Docker - Networking

Docker takes care of the networking aspects so that the containers can communicate with other containers and also with the Docker Host. If you do an **ifconfig** on the Docker Host, you will see the Docker Ethernet adapter. This adapter is created when Docker is installed on the Docker Host.

```
demo@ubuntudemo:~$ sudo ifconfig
docker0   Link encap:Ethernet  HWaddr 02:42:b4:a4:43:59
          inet addr:172.17.0.1  Bcast:0.0.0.0  Mask:255.255.0.0
          inet6 addr: fe80::42:b4ff:fea4:4359/64 Scope:Link
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:55 errors:0 dropped:0 overruns:0 frame:0
          TX packets:28 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:3448 (3.4 KB)  TX bytes:2576 (2.5 KB)

eth0      Link encap:Ethernet  HWaddr 08:00:27:f5:15:76
          inet addr:192.168.137.200  Bcast:192.168.137.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fef5:1576/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:199 errors:0 dropped:0 overruns:0 frame:0
          TX packets:70 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:13734 (13.7 KB)  TX bytes:5238 (5.2 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:40 errors:0 dropped:0 overruns:0 frame:0
          TX packets:40 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:3184 (3.1 KB)  TX bytes:3184 (3.1 KB)

demo@ubuntudemo:~$
```

This is a bridge between the Docker Host and the Linux Host. Now let's look at some commands associated with networking in Docker.

Listing All Docker Networks

This command can be used to list all the networks associated with Docker on the host.

Syntax

```
docker network ls
```

Options

None

Return Value

The command will output all the networks on the Docker Host.

Example

```
sudo docker network ls
```

Output

The output of the above command is shown below

Inspecting a Docker network

If you want to see more details on the network associated with Docker, you can use the Docker **network inspect** command.

Syntax

```
docker network inspect networkname
```

Options

- **networkname** − This is the name of the network you need to inspect.

Return Value

The command will output all the details about the network.

Example

```
sudo docker network inspect bridge
```

Output

The output of the above command is shown below −

Now let’s run a container and see what happens when we inspect the network again. Let’s spin up an Ubuntu container with the following command −

```
sudo docker run –it ubuntu:latest /bin/bash
```

Now if we inspect our network name via the following command, you will now see that the container is attached to the bridge.

```
sudo docker network inspect bridge
```

Creating Your Own New Network

One can create a network in Docker before launching containers. This can be done with the following command −

Syntax

```
docker network create --driver drivername name
```

Options

- **drivername** − This is the name used for the network driver.
- **name** − This is the name given to the network.

Return Value

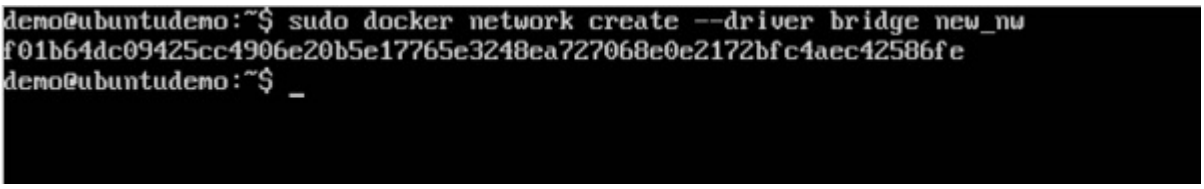
The command will output the long ID for the new network.

Example

```
sudo docker network create --driver bridge new_nw
```

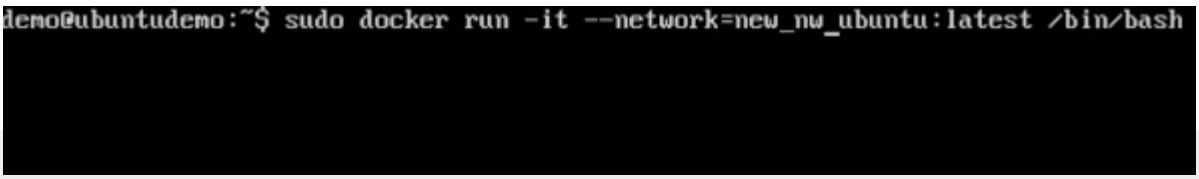
Output

The output of the above command is shown below −



You can now attach the new network when launching the container. So let's spin up an Ubuntu container with the following command −

```
sudo docker run –it –network=new_nw ubuntu:latest /bin/bash
```



And now when you inspect the network via the following command, you will see the container attached to the network.

```
sudo docker network inspect new_nw
```


"Scope": "local",
"Driver": "bridge",
"EnableIPv6": false,
"IPAM": {
"Driver": "default",
"Options": {},
"Config": [
{
"Subnet": "172.18.0.0/16",
"Gateway": "172.18.0.1/16"
}
]
},
"Internal": false,
"Containers": {
"38604fc42bcb5f78d42a8f40f34fa245301b2020a84c9e602786d2103ca6b847":
{
"Name": "boring_dubinsky",
"EndpointID": "74d6b14a6393bf3081d5d9ec012b5b76b2ead49e85a5f664c
a621761a9e69612",
"MacAddress": "02:42:ac:12:00:02",
"IPv4Address": "172.18.0.2/16",
"IPv6Address": ""
}
},
"Options": {},
"Labels": {}
}
]
demo@ubuntudemo:~$