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EXPERIMENT-3

DOCKER NETWORKS

1) **To list networks:**


```
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
sumyak@sumyak-VirtualBox:~$ docker network ls
NETWORK ID      NAME            DRIVER          SCOPE
6ec06e167241    bridge          bridge          local
4db12f90bc78    host            host            local
3acad651c561    none            null            local
```

2) **To create new network:**


```
sumyak@sumyak-VirtualBox:~$ docker network create nw1
0ec4e82faefbe3885f5296ffb3720e6d547ecadd2118bf861c98010b022fd89f
sumyak@sumyak-VirtualBox:~$ docker network ls
NETWORK ID      NAME            DRIVER          SCOPE
6ec06e167241    bridge          bridge          local
4db12f90bc78    host            host            local
3acad651c561    none            null            local
0ec4e82faefb    nw1             bridge          local
```

3) **To run container in background (detached) with connected network and to view running container**


```
sumyak@sumyak-VirtualBox:~$ docker run -d --name=cnt1 --net=nw1 redis
06dccad7d10ee8b27cf3d4f7762849763258ae327346a71fc37af982ec078791
sumyak@sumyak-VirtualBox:~$ docker ps
CONTAINER ID    IMAGE           COMMAND             CREATED
   STATUS               PORTS           NAMES
06dccad7d10e    redis           "docker-entrypoint.s…"  21 seconds ago
   Up 20 seconds        6379/tcp        cnt1
sumyak@sumyak-VirtualBox:~$
```

4) Ping:

```
sumyak@sumyak-VirtualBox:~$ docker run  --name=cnt2 --net=nw1 alpine ping cnt1
PING cnt1 (172.18.0.2): 56 data bytes
64 bytes from 172.18.0.2: seq=0 ttl=64 time=0.121 ms
64 bytes from 172.18.0.2: seq=1 ttl=64 time=0.073 ms
64 bytes from 172.18.0.2: seq=2 ttl=64 time=0.076 ms
64 bytes from 172.18.0.2: seq=3 ttl=64 time=0.066 ms
64 bytes from 172.18.0.2: seq=4 ttl=64 time=0.083 ms
64 bytes from 172.18.0.2: seq=5 ttl=64 time=0.064 ms
64 bytes from 172.18.0.2: seq=6 ttl=64 time=0.072 ms
64 bytes from 172.18.0.2: seq=7 ttl=64 time=0.078 ms
64 bytes from 172.18.0.2: seq=8 ttl=64 time=0.077 ms
```

```
sumyak@sumyak-VirtualBox:~$ docker run -it  --name=cnt3  --net=nw1 alpine
/ # ping cnt1
PING cnt1 (172.18.0.2): 56 data bytes
64 bytes from 172.18.0.2: seq=0 ttl=64 time=0.088 ms
64 bytes from 172.18.0.2: seq=1 ttl=64 time=0.073 ms
64 bytes from 172.18.0.2: seq=2 ttl=64 time=0.077 ms
64 bytes from 172.18.0.2: seq=3 ttl=64 time=0.141 ms
64 bytes from 172.18.0.2: seq=4 ttl=64 time=0.075 ms
64 bytes from 172.18.0.2: seq=5 ttl=64 time=0.116 ms
64 bytes from 172.18.0.2: seq=6 ttl=64 time=0.079 ms
```

5) Network connect:

5.1

- **create another network nw2**
- **check whether the network is created or not**

```
sumyak@sumyak-VirtualBox:~$ docker network create nw2
7adc8544c0a27409f6f3f056253da7c6887ac3e96f8e81a3067eac81899e98cc
sumyak@sumyak-VirtualBox:~$ docker network ls
NETWORK ID      NAME            DRIVER          SCOPE
6ec06e167241    bridge          bridge          local
4db12f90bc78    host            host            local
3acad651c561    none            null            local
0ec4e82faefb    nw1             bridge          local
7adc8544c0a2    nw2             bridge          local
sumyak@sumyak-VirtualBox:~$ docker ps
CONTAINER ID    IMAGE           COMMAND              CREATED
    STATUS          PORTS            NAMES
1669e5717de8    alpine          "/bin/sh"            4 minutes ago
    Up 4 minutes                     cnt3
10ebc1d77e4c    alpine          "ping cnt1"          8 minutes ago
    Up 8 minutes                     cnt2
06dccad7d10e    redis           "docker-entrypoint.s…"  12 minutes ago
    Up 12 minutes       6379/tcp         cnt1
```

5.2 make another container and connect it with nw2 and the ping container connected with another nw1 (it will show error)

```
sumyak@sumyak-VirtualBox:~$ docker run -d  --name=cnt5 --net=nw2 alpine
f9b7e7430333b3c89dca880ea8ed0c83398d2a1ff59bc27cd88c897da5a92d06
sumyak@sumyak-VirtualBox:~$ docker run  --name=cnt5 --net=nw2 alpine ping cnt1
docker: Error response from daemon: Conflict. The container name "/cnt5" is alr
eady in use by container "f9b7e7430333b3c89dca880ea8ed0c83398d2a1ff59bc27cd88c8
97da5a92d06". You have to remove (or rename) that container to be able to reuse
 that name.
See 'docker run --help'.
```

5.3 connect that container with nw2 and then ping

```
sumyak@sumyak-VirtualBox:~$ docker network connect nw2 cnt1
sumyak@sumyak-VirtualBox:~$ docker run  --name=cnt6 --net=nw2 alpine ping cnt1
PING cnt1 (172.19.0.2): 56 data bytes
64 bytes from 172.19.0.2: seq=0 ttl=64 time=0.105 ms
64 bytes from 172.19.0.2: seq=1 ttl=64 time=0.068 ms
64 bytes from 172.19.0.2: seq=2 ttl=64 time=0.081 ms
64 bytes from 172.19.0.2: seq=3 ttl=64 time=0.087 ms
64 bytes from 172.19.0.2: seq=4 ttl=64 time=0.086 ms
64 bytes from 172.19.0.2: seq=5 ttl=64 time=0.075 ms
64 bytes from 172.19.0.2: seq=6 ttl=64 time=0.085 ms
64 bytes from 172.19.0.2: seq=7 ttl=64 time=0.066 ms
```

6) Network disconnect:

```
                    "Gateway": "172.19.0.1",
                    "IPAddress": "172.19.0.2",
                    "IPPrefixLen": 16,
                    "IPv6Gateway": "",
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
                    "MacAddress": "02:42:ac:13:00:02",
                    "DriverOpts": {}
                }
            }
        }
    }
]
sumyak@sumyak-VirtualBox:~$ docker network disconnect nw2 cnt1
sumyak@sumyak-VirtualBox:~$
```