

Container Hello-World

- **Objective:** The objective of the project is to install docker in our workstation and run nginx web server using docker.
- **Setting Up Our Workstation: Prerequisites**
 1. VM with RHEL9
 2. Container runtime (Docker)
 3. Container Images (Docker Hub)
- **Install docker package:** Follow the instructions and they are as easy as copying and pasting the commands in our RHEL (CLI). The instructions can be found in <https://docs.docker.com/engine/install/rhel/>. By typing `$ sudo docker status`, it will confirm that our docker has been successfully installed and is active.

```
[henryib@localhost ~]$ service docker status
Redirecting to /bin/systemctl status docker.service
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; preset: disabled)
   Active: active (running) since Fri 2024-03-29 00:11:21 EDT; 1min 45s ago
     TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
    Main PID: 36472 (dockerd)
      Tasks: 9
     Memory: 34.1M
        CPU: 357ms
    CGroup: /system.slice/docker.service
            └─36472 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Mar 29 00:11:18 localhost.localdomain systemd[1]: Starting Docker Application Container Engine...
Mar 29 00:11:18 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:18.707538062-04:00" l
Mar 29 00:11:18 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:18.777141141-04:00" l
Mar 29 00:11:20 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:20.794636637-04:00" l
Mar 29 00:11:21 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:21.035659928-04:00" l
Mar 29 00:11:21 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:21.062784171-04:00" l
Mar 29 00:11:21 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:21.063004688-04:00" l
Mar 29 00:11:21 localhost.localdomain dockerd[36472]: time="2024-03-29T00:11:21.146279141-04:00" l
Mar 29 00:11:21 localhost.localdomain systemd[1]: Started Docker Application Container Engine.
lines 1-21/21 (END)
```

- **Creating a User and giving access to docker:**
 1. `$ useradd John`
 2. `$ sudo usermod -a -G docker John` (This adds the created user John to a group called docker)
 3. `$ sudo usermod -a -G docker john`
- **Container Hello-World:** `$ docker run hello-world`. Remember we ran this as the new user.

```
[john@localhost root]$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:53641cd209a4fecfc68e21a99871ce8c6920b2e7502df0a20671c6fccc73a7c6
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.
```

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Here, docker service pulled the image from Docker Hub and ran it. With this we just ran our first container.

- **Running Nginx Container:**

1. `$ docker run -p 80:80 nginx` (this uses docker to run nginx container and map localhost port 80 to container port 80).

```
[root@localhost ~]# docker run -p 80:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
3a1e25ce7c4f: Pull complete
e78b137be355: Pull complete
39fc875bd2b2: Pull complete
035788421403: Pull complete
87c3fb37cbf2: Pull complete
c5cdd1ce752d: Pull complete
83952c599532: Pull complete
Digest: sha256:6db391d1c0cfb30588ba0bf72ea999404f2764febf0f1f196acd5867ac7efa
```

2. Opening another terminal, using `$ Curl` command.

`$ curl localhost` – This should show you the nginx container running

- **Summary:** In this project, we installed docker on a RHEL 9 Linux VM and ran nginx we server container on the docker successfully.

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