

EPAM University Programs

DevOps external course

Module 2 Virtualization and Cloud Basic

TASK 2.4

Work with lxc in Ubuntu

1. Install LXC

```
sudo apt-get install lxc
```

```

192.168.0.106
bobrov@ubuntu1804_v3:~$ sudo apt-get install lxc
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  bridge-utils libpam-cgfs lxc-utils
Suggested packages:
  ifupdown lxc-templates lxcctl
The following NEW packages will be installed:
  bridge-utils libpam-cgfs lxc lxc-utils
0 upgraded, 4 newly installed, 0 to remove and 22 not upgraded.
Need to get 420 kB of archives.
After this operation, 1,418 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ua.archive.ubuntu.com/ubuntu bionic/main amd64 bridge-utils amd64 1.5-15ubuntu1 [30.1 kB]
Get:2 http://ua.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 libpam-cgfs amd64 3.0.3-0ubuntu1~18.04.1 [29.8 kB]
Get:3 http://ua.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 lxc-utils amd64 3.0.3-0ubuntu1~18.04.1 [357 kB]
Get:4 http://ua.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 lxc all 3.0.3-0ubuntu1~18.04.1 [2,968 B]
Fetched 420 kB in 0s (902 kB/s)
Selecting previously unselected package bridge-utils.
(Reading database ... 66979 files and directories currently installed.)
Preparing to unpack .../bridge-utils_1.5-15ubuntu1_amd64.deb ...
Unpacking bridge-utils (1.5-15ubuntu1) ...
Selecting previously unselected package libpam-cgfs.
Preparing to unpack .../libpam-cgfs_3.0.3-0ubuntu1~18.04.1_amd64.deb ...
Unpacking libpam-cgfs (3.0.3-0ubuntu1~18.04.1) ...
Selecting previously unselected package lxc-utils.
Preparing to unpack .../lxc-utils_3.0.3-0ubuntu1~18.04.1_amd64.deb ...
Unpacking lxc-utils (3.0.3-0ubuntu1~18.04.1) ...
Selecting previously unselected package lxc.
Preparing to unpack .../lxc_3.0.3-0ubuntu1~18.04.1_all.deb ...
Unpacking lxc (3.0.3-0ubuntu1~18.04.1) ...
Setting up bridge-utils (1.5-15ubuntu1) ...
Setting up libpam-cgfs (3.0.3-0ubuntu1~18.04.1) ...
Setting up lxc-utils (3.0.3-0ubuntu1~18.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/lxc-net.service → /lib/systemd/system/lxc-net.service.
Created symlink /etc/systemd/system/multi-user.target.wants/lxc.service → /lib/systemd/system/lxc.service.
Setting up lxc dnsmasq configuration.
Setting up lxc (3.0.3-0ubuntu1~18.04.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
bobrov@ubuntu1804_v3:~$

```

```
dpkg -l | grep lxc
```

```

bobrov@ubuntu1804_v3:~$ dpkg -l | grep lxc
ii  liblxc-common      3.0.3-0ubuntu1~18.04.1      amd64      Linux Containers userspace tools (common t
ools)
ii  liblxc1            3.0.3-0ubuntu1~18.04.1      amd64      Linux Containers userspace tools (library)
ii  lxc                3.0.3-0ubuntu1~18.04.1      all        Transitional package - lxc -> lxc-utils
ii  lxc-utils          3.0.3-0ubuntu1~18.04.1      amd64      Linux Containers userspace tools
ii  lxcfs              3.0.3-0ubuntu1~18.04.1      amd64      FUSE based filesystem for LXC
bobrov@ubuntu1804_v3:~$

```

2. lxc launch

```
lxc launch ubuntu:16.04 my-ubuntu
```

```
bobrov@ubuntu1804_v3:~$ lxc launch ubuntu:16.04 my-ubuntu
Creating my-ubuntu
Starting my-ubuntu
```

3. LXC list

```
lxc list
```

```
bobrov@ubuntu1804_v3:~$ lxc list
```

NAME	STATE	IPV4	IPV6	TYPE	SNAPSHOTS
my-centos	RUNNING	10.188.221.37 (eth0)	fd42:ba68:f274:3ce:216:3eff:fe05:191e (eth0)	PERSISTENT	0
my-ubuntu	RUNNING	10.188.221.165 (eth0)	fd42:ba68:f274:3ce:216:3eff:fe6a:fe49 (eth0)	PERSISTENT	0

4. Go into the container with the command line

```
lxc exec my-ubuntu -- /bin/bash
```

```
bobrov@ubuntu1804_v3:~$ lxc exec my-ubuntu -- /bin/bash
root@my-ubuntu:~# apt-get update
```

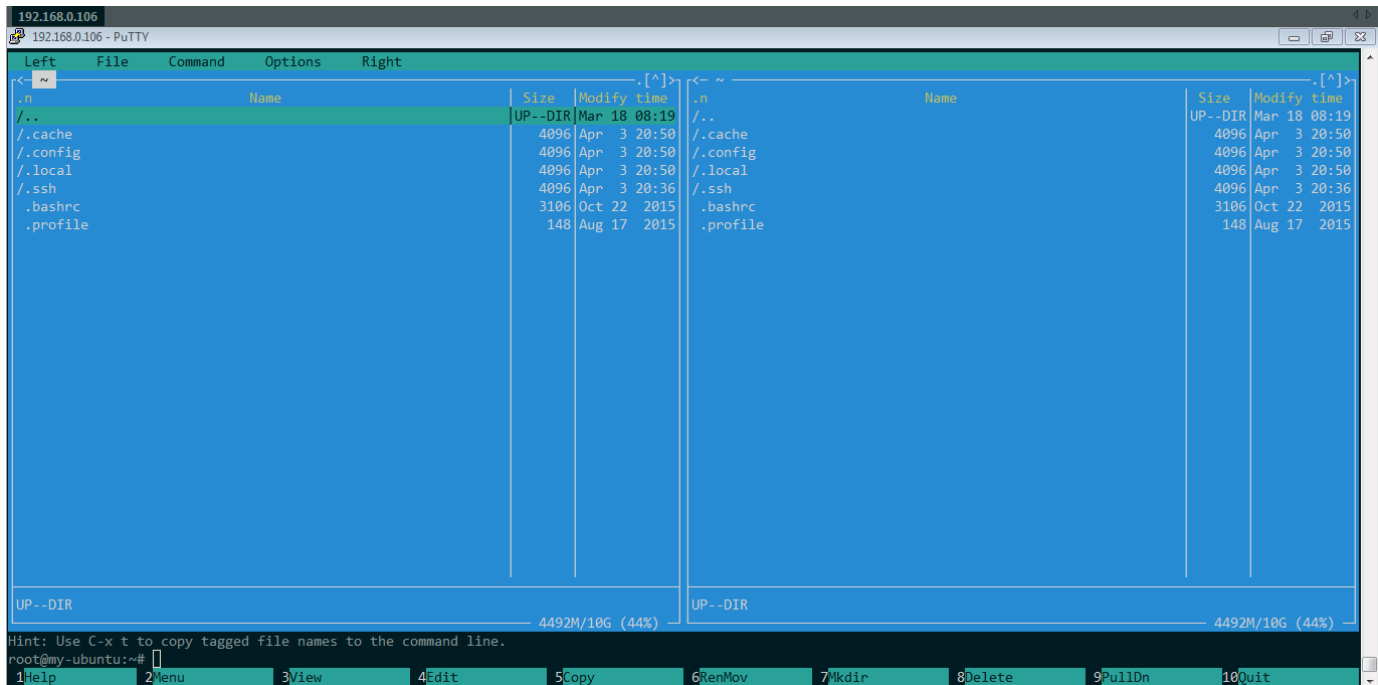
5. Run update

```
apt-get update
```

```
bobrov@ubuntu1804_v3:~$ lxc exec my-ubuntu -- /bin/bash
root@my-ubuntu:~# apt-get update
Hit:1 http://archive.ubuntu.com/ubuntu xenial InRelease
Get:2 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Get:3 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Get:5 http://archive.ubuntu.com/ubuntu xenial/universe amd64 Packages [7532 kB]
Get:6 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [841 kB]
Get:7 http://archive.ubuntu.com/ubuntu xenial/universe Translation-en [4354 kB]
Get:8 http://security.ubuntu.com/ubuntu xenial-security/main Translation-en [319 kB]
Get:9 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [487 kB]
Get:10 http://security.ubuntu.com/ubuntu xenial-security/universe Translation-en [199 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/multiverse amd64 Packages [5728 B]
Get:12 http://security.ubuntu.com/ubuntu xenial-security/multiverse Translation-en [2708 B]
Get:13 http://archive.ubuntu.com/ubuntu xenial/multiverse amd64 Packages [144 kB]
Get:14 http://archive.ubuntu.com/ubuntu xenial/multiverse Translation-en [106 kB]
Get:15 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [1120 kB]
Get:16 http://archive.ubuntu.com/ubuntu xenial-updates/main Translation-en [427 kB]
Get:17 http://archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [795 kB]
Get:18 http://archive.ubuntu.com/ubuntu xenial-updates/universe Translation-en [332 kB]
Get:19 http://archive.ubuntu.com/ubuntu xenial-updates/multiverse amd64 Packages [16.8 kB]
Get:20 http://archive.ubuntu.com/ubuntu xenial-updates/multiverse Translation-en [8468 B]
Get:21 http://archive.ubuntu.com/ubuntu xenial-backports/main amd64 Packages [7280 B]
Get:22 http://archive.ubuntu.com/ubuntu xenial-backports/main Translation-en [4456 B]
Get:23 http://archive.ubuntu.com/ubuntu xenial-backports/universe amd64 Packages [8064 B]
Get:24 http://archive.ubuntu.com/ubuntu xenial-backports/universe Translation-en [4328 B]
Fetched 17.0 MB in 5s (2914 kB/s)
Reading package lists... Done
root@my-ubuntu:~#
```

6. Install any program in the container. For example mc. Check performance.

```
apt-get install mc
mc run
```



7. Upload a file to the container and download another file from the container

```
lxc file push myfile my-ubuntu/root/
```

```
bobrov@ubuntu1804_v3:~$ echo this is the test file version 4.0 > myfile
bobrov@ubuntu1804_v3:~$ ls
myfile  testfile2.txt  testfile.txt  test.txt
bobrov@ubuntu1804_v3:~$ lxc file push myfile my-ubuntu/root/
bobrov@ubuntu1804_v3:~$ lxc exec my-ubuntu -- /bin/bash
root@my-ubuntu:~# ls
myfile
root@my-ubuntu:~# cat myfile
this is the test file version 4.0
root@my-ubuntu:~#
```

```
lxc file pull my-ubuntu/home/test.txt .
```

```
bobrov@ubuntu1804_v3:~$ lxc file pull my-ubuntu/home/test.txt .
bobrov@ubuntu1804_v3:~$ ls
test.txt
```

Working with Docker on Ubuntu

1. Install docker

```
sudo apt install docker-ce
```

```
bobrov@ubuntu1804_v3:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce-cli libltdl7 pigz
The following NEW packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce docker-ce-cli libltdl7 pigz
0 upgraded, 7 newly installed, 0 to remove and 22 not upgraded.
Need to get 85.8 MB of archives.
After this operation, 385 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ua.archive.ubuntu.com/ubuntu bionic/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:2 http://ua.archive.ubuntu.com/ubuntu bionic/universe amd64 aufs-tools amd64 1:4.9+20170918-1ubuntu1 [104 kB]
Get:3 http://ua.archive.ubuntu.com/ubuntu bionic/universe amd64 cgroupfs-mount all 1.4 [6,320 B]
Get:4 http://ua.archive.ubuntu.com/ubuntu bionic/main amd64 libltdl7 amd64 2.4.6-2 [38.8 kB]
Get:5 https://download.docker.com/linux/ubuntu bionic/stable amd64 containerd.io amd64 1.2.13-1 [20.1 MB]
Get:6 https://download.docker.com/linux/ubuntu bionic/stable amd64 docker-ce-cli amd64 5:19.03.8~3-0~ubuntu-bionic [42.6 MB]
Get:7 https://download.docker.com/linux/ubuntu bionic/stable amd64 docker-ce amd64 5:19.03.8~3-0~ubuntu-bionic [22.9 MB]
Fetched 85.8 MB in 17s (5,000 kB/s)
debconf: unable to initialize frontend: Dialog
debconf: (Dialog frontend requires a screen at least 13 lines tall and 31 columns wide.)
debconf: falling back to frontend: Readline
Selecting previously unselected package pigz.
(Reading database ... 67572 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
Selecting previously unselected package aufs-tools.
Preparing to unpack .../1-aufs-tools_1%3a4.9+20170918-1ubuntu1_amd64.deb ...
Unpacking aufs-tools (1:4.9+20170918-1ubuntu1) ...
Selecting previously unselected package cgroupfs-mount.
Preparing to unpack .../2-cgroupfs-mount_1.4_all.deb ...
Unpacking cgroupfs-mount (1.4) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../3-containerd.io_1.2.13-1_amd64.deb ...
Preparing to unpack .../3-containerd.io_1.2.13-1_amd64.deb ...
Unpacking containerd.io (1.2.13-1) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../4-docker-ce-cli_5%3a19.03.8~3-0~ubuntu-bionic_amd64.deb ...
Unpacking docker-ce-cli (5:19.03.8~3-0~ubuntu-bionic) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../5-docker-ce_5%3a19.03.8~3-0~ubuntu-bionic_amd64.deb ...
Unpacking docker-ce (5:19.03.8~3-0~ubuntu-bionic) ...
Selecting previously unselected package libltdl7:amd64.
Preparing to unpack .../6-libltdl7_2.4.6-2_amd64.deb ...
Unpacking libltdl7:amd64 (2.4.6-2) ...
Setting up aufs-tools (1:4.9+20170918-1ubuntu1) ...
Setting up containerd.io (1.2.13-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up cgroupfs-mount (1.4) ...
Setting up libltdl7:amd64 (2.4.6-2) ...
Setting up docker-ce-cli (5:19.03.8~3-0~ubuntu-bionic) ...
Setting up pigz (2.4-1) ...
Setting up docker-ce (5:19.03.8~3-0~ubuntu-bionic) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for libc-bin (2.27-3ubuntu1) ...
Processing triggers for systemd (237-3ubuntu10.38) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
bobrov@ubuntu1804_v3:~$
```

2. Run a search for configured solutions for ubuntu

docker search ubuntu

```
bobrov@ubuntu1804_v3:~$ docker search ubuntu
```

NAME	DESCRIPTION	STARS	OFFICIAL
AUTOMATED			
ubuntu	Ubuntu is a Debian-based Linux operating sys...	10712	[OK]
dorowu/ubuntu-desktop-lxde-vnc	Docker image to provide HTML5 VNC interface ...	411	
[OK]			
rastasheep/ubuntu-sshd	Dockerized SSH service, built on top of offi...	245	
[OK]			
consol/ubuntu-xfce-vnc	Ubuntu container with "headless" VNC session...	212	
[OK]			
ubuntu-upstart	Upstart is an event-based replacement for th...	107	[OK]
ansible/ubuntu14.04-ansible	Ubuntu 14.04 LTS with ansible	98	
[OK]			
neurodebian	NeuroDebian provides neuroscience research s...	68	[OK]
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mysql-5	ubuntu-16-nginx-php-phpmyadmin-mysql-5	50	
[OK]			
ubuntu-debootstrap	debootstrap --variant=minbase --components=m...	43	[OK]
nuagebec/ubuntu	Simple always updated Ubuntu docker images w...	24	
[OK]			
i386/ubuntu	Ubuntu is a Debian-based Linux operating sys...	19	
1and1internet/ubuntu-16-apache-php-5.6	ubuntu-16-apache-php-5.6	14	
[OK]			
1and1internet/ubuntu-16-apache-php-7.0	ubuntu-16-apache-php-7.0	13	
[OK]			
eclipse/ubuntu_jdk8	Ubuntu, JDK8, Maven 3, git, curl, nmap, mc, ...	12	
[OK]			
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mariadb-10	ubuntu-16-nginx-php-phpmyadmin-mariadb-10	11	
[OK]			
1and1internet/ubuntu-16-nginx-php-5.6-wordpress-4	ubuntu-16-nginx-php-5.6-wordpress-4	7	
[OK]			

3. Download any of the images to the local machine.

docker pull ubuntu

```
bobrov@ubuntu1804_v3:~$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
5bed26d33875: Pull complete
f11b29a9c730: Pull complete
930bda195c84: Pull complete
78bf9a5ad49e: Pull complete
Digest: sha256:bec5a2727be7fff3d308193cfde3491f8fba1a2ba392b7546b43a051853a341d
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
bobrov@ubuntu1804_v3:~$
```

4. Run the command to view images downloaded to the computer.

docker images

```
bobrov@ubuntu1804_v3:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
ubuntu	latest	4e5021d210f6	2 weeks ago	64.2MB
hello-world	latest	fce289e99eb9	15 months ago	1.84kB

5. Run the apt-get update update

apt-get update

```
root@9bc806a718f6:/# apt-get update
Hit:1 http://archive.ubuntu.com/ubuntu bionic InRelease
Hit:2 http://security.ubuntu.com/ubuntu bionic-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu bionic-backports InRelease
Reading package lists... Done
root@9bc806a718f6:/#
```

apt update

```
bobrov@ubuntu1804_v3:~$ docker run -it ubuntu
root@9bc806a718f6:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [7904 B]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [37.0 kB]
Get:10 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [870 kB]
Get:11 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [835 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1367 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [50.4 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [12.2 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1161 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4247 B]
Get:18 http://archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [2496 B]
Fetched 17.7 MB in 5s (3843 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
12 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@9bc806a718f6:/#
```


6. Install any program in the container. For example mc. Check performance.

```
apt install mc
mc run
```

[illegible]

7. Upload a file to the container and download another file from the container

Upload a file to the container

```
docker ps
```

```
bobrov@ubuntu1804_v3:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
9bc806a718f6        ubuntu             "/bin/bash"        59 minutes ago     Up About a minute             modest_kilby

docker cp myfile modest_kilby:/home

bobrov@ubuntu1804_v3:~$ ls
myfile  testfile2.txt  testfile.txt  test.txt

bobrov@ubuntu1804_v3:~$ docker cp myfile modest_kilby:/home

bobrov@ubuntu1804_v3:~$ docker start modest_kilby
modest_kilby

bobrov@ubuntu1804_v3:~$ docker exec -it modest_kilby bash
root@9bc806a718f6:/# ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var

root@9bc806a718f6:/# cd /home

root@9bc806a718f6:/home# ls
myfile

root@9bc806a718f6:/home#
```

Download file from the container

```
sudo docker cp modest_kilby:/root/testfile_docker /root
```

```
root@9bc806a718f6:~# echo this is the file for test > testfile_docker
root@9bc806a718f6:~# ls
testfile_docker
root@9bc806a718f6:~# exit
exit
bobrov@ubuntu1804_v3:~$ docker cp modest_kilby:/root/testfile_docker /root
open /root/testfile_docker: permission denied
bobrov@ubuntu1804_v3:~$ sudo docker cp modest_kilby:/root/testfile_docker /root
[sudo] password for bobrov:
bobrov@ubuntu1804_v3:~$ ls
myfile  testfile2.txt  testfile.txt  test.txt
bobrov@ubuntu1804_v3:~$ sudo -i
root@ubuntu1804_v3:~# ls
testfile_docker
root@ubuntu1804_v3:~# cat testfile_docker
this is the file for test
```

8. Read the documentation and briefly outline the main 7 Dockerfile commands

FROM - The FROM instruction specifies the parent image from which you are building.

RUN - Executes a command and creates an image layer. Used to install packages in a container.

COPY - Copies files and folders to the container.

CMD - Describes a command with arguments to be executed when the container is started.

LABEL - Describes metadata. For example, information about who created and maintains the image.

WORKDIR - Sets the working directory for the next instruction.

ADD - Copies files and folders to a container; can unpack local .tar files.

Working with Kubernetes on Ubuntu

1. Install microk8s

```
sudo snap install microk8s --classic
```

```
bobrov@bobrov-VirtualBox:~$ sudo snap install microk8s --classic --channel=1.18/stable
[sudo] password for bobrov:
microk8s (1.18/stable) v1.18.0 from Canonical✓ installed
bobrov@bobrov-VirtualBox:~$
```

2. Check the status and cluster manager commands

```
microk8s status
```

```
bobrov@bobrov-VirtualBox:~$ microk8s status
microk8s is running
addons:
cilium: disabled
dashboard: disabled
dns: disabled
fluentd: disabled
gpu: disabled
helm: disabled
helm3: disabled
ingress: disabled
istio: disabled
jaeger: disabled
knative: disabled
kubeflow: disabled
linkerd: disabled
metallb: disabled
metrics-server: disabled
prometheus: disabled
rbac: disabled
registry: disabled
storage: disabled
bobrov@bobrov-VirtualBox:~$
```

```
microk8s kubectl get nodes
```

```
microk8s kubectl get services
```

```
bobrov@bobrov-VirtualBox:~$ microk8s kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
bobrov-virtualbox   Ready    <none>   20m   v1.18.0
bobrov@bobrov-VirtualBox:~$ microk8s kubectl get services
NAME         TYPE        CLUSTER-IP    EXTERNAL-IP  PORT(S)    AGE
kubernetes   ClusterIP   10.152.183.1   <none>       443/TCP    20m
bobrov@bobrov-VirtualBox:~$
```

3. Browse docker-mounted images; wrap one of them in a *.tar image

docker images

```
bobrov@bobrov-VirtualBox:~/Documents/project$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
myimage1	1.0	d96c825fc96d	2 minutes ago	92.4MB
ubuntu	18.04	4e5021d210f6	2 weeks ago	64.2MB
ubuntu	latest	4e5021d210f6	2 weeks ago	64.2MB

docker save myimage1 > myimage1.tar

```
bobrov@bobrov-VirtualBox:~$ docker save myimage1 > myimage1.tar
bobrov@bobrov-VirtualBox:~$ ls
Desktop Documents Downloads Music myimage1.tar myimage.tar myubntdocker.tar myubuntu.tar Pictures Public snap Templates Videos
bobrov@bobrov-VirtualBox:~$
```

4. Import image to Kubernetes

microk8s ctr image import myimage1.tar

```
bobrov@bobrov-VirtualBox:~$ microk8s ctr image import myimage1.tar
[sudo] password for bobrov:
unpacking docker.io/library/myimage1:1.0 (sha256:357741f5975cfa56d91cbfb445de9590e5b5b462bc5362bfca5a083b57c87af5)...done
```

5. Run the image and make sure it works.

microk8s kubectl apply -f

<https://k8s.io/examples/application/deployment.yaml> --record

```
bobrov@bobrov-VirtualBox:~$ microk8s kubectl apply -f https://k8s.io/examples/application/deployment.yaml --record
deployment.apps/nginx-deployment created
```

watch microk8s.kubectl get all

```
Every 2,0s: microk8s.kubectl get all bobrov-VirtualBox: Mon Apr 6 18:48:46 2020
```

NAME	READY	STATUS	RESTARTS	AGE
pod/nginx-deployment-6b474476c4-4nrqd	1/1	Running	0	5m12s
pod/nginx-deployment-6b474476c4-hqp2q	1/1	Running	0	5m12s

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/kubernetes	ClusterIP	10.152.183.1	<none>	443/TCP	40h

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/nginx-deployment	2/2	2	2	5m12s

NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/nginx-deployment-6b474476c4	2	2	2	5m12s

мне так и не удалось запустить свой образ, не смог настроить yaml файл, запустил из примера с сайта <https://kubernetes.io/>