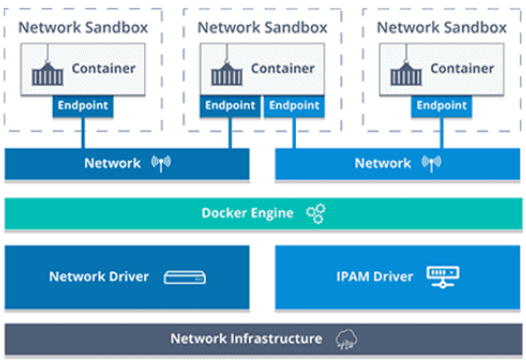
NETWORKING

GABRIEL ELIAS GIMENES



Docker Networking
For
Beginners

PASO 1:
Vamos a lanzar un contenedor:

```
root@UbuntuServ:/home/vboxuser# docker run -d -p --name web httpd
docker: invalid containerPort: --name

Run 'docker run --help' for more information
root@UbuntuServ:/home/vboxuser# docker run -d -P --name web httpd
99f4f796458bf178df78e6a46d14c56d7d80c802a9581d9302ee1d732112f3bb
root@UbuntuServ:/home/vboxuser#
```

Vamos a comprobarlo:

```
Run 'docker run --help' for more information
root@UbuntuServ:/home/vboxuser# docker run -d -P --name web httpd
99f4f796458bf178df78e6a46d14c56d7d80c802a9581d9302ee1d732112f3bb
root@UbuntuServ:/home/vboxuser# docker ps
CONTAINER ID   IMAGE     COMMAND              CREATED          STATUS          PORTS                                     NAMES
99f4f796458b   httpd     "httpd-foreground"   24 seconds ago   Up 23 seconds   0.0.0.0:32768->80/tcp, [::]:32768->80/tcp   web
root@UbuntuServ:/home/vboxuser# docker images
                                                                                                                  Info →  U  In Use
IMAGE                                ID             DISK USAGE   CONTENT SIZE   EXTRA
aboraas/apache:latest                c7c5d67f9f65       392MB          102MB    U
gabrieg/apache-passenger:latest      a8618322d329       294MB         80.5MB
gelias/apache-passenger:latest       b79032f45be8       294MB         80.5MB
gelias/apache-passenger:v1           227e1192d706       479MB          130MB    U
gelias/apache-passenger:v2           3f21cdcde0a1       487MB
```

PASO 2:
Vamos a inspeccionar nuestra imagen con docker inspect web:


```
                    "HostPort": "32768"
                },
                {
                    "HostIp": "::",
                    "HostPort": "32768"
                }
            ]
        },
        "Networks": {
            "bridge": {
                "IPAMConfig": null,
                "Links": null,
                "Aliases": null,
                "DriverOpts": null,
                "GwPriority": 0,
                "NetworkID": "32bb4d8cae2352ceea80dd5461b7b0ba64f4f8e55478056eaa91c1463b8b12d",
                "EndpointID": "ec3230d98807c6e7409397c466127
                "Gateway": "172.17.0.1",
                "IPAddress": "172.17.0.2",
                "MacAddress": "a2:7d:a9:3f:65:89",
                "IPPrefixLen": 16,
                "IPv6Gateway": "",
                "GlobalIPv6Address": "",
                "GlobalIPv6PrefixLen": 0,
                "DNSNames": null
            }
        }
    },
    "ImageManifestDescriptor": {
        "mediaType": "application/vnd.oci.image.manifest.v1+json",
        "digest": "sha256:d17906bc35fb0527e64cf6410704e94cb9cb4657ce690a107cd5b56943ff9eb0",
        "size": 2093,
        "annotations": {
            "com.docker.official-images.bashbrew.arch": "amd64",
            "org.opencontainers.image.base.digest": "sha256:ef514b33e858a6ddd5a2af2b50f08f7ff2e43726a14d5f53bdb1d75220dfa5fb",
            "org.opencontainers.image.base.name": "debian:trixie-slim",
            "org.opencontainers.image.created": "2026-01-13T01:20:52Z",
            "org.opencontainers.image.revision": "b8bf24dec3fb94efd3d81ac495bea8247d5115d9",
            "org.opencontainers.image.source": "https://github.com/docker-library/httpd.git#b8bf24dec3fb94efd3d81ac495bea8247d5115d9:2.4",
            "org.opencontainers.image.url": "https://hub.docker.com/_/httpd",
            "org.opencontainers.image.version": "2.4.66"
        },
        "platform": {
            "architecture": "amd64",
            "os": "linux"
        }
    }
}
]
root@UbuntuServ:/home/vboxuser#
```

PASO 3:
Ahora hemos hecho un inspector de nuestro network bridge

Ahora vamos a crear otro network bridge usando docker network create y el tipo es bridge

Ahora veremos si se ha creado con docker network ls

Ahora lo que hemos hecho es hacer un inspect de nuestra red creada

```
root@UbuntuServ:/home/vboxuser# docker network ls
NETWORK ID     NAME         DRIVER    SCOPE
32bb4d8cae23   bridge       bridge    local
f465bcd92eb5   host         host      local
b8c0e50ce5c9   miRedLocal   bridge    local
7e76199d8b9e   none         null      local
root@UbuntuServ:/home/vboxuser# docker network inspect miRedLocal
[
    {
        "Name": "miRedLocal",
        "Id": "b8c0e50ce5c95537d4c54667ca7ffd0dbd2093051b74e7fe4365dda26abf03d4",
        "Created": "2026-01-22T11:53:56.7252526212",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv4": true,
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "IPRange": "",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Options": {},
        "Labels": {},
        "Containers": {},
        "Status": {
            "IPAM": {
                "Subnets": {
                    "172.18.0.0/16": {
                        "IPsInUse": 3,
                        "DynamicIPsAvailable": 65533
                    }
                }
            }
        }
    }
]
root@UbuntuServ:/home/vboxuser#
```


PASO 4:

Ahora vamos a crear otro contenedor para que se conecte a nuestra red creada

```
root@UbuntuServ:/home/vboxuser# docker run -d --network=miRedLocal --name web1 httpd
b42605eb17cc0202da07f938e8dab46857ed487b8199a04398b2e34154af5405
root@UbuntuServ:/home/vboxuser#
```

Ahora hemos hecho un inspect sobre nuestra imagen para ver a la ip que está conectada

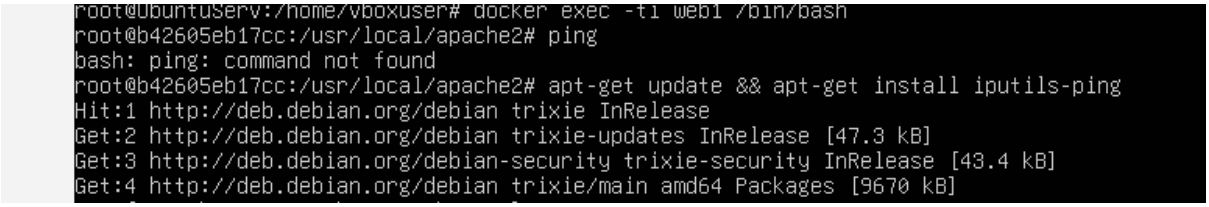
```
            "SandboxID": "a0261a89542e12be6279d6fb249e4526added9dce1c49ad5f3358a5489cce9cc",
            "SandboxKey": "/var/run/docker/netns/a0261a89542e",
            "Ports": {
                "80/tcp": null
            },
            "Networks": {
                "miRedLocal": {
                    "IPAMConfig": null,
                    "Links": null,
                    "Aliases": null,
                    "DriverOpts": null,
                    "GwPriority": 0,
                    "NetworkID": "b8c0e50ce5c95537d4c54667ca7ffd0dbd2093051b74e7fe4365dda26abf03d4",
                    "EndpointID": "15288180a9bb8f71f0dcc9d8458e9cf6d67499a59037b149537c0880f3c68929",
                    "Gateway": "172.18.0.1",
                    "IPAddress": "172.18.0.2",
                    "MacAddress": "3a:95:da:21:8d:46",
                    "IPPrefixLen": 16,
                    "IPv6Gateway": "",
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
                    "DNSNames": [
                        "web1",
                        "b42605eb17cc"
                    ]
                }
            }
        },
        "ImageManifestDescriptor": {
            "mediaType": "application/vnd.oci.image.manifest.v1+json",
            "digest": "sha256:d17906bc35fb0527e64cf6410704e94cb9cb4657ce690a107cd5b56943ff9eb0",
            "size": 2093,
            "annotations": {
                "com.docker.official-images.bashbrew.arch": "amd64",
                "org.opencontainers.image.base.digest": "sha256:ef514b33e858a6ddd5a2af2b50f08f7ff2e43726a14d5f53bdb1d75220dfa5fb",
                "org.opencontainers.image.base.name": "debian:trixie-slim",
                "org.opencontainers.image.created": "2025-01-13T01:20:52Z",
                "org.opencontainers.image.revision": "b8bf24dec3fb94efd3d81ac495bea8247d5115d9",
                "org.opencontainers.image.source": "https://github.com/docker-library/httpd.git#b8bf24dec3fb94efd3d81ac495bea8247d5115d9:2.4",
                "org.opencontainers.image.url": "https://hub.docker.com/_/httpd",
                "org.opencontainers.image.version": "2.4.66"
            },
            "platform": {
                "architecture": "amd64",
                "os": "linux"
            }
        }
    }
]
root@UbuntuServ:/home/vboxuser#
```

Ahora hemos creado otra imagen llamada web2 para ver a qué ip se conecta pero sin especificar en qué red se conecta

PASO 6:
Ahora vamos a abrir sesion en web1 con docker exec -ti web1 /bin/bash

Ahora hacemos ping

Nos da error ya que no tenemos el comando ping l,o tenemos que instalar con apt-get update && apt-get install iputils-ping



PASO 7:
Para que se puedan ver ambos containers, hay que conectar sus redes. Para ello vamos a conectar web2 a miRedLocal con el comando docker network connect miRedLocal web2.

```
Setting up iputils-ping (3:20240905-3) ...
root@b42605eb17cc:/usr/local/apache2# exit
exit
root@UbuntuServ:/home/vboxuser# docker network connect miRedLocal web2
root@UbuntuServ:/home/vboxuser#
```

Ahora con docker inspect web2 probaremos que es accesible

Ahora lo comprobaremos haciendo un ping a la ip

```
]
root@UbuntuServ:/home/vboxuser# ping 172.17.0.3
PING 172.17.0.3 (172.17.0.3) 56(84) bytes of data.
64 bytes from 172.17.0.3: icmp_seq=1 ttl=64 time=0.179 ms
64 bytes from 172.17.0.3: icmp_seq=2 ttl=64 time=0.058 ms
64 bytes from 172.17.0.3: icmp_seq=3 ttl=64 time=0.070 ms
64 bytes from 172.17.0.3: icmp_seq=4 ttl=64 time=0.314 ms
64 bytes from 172.17.0.3: icmp_seq=5 ttl=64 time=0.048 ms
64 bytes from 172.17.0.3: icmp_seq=6 ttl=64 time=0.098 ms
64 bytes from 172.17.0.3: icmp_seq=7 ttl=64 time=0.042 ms
64 bytes from 172.17.0.3: icmp_seq=8 ttl=64 time=0.083 ms
```