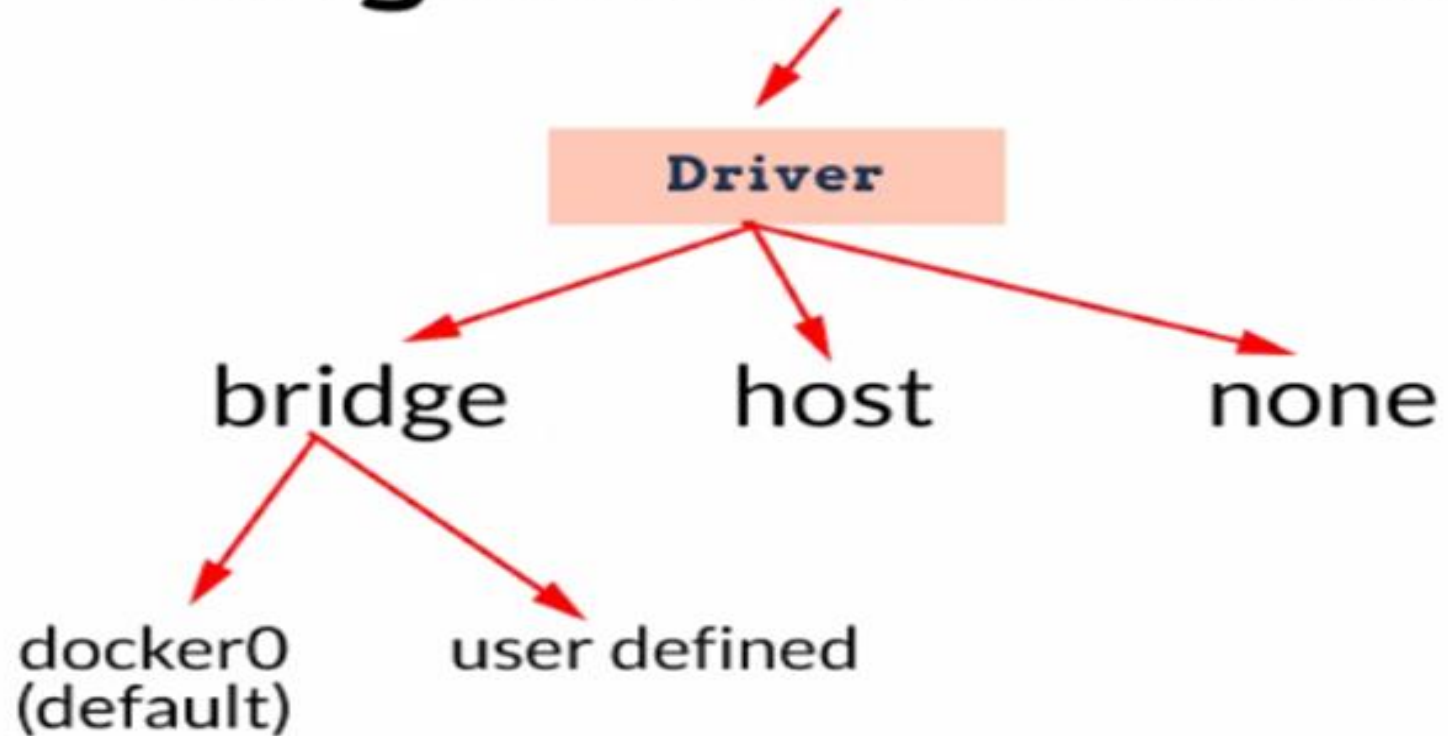


Docker Networking



As default, docker has three network drivers.

Single Host Networking

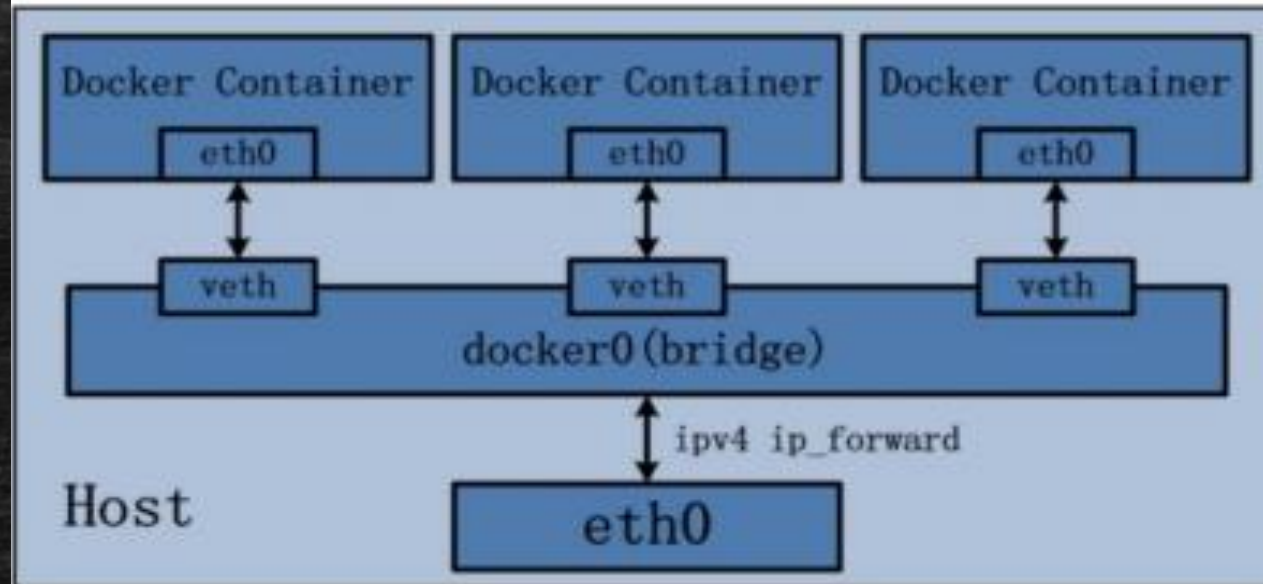


Network drivers

- ❑ **bridge** is the private default network driver. If we don't specify a driver, this is the type of network we are creating.
- ❑ When we install the docker, the Docker daemon creates virtual ethernet bridge **dockero** that performs the operation by automatically delivering packets among various network interfaces.

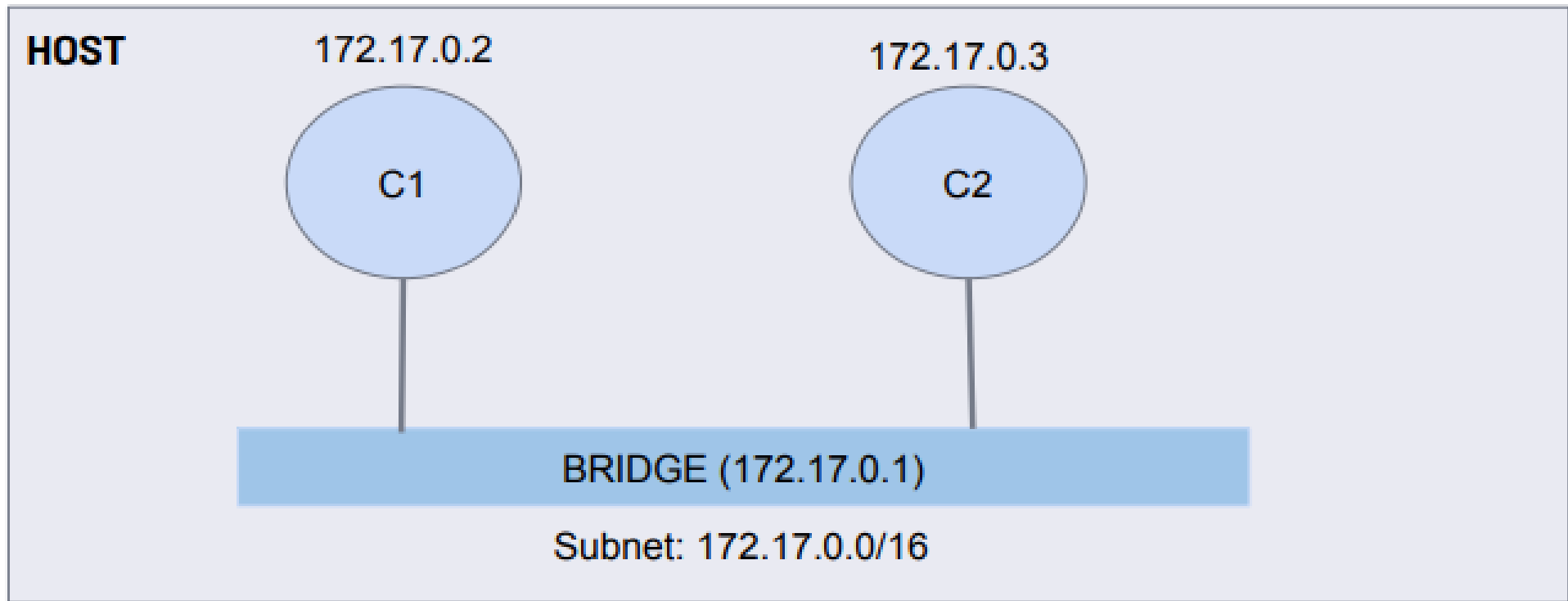
Varsayılan olan driverdır. Network objesi yaratılırken özellikle başka bir driver belirtilmezse bridge driver ile network yaratılır.

Her Docker kurulu host üstünde bridge driver ile yaratılmış "Bridge" adında bir network bulunur ve container yaratıldığında aksi belirtilmediği sürece varsayılan olarak buna bağlanır.



Network drivers

- When we create containers, it will automatically attach to the bridge driver.

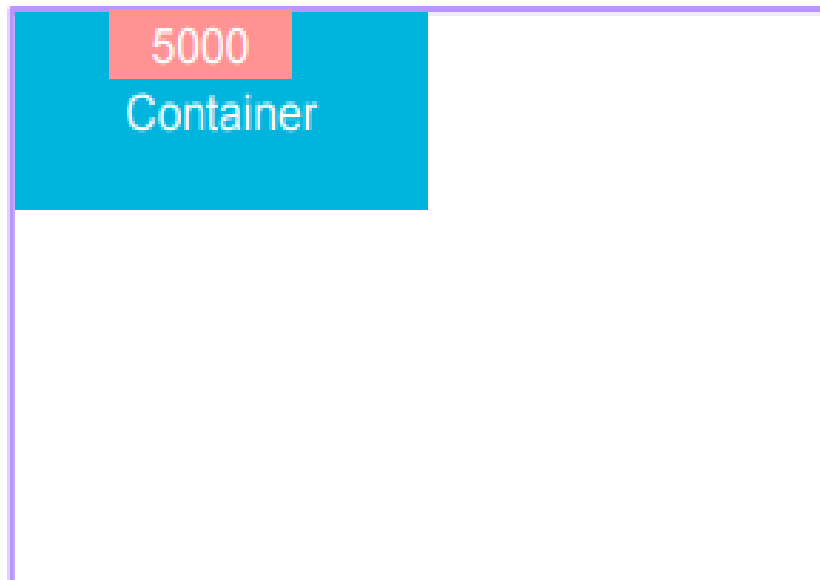


- ❑ **Host** removes network isolation between the docker host and docker containers. It uses the host's networking directly.
- ❑ Host networks are best when the network stack should not be isolated from the Docker host, but we want other aspects of the container to be isolated.

Her sistemde host driver ile yaratılmış "Host" adından bir network bulunur.

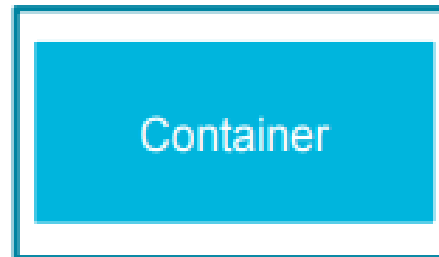
Bu network'e bağlı container'da network izolasyonu olmaz. Sanki o host üstünde çalışan bir process gibi host'un ağ kaynaklarını kullanır.

Docker Host



- ❑ **None** network driver disable all networking of containers.
- ❑ **None** network driver will not configure any IP for the container and doesn't have any access to the external network as well as for other containers.
- ❑ It is used when a user wants to block the networking access to a container.

Docker Host



NONE

Container hiçbir şekilde ağ bağlantısına sahip olmasın istenirse bu driver ile yaratılan network'e bağlanır.

Run - Port mappings

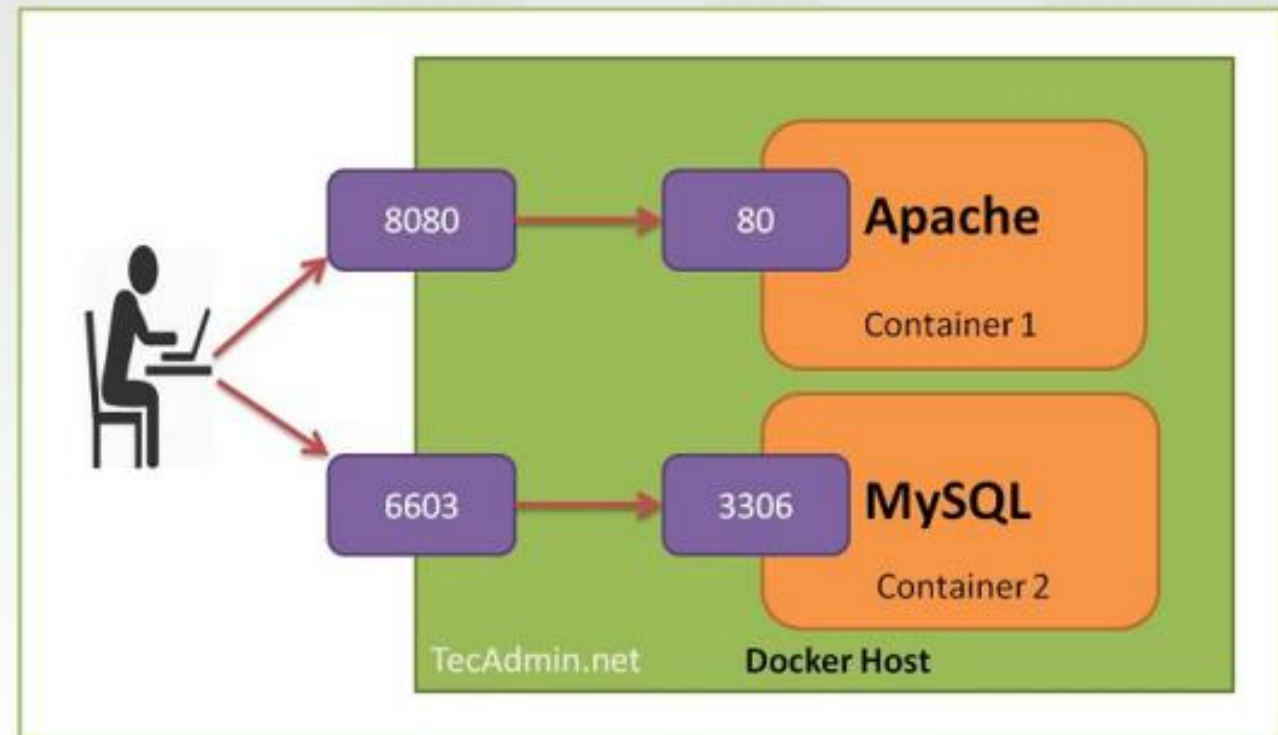
By default, when you create a container, it does not publish any of its ports to the outside world. To make a port available to services outside of Docker, or to Docker containers which are not connected to the container's network, use the **--publish** or **-p** flag.

```
-p host_port : container_port
```

Run – Port Mappings

```
$ docker run -d -p 8080:80 apache_image
```

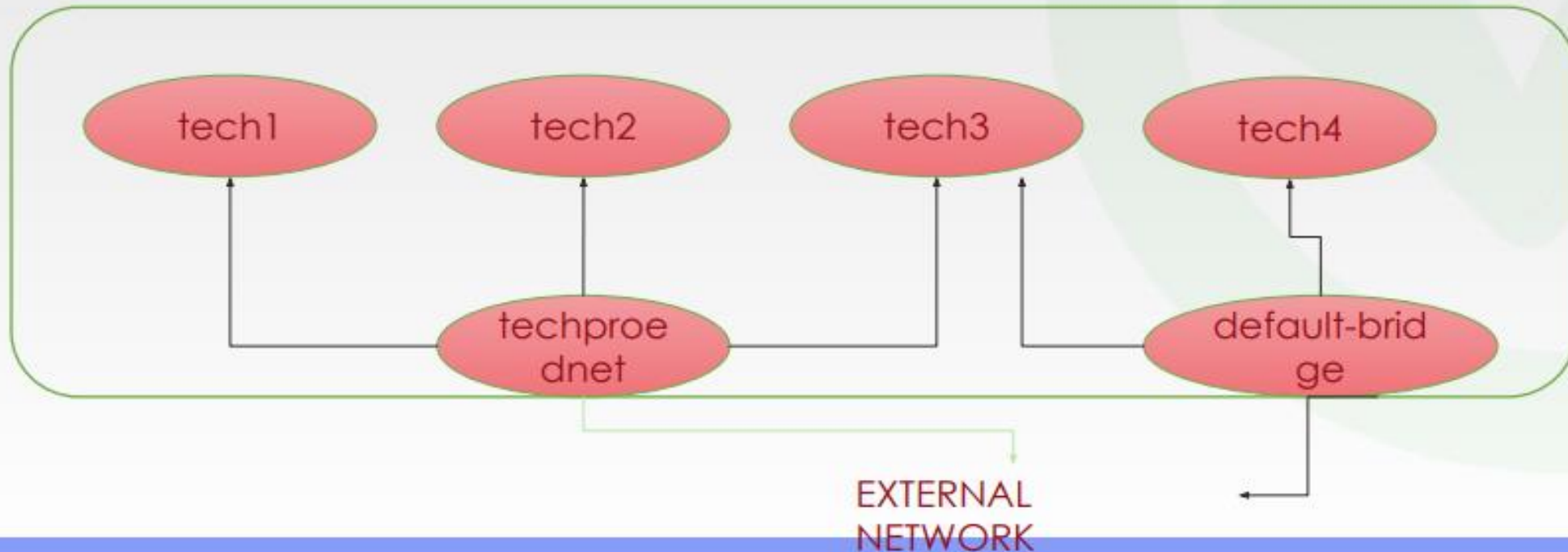
```
$ docker run -d -p 6603:3306 mysql_image
```



User-defined Networks

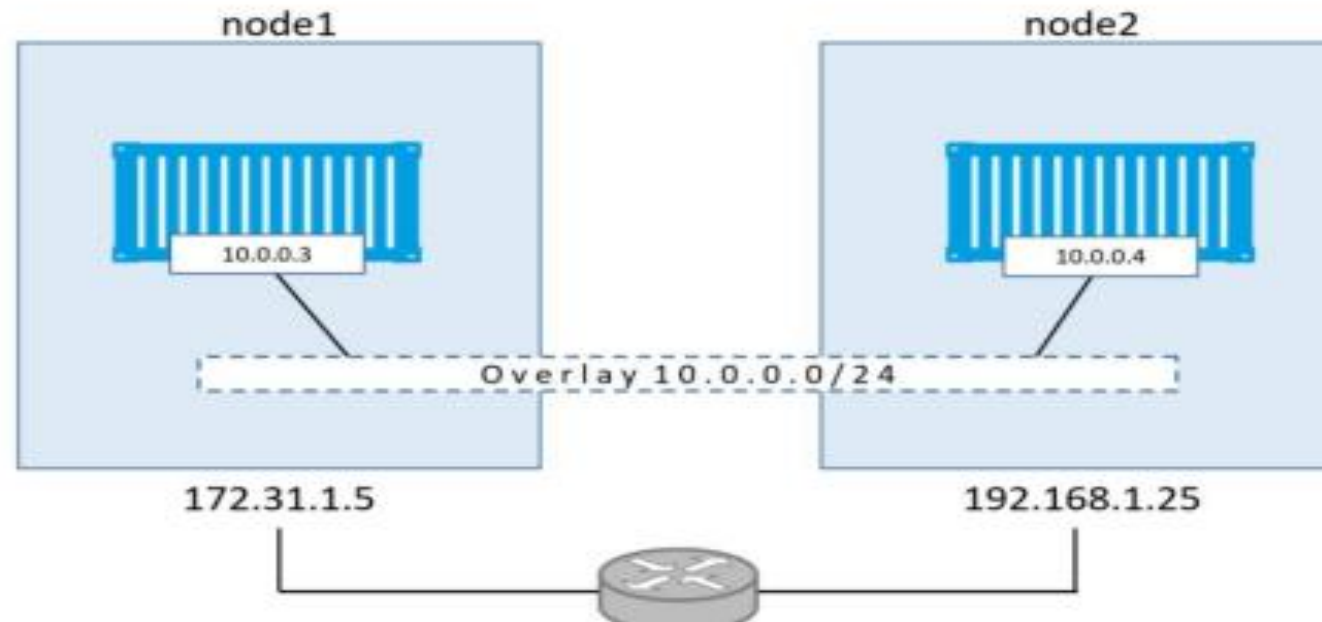
In addition to the default networks, users can create their own networks called user-defined networks of any network driver type.

\$ docker network create --driver bridge techproednet



Network drivers

- **Overlay** networks connect multiple Docker daemons together and enable swarm services to communicate with each other.



Overlay Network (Örtü Ağı): Overlay ağları, Docker konteynerlerinin farklı Docker ana bilgisayarları arasında iletişim kurabilmesini sağlar. Bu, çoklu Docker ana bilgisayarlarından oluşan bir Docker Swarm kümesi veya Kubernetes gibi bir orkestrasyon platformu kullanırken faydalıdır.

Network drivers

- ❑ **Macvlan** networks allow you to assign a MAC address to a container, making it appear as a physical device on your network.
- ❑ Using the macvlan driver is sometimes the best choice when dealing with legacy applications that expect to be directly connected to the physical network, rather than routed through the Docker host's network stack.

Macvlan Network (Macvlan Ağı): Bu ağ türü, Docker konteynerlerine fiziksel ağ arayüzleri gibi davranan MAC adresleri ve IP adresleri atanmasını sağlar. Bu şekilde, Docker konteynerleri, fiziksel ağa bağlı gibi davranabilirler.

Network drivers

- ❑ **Network plugins:** We can install and use third-party network plugins with Docker. These plugins are available from Docker Hub or from third-party vendors.
- ❑ Third-party network plugins allow us to integrate Docker with specialized network stacks.

docker network Commands

Command	Description
<u>docker network connect</u>	Connect a container to a network
<u>docker network create</u>	Create a network
<u>docker network disconnect</u>	Disconnect a container from a network
<u>docker network inspect</u>	Display detailed information on one or more networks
<u>docker network ls</u>	List networks
<u>docker network prune</u>	Remove all unused networks
<u>docker network rm</u>	Remove one or more networks