

# Explanation of the Images, Containers, docker-compose, and networks.

## Images:

```
● asnath@AssynathJr: ~/AIops_Labs/PrometheusSandbox$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                               NAMES
1499aac3d97b   prometheussandbox-app_one          "/usr/local/bin/dumb..." 3 hours ago    Up 3 hours    0.0.0.0:8000->8000/tcp             app_one
fd4b12a51e4f   wrouesnel/postgres_exporter        "/postgres_exporter"      32 hours ago   Up 4 hours    0.0.0.0:9187->9187/tcp             postgres_exporter
5a26626de5a5   prom/pushgateway                   "/bin/pushgateway"        32 hours ago   Up 4 hours    0.0.0.0:9091->9091/tcp             prometheus_push_gateway
bc5f0e36cacc   postgres:13.3                      "docker-entrypoint.s..." 32 hours ago   Up 4 hours    0.0.0.0:5432->5432/tcp             postgres
2ea597f1b8d8   prometheussandbox-prometheus       "/bin/prometheus -c..." 32 hours ago   Up 4 hours    0.0.0.0:9090->9090/tcp             prometheus
d88a5ebf7aa3   quay.io/prometheus/node-exporter    "/bin/node_exporter"      32 hours ago   Up 4 hours    0.0.0.0:9100->9100/tcp             prometheus_node_exporter
67bd1b8b8624   prometheussandbox-grafana          "/run.sh"                 32 hours ago   Up 4 hours    0.0.0.0:3000->3000/tcp             grafana
a991e41da4e4   prometheussandbox-app_two          "/bin/sh -c /go/bin/..." 32 hours ago   Up 4 hours    0.0.0.0:8001->8001/tcp             app_two
● asnath@AssynathJr: ~/AIops_Labs/PrometheusSandbox$
```

Figure 1: Images running on docker

Explanation: The docker contains various containers running for about 3-4 hours and each has specific ports to allow communication between the containers and the host system.

Several containers are running including:

- ➔ Prometheus for monitoring.
- ➔ Grafana for visualization.
- ➔ PostgreSQL for database
- ➔ The rest are exporters and gateways.

## Docker-Compose:

The docker-compose includes services for 'app one' and 'app two' applications, Prometheus for monitoring, Grafana for data visualization and PostgreSQL for database. Also, it includes exporters for collecting metrics from Node.js and PostgreSQL and push gateway for Prometheus.

## Networks:

```
● asnath@AssynathJr: ~/AIops_Labs/PrometheusSandbox$ docker network ls
NETWORK ID          NAME                DRIVER              SCOPE
021baeca6cb8        app_default         bridge              local
5e5f402a4b96        app_todo-network    bridge              local
078bbc4d1529        bridge              bridge              local
7d7ed770a355        host                host                local
8224172ab5b3        none                null                local
8c9df2521eb5        prometheussandbox default              bridge              local
```

Figure 2: Docker Network lists

```

asmath@asynath01:~/XDCps_Labs/PrometheusSandbox$ docker network inspect prometheussandbox_default
[
  {
    "Name": "prometheussandbox_default",
    "Id": "8c0df252b653d5ab515802573d99ac2b88f6f08f46a3e80a0255ad215443a08",
    "Created": "2024-09-18T07:16:33.022888752Z",
    "Scope": "local",
    "Driver": "bridge",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": null,
      "Config": [
        {
          "Subnet": "172.28.0.0/16",
          "Gateway": "172.28.0.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": {
      "3409aac3d970b05696270f575385f78495989f344c66cded8fa4c762874624bd": {
        "Name": "app_one",
        "EndpointID": "92ad958ba8951841a8ed956605bcc2d969d9f48a775888d27f05f43c88957ab7",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.4/16",
        "IPv6Address": ""
      },
      "2ae997f8b8d83511b985ff2348d9a4245ad1c756253a999cd9a088bccc56b": {
        "Name": "prometheus",
        "EndpointID": "c3c58b8f4856a908f8b8434aac90ca89fca87a07c42c7b813e2963ae8f2b82",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.6/16",
        "IPv6Address": ""
      },
      "5a26626d5a54b379c08ac534bc553a390cc77a086c62976a8708089aaf22c08": {
        "Name": "prometheus_push_gateway",
        "EndpointID": "893678c3778c5095e57930b6883a28424fb2b6d38c08c634c5d520f2163e63",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.8/16",
        "IPv6Address": ""
      },
      "576d08b8634bd0d88ad0f4f66b577d5d48547d5a56380f3e4288f172e5c389": {
        "Name": "grafana",
        "EndpointID": "93a5a4b2c3e3eb00c563388f95f8b0c02e68484d00f4e508d5a0842ce418cb",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.7/16",
        "IPv6Address": ""
      },
      "a990e43da4e4894a6526a51a5256c55d99c70a3d056573a023bc80ca0985cab": {
        "Name": "app_two",
        "EndpointID": "f0475ee25c0431b3b3b68f3d43d9f0858295a088b8ad5255ed04625655d0d",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.3/16",
        "IPv6Address": ""
      },
      "1c5f0b36cacc3f7d8b474297960c5768aebcc351a8f4f68606a2f0293b07748": {
        "Name": "postgres",
        "EndpointID": "a40866a70b0530fca4f073122a8d4112f80901265798d998ab080ebbb8a505",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.2/16",
        "IPv6Address": ""
      },
      "d88a5ebf7aa38f560a0f8f80657d9095c5aba76021384250f8b370815de8c28": {
        "Name": "prometheus_node_exporter",
        "EndpointID": "1ab09c7d08db0ff241785e64c661326ce2e2d0ccab18708470b0522c86e13",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.5/16",
        "IPv6Address": ""
      },
      "f08b22a5b04f903bd6c42ba6e0ad40574306173db66837525ee422386f3468": {
        "Name": "postgres_exporter",
        "EndpointID": "50a8d986c0b25f03e0b094ab3d80e1c2080ba513d071830f825005c4d2c80e5",
        "MacAddress": "02:42:ac:14:00:08",
        "IPv4Address": "172.28.0.9/16",
        "IPv6Address": ""
      }
    },
    "Options": {},
    "Labels": {
      "com.docker.compose.network": "default",
      "com.docker.compose.project": "prometheussandbox",
      "com.docker.compose.version": "2.29.1"
    }
  }
]

```

Figure 3: Docker network configuration for Prometheus monitoring Setup

The above images show the lists of the Docker networks on the system. The networks include default application networks, a bridge network, a host network, and a specific network for a Prometheus sandbox environment. Figure 3, shows a JSON configuration file for a Docker network named "prometheussandbox\_default". It defines various network endpoints for different services like Prometheus, Grafana, PostgreSQL, and custom applications.