How to Install Docker Portainer on Linux

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containersdocker

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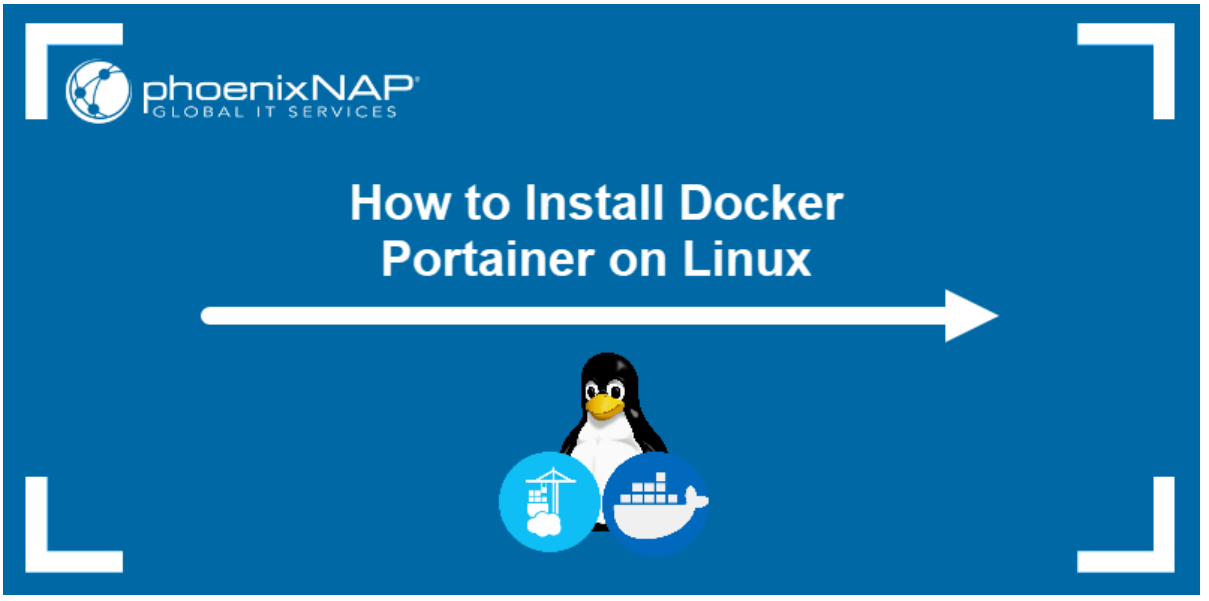
Introduction
Portainer is a lightweight container management tool that provides a GUI for simplifying container operations. It supports all the major orchestration platforms - Kubernetes, Nomad, ACI, and multiple Docker environments (Docker hosts and Swarm clusters). **This tutorial will show you how to install Portainer for Docker on Linux.** It will also provide instructions for **using Portainer to deploy a containerized app**.



Prerequisites

- The latest version of Docker installed and running as *root*.
- Administrative access to the system.

Note: The tutorial covers the installation steps for **Portainer Community Edition**. Portainer also has a business edition, which requires purchasing a license.

Docker Portainer Installation

Portainer is deployed as a lightweight Docker container on any Linux system running Docker. The main component of Portainer is Portainer Server, which is used to manage containers, networks, and environments. Portainer Agent is the component installed on another Docker system to enable communication with the server.
Follow the steps below to **install Portainer and deploy a containerized app to test the installation**.

Step 1: Create Docker Volume

Portainer stores information on a Docker volume. Type the following command to create a Docker volume for the Portainer Server:

```
docker volume create portainer_data
```

If the operation is successful, the system outputs the name of the volume.

```
marko@pnap:~$ docker volume create portainer_data
portainer_data
marko@pnap:~$
```

Step 2: Install Portainer Server

The latest Portainer Community Edition image is available on Docker Hub. Use the docker run command to pull the image and start a Portainer Server container:

```
docker run -d -p 8000:8000 -p 9443:9443 --name portainer \
--restart=always \
-v /var/run/docker.sock:/var/run/docker.sock \
-v portainer_data:/data \
portainer/portainer-ce:2.9.3
```

Portainer exposes the UI via the secure port `9443`. Port `8000` is used for edge computing and is optional unless you are planning to use edge agents.

```
marko@pnap:~$ docker run -d -p 8000:8000 -p 9443:9443 --name portainer \
> --restart=always \
> -v /var/run/docker.sock:/var/run/docker.sock \
> -v portainer_data:/data \
> portainer/portainer-ce:2.9.3
Unable to find image 'portainer/portainer-ce:2.9.3' locally
2.9.3: Pulling from portainer/portainer-ce
0ea73420e2bb: Pull complete
c367f59be2e1: Pull complete
d11cdfc3c2c7: Pull complete
Digest: sha256:84676dfce8ab328e51990797cceff5131c1ff63c3a73f5ebf1397cad9aa42e3c
Status: Downloaded newer image for portainer/portainer-ce:2.9.3
fc3eb20e50772d24935a2d9e6f71a838ec019fc5c022a8bb43b4111c27f4de56
marko@pnap:~$
```

Note: BMC offers affordable instances that satisfy all the performance requirements for edge computing.
`docker run` pulls the necessary images and starts the container. Check that Portainer is running by typing:

```
docker ps
```

The command lists all the running containers. Find the container named `portainer` and make sure its status is `Up`.

```
marko@pnap:~$ docker ps
CONTAINER ID   IMAGE                           COMMAND        CREATED         STATUS
     PORTS
               NAMES
fc3eb20e5077   portainer/portainer-ce:2.9.3    "/portainer"   7 minutes ago   Up 2 minut
es   0.0.0.0:8000->8000/tcp, :::8000->8000/tcp, 0.0.0.0:9443->9443/tcp, :::9443->9443/t
cp, 9000/tcp   portainer
marko@pnap:~$
```

Step 3: Access Portainer Dashboard

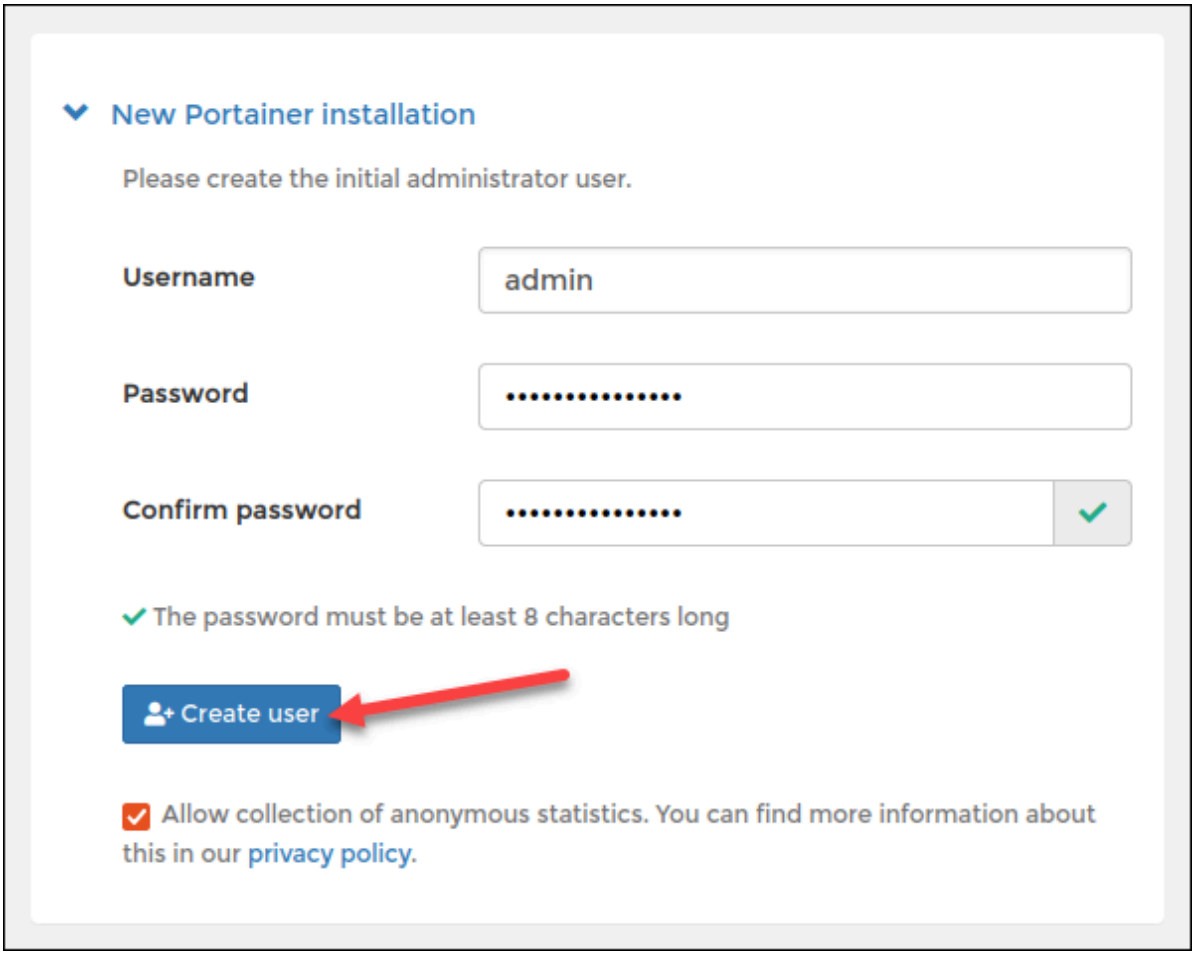
Portainer has a web UI accessible through an internet browser. To access the main Portainer dashboard:

1. In a browser, visit the following address:

```
https://localhost:9443
```

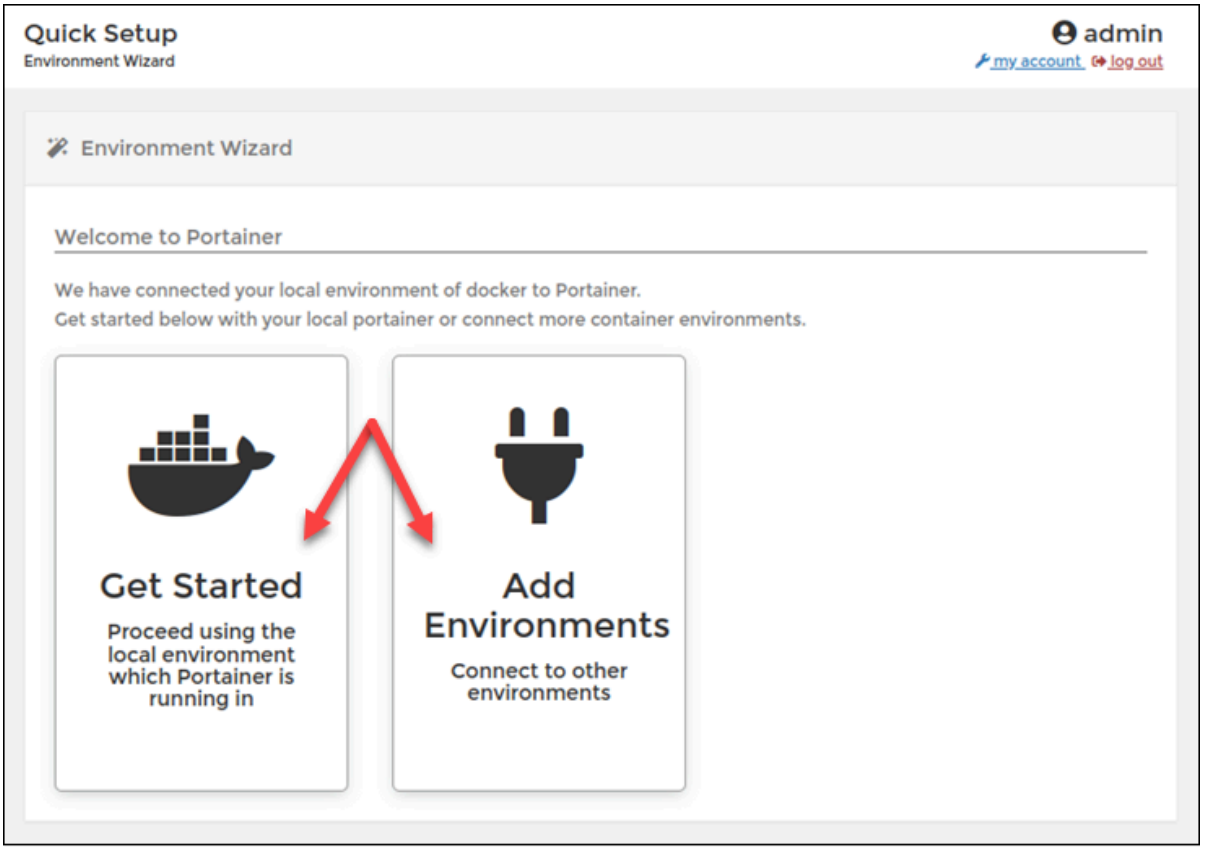
Note: If you receive a blank page with the ***Client sent an HTTP request to an HTTPS server*** message, make to explicitly state `HTTPS` as the connection type.

2. The first time you access Portainer, the system asks to create a password for the *admin* user. Type the password twice and select the **Create user** button.



The **Environment Wizard** starts.

3. Select the **Get Started** button to go to the dashboard and start using Portainer in the local environment only. To add other environments during the initial setup, click **Add Environments**.



Note: You can add environments later from the Portainer dashboard.

Step 4 (Optional): Add More Environments to Portainer Installation

You can manage multiple Docker environments within the Portainer UI. Moreover, each environment needs to have a Portainer Agent instance installed. The agent then uses port `9001` to communicate with the server.

Follow the steps below to add an environment to Portainer.

1. Type the following command to start a Portainer Agent container on the system you want to add:

```
docker run -d -p 9001:9001 --name portainer_agent --restart=always -v
/var/run/docker.sock:/var/run/docker.sock -v
/var/lib/docker/volumes:/var/lib/docker/volumes portainer/agent:2.9.3
```

Wait for Docker to pull the necessary images and initiate the container.

```
marko@test-main:~$ docker run -d -p 9001:9001 --name portainer_agent --restart=always -
v /var/run/docker.sock:/var/run/docker.sock -v /var/lib/docker/volumes:/var/lib/docker/
volumes portainer/agent:2.9.3
Unable to find image 'portainer/agent:2.9.3' locally
2.9.3: Pulling from portainer/agent
0ea73420e2bb: Pull complete
c367f59be2e1: Pull complete
3588d4238db9: Pull complete
fbe563f7b967: Pull complete
b6bb1a9f6129: Pull complete
Digest: sha256:058755774598a232ec123cfd55aee68ed43f908e9acceded9a976950875ed55c
Status: Downloaded newer image for portainer/agent:2.9.3
c48332e89bc38ba2b4be4ae8689892bfad2e6e23cffb4ee89d4729b08d5fad99
marko@test-main:~$
```

2. To register the new environment in Portainer, you need the IP address of the system hosting the environment. If you do not know the IP, use the ip command to obtain it:

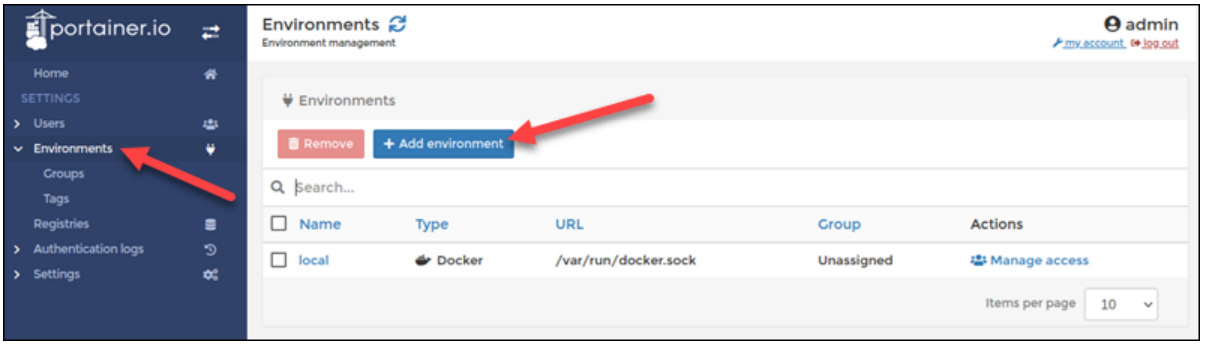
```
ip a
```

The command lists the network interfaces on your system. Make a note of the main interface's IP address.

```
marko@test-main:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen
1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group def
ault qlen 1000
    link/ether 08:00:27:64:db:57 brd ff:ff:ff:ff:ff:ff
    inet 10.240.12.131/24 brd 10.240.12.255 scope global dynamic noprefixroute enp0s3
       valid_lft 686372sec preferred_lft 686372sec
    inet6 fe80::61e3:c354:df2a:f8ed/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

Return to the Portainer Server UI.

3. Select **Environments** in the menu on the left side and click **Add environment**.



Note: If you select the **Add Environments** button in **Step 3**, Portainer takes you directly to the **Create Environment** page.

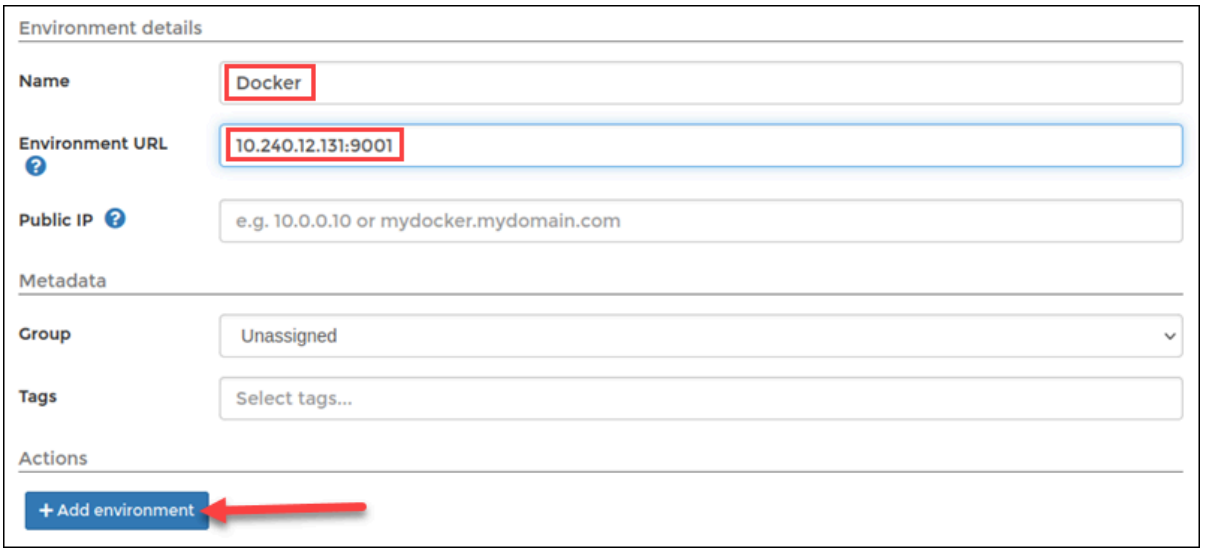
On the **Create Environment** page, fill in the details about the environment you want to add.

4. Write the name of the environment in the **Name** field

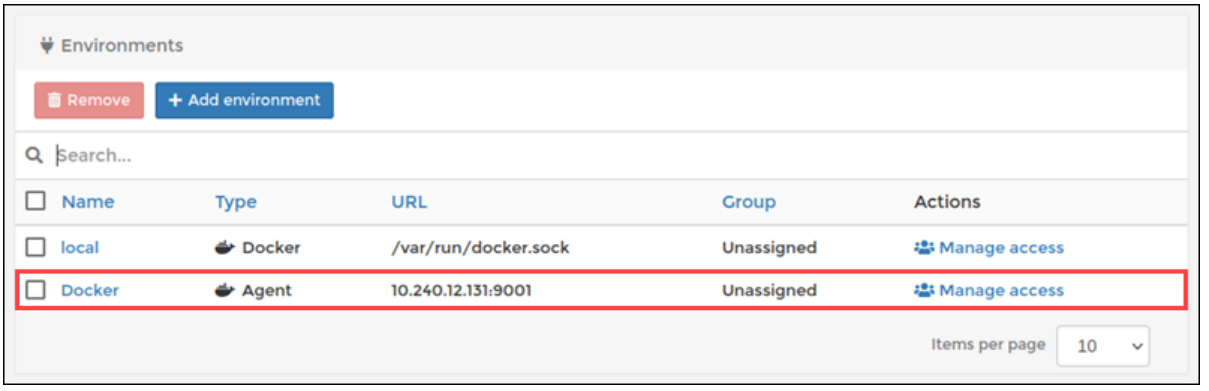
5. Type the URL of the system running Portainer Agent in the **Environment URL** field.

```
[ip-address]:9001
```

6. When you finish the setup, select the **Add environment** button in the **Actions** section.



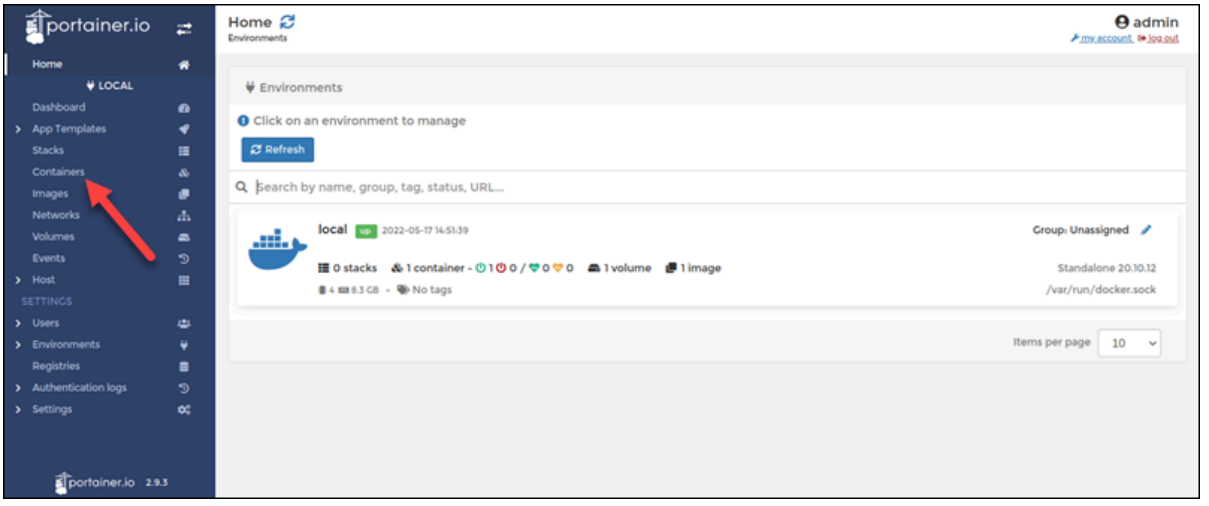
The new environment appears on the **Environments** page.



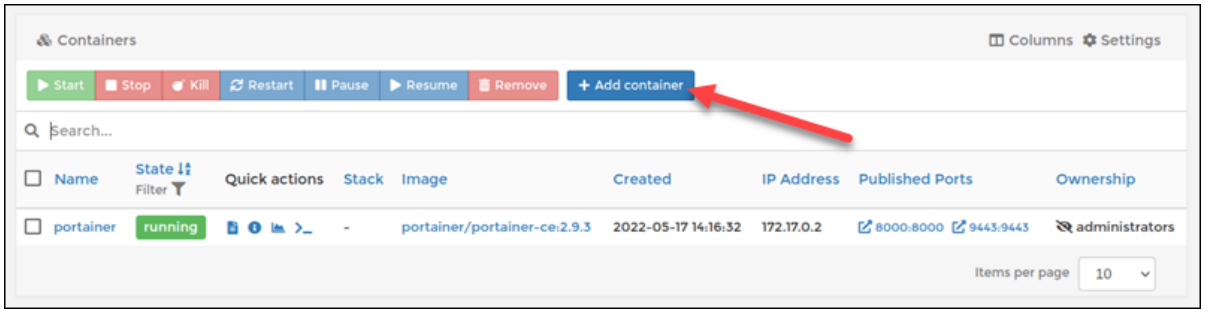
Step 5: Deploy Container Using Portainer

Test your Portainer setup by deploying a test Docker container. Follow the steps below to install an Apache HTTP Server instance.

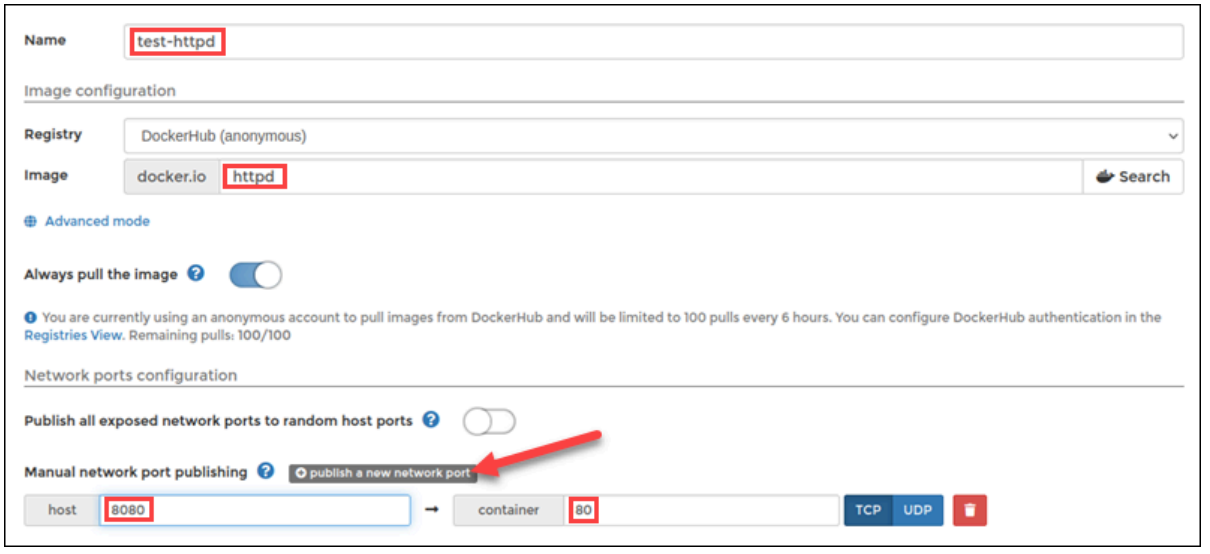
1. Select **Containers** in the menu on the left side to open the **Containers** page.



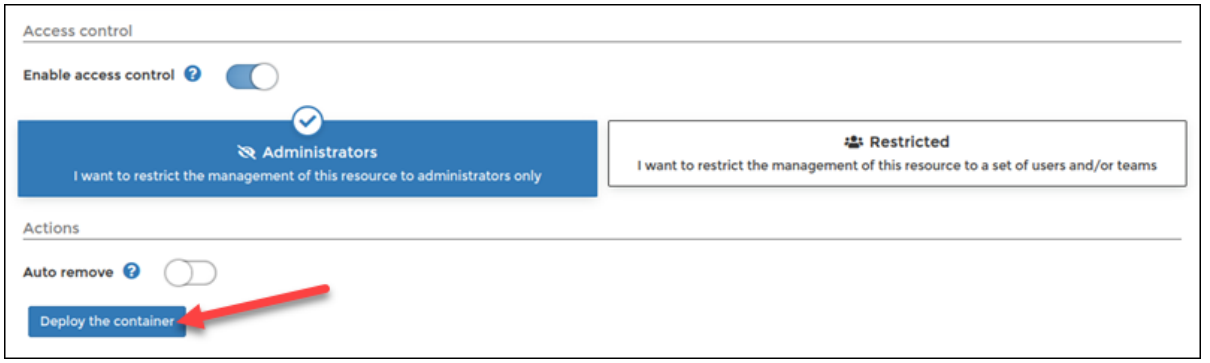
2. Click the **Add container** button in the action bar.



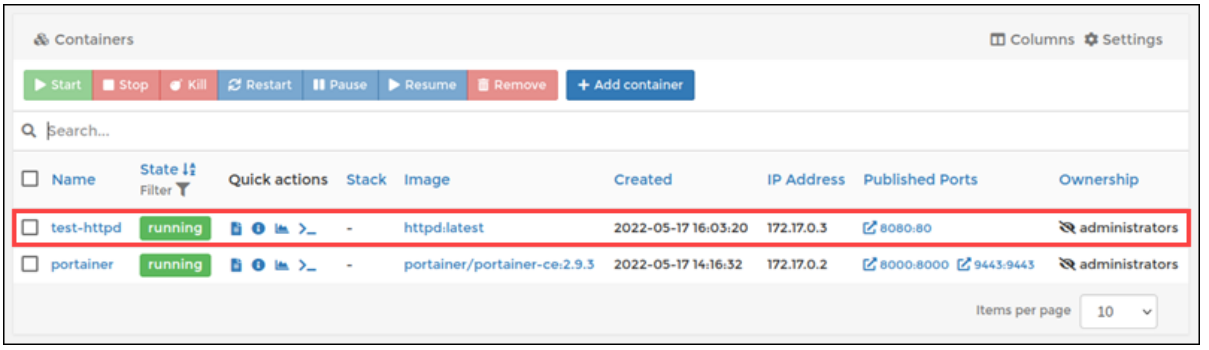
3. Provide details for the container you want to run, including the container name, the image name, and the connection ports.



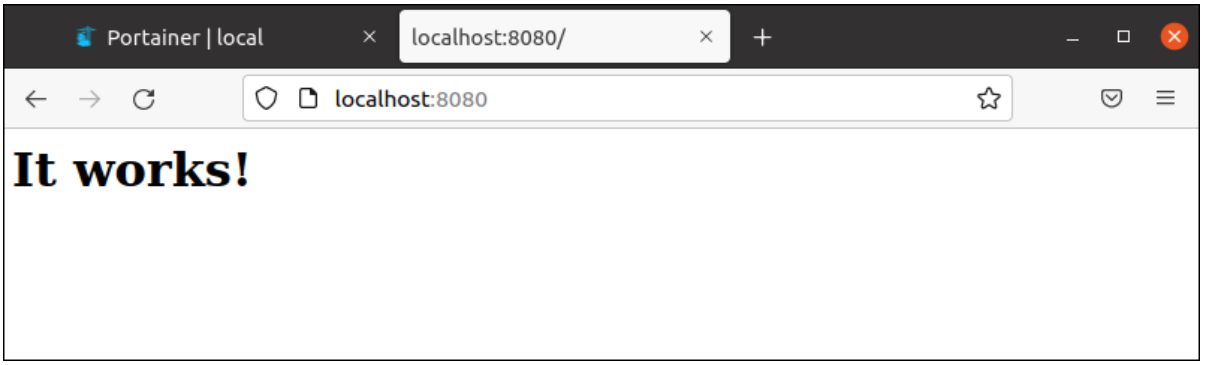
4. When you finish setting up the container, scroll to the bottom of the page and select the **Deploy the container** button.



Wait for Portainer to deploy the container. When the container is ready, its state will be ***running***.



5. Open another browser tab and type the IP address of your environment followed by the port assigned to the container. The Apache server shows the confirmation message.



Conclusion

After going through the steps in this tutorial, you will learn how to install Portainer to manage Docker containers on Linux.

The tutorial covered the steps for installing the Portainer Server instance and the procedure for adding environments to your installation.