LXC

```
root@ubuntu:~# apt install lxd
Reading package lists... Done
Building dependency tree
Reading state information... Done
lxd is already the newest version (3.0.3-0ubuntu1~18.04.1).
lxd set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@ubuntu:~#
```

```
root@ubuntu:~# lxc image list ubuntu:lts
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
|      ALIAS      | FINGERPRINT  | PUBLIC |               DESCRIPTION                |   ARCH  |   SIZE   |           UPLOAD DATE           |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| arm64 (5 more)  | a85a5f4b9b92 | yes    | ubuntu 18.04 LTS arm64 (release) (20200317)  | aarch64 | 166.24MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| armhf (5 more)  | 38accl4580aa | yes    | ubuntu 18.04 LTS armhf (release) (20200317)  | armv7l  | 164.77MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| b (11 more)     | 98e43d99d83e | yes    | ubuntu 18.04 LTS amd64 (release) (20200317)  | x86_64  | 178.92MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| i386 (5 more)   | 81947ccl5312 | yes    | ubuntu 18.04 LTS i386 (release) (20200317)   | i686    | 180.24MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| ppc64el (5 more)| cd1683280c34 | yes    | ubuntu 18.04 LTS ppc64el (release) (20200317)| ppc64le | 186.84MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
| s390x (5 more)  | e74faf8d8a3c | yes    | ubuntu 18.04 LTS s390x (release) (20200317)  | s390x   | 170.00MB | Mar 17, 2020 at 12:00am (UTC)   |
+-----------------+--------------+--------+------------------------------------------+---------+----------+---------------------------------+
root@ubuntu:~#
```

```
root@ubuntu:~# lxd init
Would you like to use LXD clustering? (yes/no) [default=no]:
Do you want to configure a new storage pool? (yes/no) [default=yes]:
Name of the new storage pool [default=default]:
Name of the storage backend to use (btrfs, dir, lvm) [default=btrfs]:
Create a new BTRFS pool? (yes/no) [default=yes]:
Would you like to use an existing block device? (yes/no) [default=no]:
Size in GB of the new loop device (1GB minimum) [default=15GB]: 10GB
Would you like to connect to a MAAS server? (yes/no) [default=no]:
Would you like to create a new local network bridge? (yes/no) [default=yes]:
What should the new bridge be called? [default=lxdbr0]:
What IPv4 address should be used? (CIDR subnet notation, "auto" or "none") [default=auto]:
What IPv6 address should be used? (CIDR subnet notation, "auto" or "none") [default=auto]:
Would you like LXD to be available over the network? (yes/no) [default=no]: yes
Address to bind LXD to (not including port) [default=all]:
Port to bind LXD to [default=8443]:
Trust password for new clients:
Again:
No password set, client certificates will have to be manually trusted.Would you like stale cached images to be updated automatically? (yes/no) [default=yes]
Would you like a YAML "lxd init" preseed to be printed? (yes/no) [default=no]:
root@ubuntu:~# lxc launch ubuntu:b b1
Creating b1
Starting b1
root@ubuntu:~#
```

```
root@ubuntu: ~

root@ubuntu:~# lxc list
+------+---------+---------------------+---------------------------------------------+------------+-----------+
| NAME | STATE   | IPV4                | IPV6                                        | TYPE       | SNAPSHOTS |
+------+---------+---------------------+---------------------------------------------+------------+-----------+
| b1   | RUNNING | 10.47.183.163 (eth0)| fd42:1d1c:259:4136:216:3eff:fe20:75d6 (eth0)| PERSISTENT | 0         |
+------+---------+---------------------+---------------------------------------------+------------+-----------+
root@ubuntu:~# lxc info b1
Name: b1
Remote: unix://
Architecture: x86_64
Created: 2020/04/04 15:27 UTC
Status: Running
Type: persistent
Profiles: default
Pid: 2265
Ips:
  eth0: inet    10.47.183.163    vethJFOOMP
  eth0: inet6   fd42:1d1c:259:4136:216:3eff:fe20:75d6   vethJFOOMP
  eth0: inet6   fe80::216:3eff:fe20:75d6        vethJFOOMP
  lo:   inet    127.0.0.1
  lo:   inet6   ::1
Resources:
  Processes: 24
  CPU usage:
    CPU usage (in seconds): 3
  Memory usage:
    Memory (current): 227.37MB
    Memory (peak): 288.46MB
  Network usage:
    lo:
      Bytes received: 1.01kB
      Bytes sent: 1.01kB
      Packets received: 12
      Packets sent: 12
    eth0:
      Bytes received: 593.69kB
      Bytes sent: 13.16kB
      Packets received: 390
      Packets sent: 155
root@ubuntu:~#
```

```
root@b1: ~

root@b1:~# apt update
Hit:1 http://archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://security.ubuntu.com/ubuntu bionic-security 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/universe amd64 Packages [8570 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:8 http://archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:9 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [897 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [310 kB]
Get:11 http://archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [37.5 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [9524 B]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1061 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [329 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [10.5 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [4696 B]
Get:17 http://archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [2512 B]
Get:18 http://archive.ubuntu.com/ubuntu bionic-backports/main Translation-en [1644 B]
Get:19 http://archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4020 B]
Get:20 http://archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [1900 B]
Get:21 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [677 kB]
Get:22 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [218 kB]
Get:23 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [28.5 kB]
Get:24 http://security.ubuntu.com/ubuntu bionic-security/restricted Translation-en [7568 B]
Get:25 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [653 kB]
Get:26 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [217 kB]
Get:27 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [6968 B]
Get:28 http://security.ubuntu.com/ubuntu bionic-security/multiverse Translation-en [2732 B]
Fetched 18.5 MB in 3s (7075 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
26 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@b1:~#
```

```
🖳 root@b1: ~

root@b1:~# iostat

Command 'iostat' not found, but can be installed with:

apt install sysstat

root@b1:~# apt install -y sysstat
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libsensors4
Suggested packages:
  lm-sensors isag
The following NEW packages will be installed:
  libsensors4 sysstat
0 upgraded, 2 newly installed, 0 to remove and 26 not upgraded.
Need to get 0 B/324 kB of archives.
After this operation, 1309 kB of additional disk space will be used.
Preconfiguring packages ...
Selecting previously unselected package libsensors4:amd64.
(Reading database ... 28695 files and directories currently installed.)
Preparing to unpack .../libsensors4_1%3a3.4.0-4_amd64.deb ...
Unpacking libsensors4:amd64 (1:3.4.0-4) ...
Selecting previously unselected package sysstat.
Preparing to unpack .../sysstat_11.6.1-1ubuntu0.1_amd64.deb ...
Unpacking sysstat (11.6.1-1ubuntu0.1) ...
Setting up libsensors4:amd64 (1:3.4.0-4) ...
Setting up sysstat (11.6.1-1ubuntu0.1) ...
update-alternatives: using /usr/bin/sar.sysstat to provide /usr/bin/sar (sar) in auto mode
Processing triggers for libc-bin (2.27-3ubuntu1) ...
Processing triggers for systemd (237-3ubuntu10.39) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
root@b1:~# iostat
Linux 4.15.0-91-generic (b1)     04/04/20        _x86_64_        (4 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.55    0.06    0.31    0.32    0.00   98.76

Device             tps    kB_read/s    kB_wrtn/s    kB_read    kB_wrtn
sda               0.00         0.01         0.00          8          0

root@b1:~# █
```

```
🖳 root@b1: ~

root@b1:~# cat /etc/hostname
b1
root@b1:~# exit
root@ubuntu:~# lxc file pull b1/etc/hostname .
root@ubuntu:~# ls
hostname
root@ubuntu:~# cat ./hostname
b1
root@ubuntu:~# touch ./test_file
root@ubuntu:~# ls
hostname  test_file
root@ubuntu:~# lxc file push ./test_file b1/tmp/
root@ubuntu:~# lxc exec b1 /bin/bash
root@b1:~# ls /tmp
systemd-private-4832edc61f1d4c52a25bd3e89d576ee9-systemd-resolved.service-wqNxmq  test_file
root@b1:~# █
```

DOCKER

```
root@ubuntu:~# apt install -y    apt-transport-https    ca-certificates    curl    gnupg-agent    software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
ca-certificates is already the newest version (20180409).
ca-certificates set to manually installed.
curl is already the newest version (7.58.0-2ubuntu3.8).
curl set to manually installed.
software-properties-common is already the newest version (0.96.24.32.12).
software-properties-common set to manually installed.
The following NEW packages will be installed:
  apt-transport-https gnupg-agent
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 6,572 B of archives.
After this operation, 196 kB of additional disk space will be used.
Get:1 http://de.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 apt-transport-https all 1.6.12 [1,692 B]
Get:2 http://de.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 gnupg-agent all 2.2.4-1ubuntu1.2 [4,880 B]
Fetched 6,572 B in 0s (48.3 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 67007 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_1.6.12_all.deb ...
Unpacking apt-transport-https (1.6.12) ...
Selecting previously unselected package gnupg-agent.
Preparing to unpack .../gnupg-agent_2.2.4-1ubuntu1.2_all.deb ...
Unpacking gnupg-agent (2.2.4-1ubuntu1.2) ...
Setting up apt-transport-https (1.6.12) ...
Setting up gnupg-agent (2.2.4-1ubuntu1.2) ...
root@ubuntu:~# curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
OK
root@ubuntu:~# add-apt-repository \
>    "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
>    $(lsb_release -cs) \
>    stable"
Hit:1 http://de.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 https://download.docker.com/linux/ubuntu bionic InRelease [64.4 kB]
Hit:3 http://de.archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:4 http://de.archive.ubuntu.com/ubuntu bionic-backports InRelease
Hit:5 http://de.archive.ubuntu.com/ubuntu bionic-security InRelease
Get:6 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages [11.0 kB]
Fetched 75.5 kB in 0s (205 kB/s)
Reading package lists... Done
root@ubuntu:~#
```

```
root@ubuntu:~# apt update
Hit:1 https://download.docker.com/linux/ubuntu bionic InRelease
Hit:2 http://de.archive.ubuntu.com/ubuntu bionic InRelease
Get:3 http://de.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://de.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://de.archive.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:6 http://de.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [897 kB]
Get:7 http://de.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1,061 kB]
Get:8 http://de.archive.ubuntu.com/ubuntu bionic-security/main amd64 Packages [677 kB]
Get:9 http://de.archive.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [653 kB]
Fetched 3,540 kB in 1s (4,194 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
root@ubuntu:~# apt install -y docker-ce docker-ce-cli containerd.io
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  aufs-tools cgroupfs-mount 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 0 not upgraded.
Need to get 85.8 MB of archives.
After this operation, 385 MB of additional disk space will be used.
Get:1 https://download.docker.com/linux/ubuntu bionic/stable amd64 containerd.io amd64 1.2.13-1 [20.1 MB]
Get:2 http://de.archive.ubuntu.com/ubuntu bionic/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:3 http://de.archive.ubuntu.com/ubuntu bionic/universe amd64 aufs-tools amd64 1:4.9+20170918-1ubuntu1 [104 kB]
Get:4 http://de.archive.ubuntu.com/ubuntu bionic/universe amd64 cgroupfs-mount all 1.4 [6,320 B]
Get:5 http://de.archive.ubuntu.com/ubuntu bionic/main amd64 libltdl7 amd64 2.4.6-2 [38.8 kB]
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 1s (73.4 MB/s)
Selecting previously unselected package pigz.
(Reading database ... 67015 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) ...
```

```
Get:4 http://de.archive.ubuntu.com/ubuntu bionic/universe amd64 cgroupfs-mount all 1.4 [6,320 B]
Get:5 http://de.archive.ubuntu.com/ubuntu bionic/main amd64 libltdl7 amd64 2.4.6-2 [38.8 kB]
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 1s (73.4 MB/s)
Selecting previously unselected package pigz.
(Reading database ... 67015 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 ...
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 (237-3ubuntu10.39) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
root@ubuntu:~# docker --version
Docker version 19.03.8, build afacb8b7f0
root@ubuntu:~#
```

```
root@ubuntu:~# 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]
landlinternet/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
landlinternet/ubuntu-16-apache-php-5.6             ubuntu-16-apache-php-5.6                        14                    [OK]
landlinternet/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]
landlinternet/ubuntu-16-nginx-php-phpmyadmin-mariadb-10  ubuntu-16-nginx-php-phpmyadmin-mariadb-10  11                    [OK]
landlinternet/ubuntu-16-nginx-php-5.6-wordpress-4  ubuntu-16-nginx-php-5.6-wordpress-4             7                     [OK]
landlinternet/ubuntu-16-apache-php-7.1             ubuntu-16-apache-php-7.1                        6                     [OK]
darksheer/ubuntu                                   Base Ubuntu Image -- Updated hourly             5                     [OK]
landlinternet/ubuntu-16-nginx-php-7.0              ubuntu-16-nginx-php-7.0                         4                     [OK]
pivotaldata/ubuntu                                 A quick freshening-up of the base Ubuntu doc…   4
pivotaldata/ubuntu16.04-build                      Ubuntu 16.04 image for GPDB compilation         2
landlinternet/ubuntu-16-php-7.1                    ubuntu-16-php-7.1                               1                     [OK]
smartentry/ubuntu                                  ubuntu with smartentry                          1                     [OK]
landlinternet/ubuntu-16-sshd                       ubuntu-16-sshd                                  1                     [OK]
pivotaldata/ubuntu-gpdb-dev                        Ubuntu images for GPDB development              1
root@ubuntu:~#
```

```
root@ubuntu:~# docker pull ubuntu:18.04
18.04: 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:18.04
docker.io/library/ubuntu:18.04
root@ubuntu:~#
```

```
root@ubuntu:~# docker image ls
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
ubuntu              18.04        4e5021d210f6      2 weeks ago      64.2MB
root@ubuntu:~#
```

```
root@ubuntu:~# docker run -it --name ubnt ubuntu:18.04 /bin/bash
root@49ae10aa468a:/# 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://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [835 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
Get:7 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [870 kB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [37.0 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [7904 B]
Get:10 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:11 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [12.2 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/universe amd64 Packages [1367 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1161 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [2496 B]
Get:18 http://archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4247 B]
Fetched 17.7 MB in 1s (12.8 MB/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@49ae10aa468a:/#
```

```
root@49ae10aa468a:/# apt install -y mc
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  file libgdbm-compat4 libgdbm5 libglib2.0-0 libglib2.0-data libgpm2 libicu60 libmagic-mgc libmagic1 libperl5.26 libslang2 libssh2-1 libxml2 mc-data mime-support
  netbase perl perl-modules-5.26 shared-mime-info unzip xdg-user-dirs xz-utils
Suggested packages:
  gdbm-l10n gpm arj catdvi | texlive-binaries dbview djvulibre-bin genisoimage gv imagemagick libaspell-dev links | w3m | lynx odt2txt poppler-utils python
  python-boto python-tz xpdf | pdf-viewer zip perl-doc libterm-readline-gnu-perl | libterm-readline-perl-perl make
The following NEW packages will be installed:
  file libgdbm-compat4 libgdbm5 libglib2.0-0 libglib2.0-data libgpm2 libicu60 libmagic-mgc libmagic1 libperl5.26 libslang2 libssh2-1 libxml2 mc mc-data mime-support
  netbase perl perl-modules-5.26 shared-mime-info unzip xdg-user-dirs xz-utils
0 upgraded, 23 newly installed, 0 to remove and 12 not upgraded.
Need to get 19.7 MB of archives.
After this operation, 98.1 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 perl-modules-5.26 all 5.26.1-6ubuntu0.3 [2763 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic/main amd64 libgdbm5 amd64 1.14.1-6 [26.0 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic/main amd64 libgdbm-compat4 amd64 1.14.1-6 [6084 B]
Get:4 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libperl5.26 amd64 5.26.1-6ubuntu0.3 [3527 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 perl amd64 5.26.1-6ubuntu0.3 [201 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libmagic-mgc amd64 1:5.32-2ubuntu0.3 [184 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libmagic1 amd64 1:5.32-2ubuntu0.3 [68.7 kB]
Get:8 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 file amd64 1:5.32-2ubuntu0.3 [22.1 kB]
Get:9 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libglib2.0-0 amd64 2.56.4-0ubuntu0.18.04.6 [1171 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libglib2.0-data all 2.56.4-0ubuntu0.18.04.6 [4540 B]
Get:11 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libicu60 amd64 60.2-3ubuntu3.1 [8054 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic/main amd64 libslang2 amd64 2.3.1a-3ubuntu1 [424 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libxml2 amd64 2.9.4+dfsg1-6.1ubuntu1.3 [663 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic/main amd64 mime-support all 3.60ubuntu1 [30.1 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic/main amd64 netbase all 5.4 [12.7 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic/main amd64 shared-mime-info amd64 1.9-2 [426 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic/main amd64 xdg-user-dirs amd64 0.17-1ubuntu1 [48.0 kB]
Get:18 http://archive.ubuntu.com/ubuntu bionic/main amd64 xz-utils amd64 5.2.2-1.3 [83.8 kB]
Get:19 http://archive.ubuntu.com/ubuntu bionic/main amd64 libgpm2 amd64 1.20.7-5 [15.1 kB]
Get:20 http://archive.ubuntu.com/ubuntu bionic/universe amd64 libssh2-1 amd64 1.8.0-1 [73.2 kB]
Get:21 http://archive.ubuntu.com/ubuntu bionic/universe amd64 mc-data all 3:4.8.19-1 [1238 kB]
Get:22 http://archive.ubuntu.com/ubuntu bionic/universe amd64 mc amd64 3:4.8.19-1 [474 kB]
Get:23 http://archive.ubuntu.com/ubuntu bionic/main amd64 unzip amd64 6.0-21ubuntu1 [167 kB]
Fetched 19.7 MB in 1s (31.4 MB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package perl-modules-5.26.
(Reading database ... 4046 files and directories currently installed.)
Preparing to unpack .../00-perl-modules-5.26_5.26.1-6ubuntu0.3_all.deb ...
```

```
Unpacking perl-modules-5.26 (5.26.1-6ubuntu0.3) ...
Selecting previously unselected package libgdbm5:amd64.
Preparing to unpack .../01-libgdbm5_1.14.1-6_amd64.deb ...
Unpacking libgdbm5:amd64 (1.14.1-6) ...
Selecting previously unselected package libgdbm-compat4:amd64.
Preparing to unpack .../02-libgdbm-compat4_1.14.1-6_amd64.deb ...
Unpacking libgdbm-compat4:amd64 (1.14.1-6) ...
Selecting previously unselected package libperl5.26:amd64.
Preparing to unpack .../03-libperl5.26_5.26.1-6ubuntu0.3_amd64.deb ...
Unpacking libperl5.26:amd64 (5.26.1-6ubuntu0.3) ...
Selecting previously unselected package perl.
Preparing to unpack .../04-perl_5.26.1-6ubuntu0.3_amd64.deb ...
Unpacking perl (5.26.1-6ubuntu0.3) ...
Selecting previously unselected package libmagic-mgc.
Preparing to unpack .../05-libmagic-mgc_1%3a5.32-2ubuntu0.3_amd64.deb ...
Unpacking libmagic-mgc (1:5.32-2ubuntu0.3) ...
Selecting previously unselected package libmagic1:amd64.
Preparing to unpack .../06-libmagic1_1%3a5.32-2ubuntu0.3_amd64.deb ...
Unpacking libmagic1:amd64 (1:5.32-2ubuntu0.3) ...
Selecting previously unselected package file.
Preparing to unpack .../07-file_1%3a5.32-2ubuntu0.3_amd64.deb ...
Unpacking file (1:5.32-2ubuntu0.3) ...
Selecting previously unselected package libglib2.0-0:amd64.
Preparing to unpack .../08-libglib2.0-0_2.56.4-0ubuntu0.18.04.6_amd64.deb ...
Unpacking libglib2.0-0:amd64 (2.56.4-0ubuntu0.18.04.6) ...
Selecting previously unselected package libglib2.0-data.
Preparing to unpack .../09-libglib2.0-data_2.56.4-0ubuntu0.18.04.6_all.deb ...
Unpacking libglib2.0-data (2.56.4-0ubuntu0.18.04.6) ...
Selecting previously unselected package libicu60:amd64.
Preparing to unpack .../10-libicu60_60.2-3ubuntu3.1_amd64.deb ...
Unpacking libicu60:amd64 (60.2-3ubuntu3.1) ...
Selecting previously unselected package libslang2:amd64.
Preparing to unpack .../11-libslang2_2.3.1a-3ubuntu1_amd64.deb ...
Unpacking libslang2:amd64 (2.3.1a-3ubuntu1) ...
Selecting previously unselected package libxml2:amd64.
Preparing to unpack .../12-libxml2_2.9.4+dfsg1-6.1ubuntu1.3_amd64.deb ...
Unpacking libxml2:amd64 (2.9.4+dfsg1-6.1ubuntu1.3) ...
Selecting previously unselected package mime-support.
Preparing to unpack .../13-mime-support_3.60ubuntu1_all.deb ...
Unpacking mime-support (3.60ubuntu1) ...
Selecting previously unselected package netbase.
Preparing to unpack .../14-netbase_5.4_all.deb ...
Unpacking netbase (5.4) ...
Selecting previously unselected package shared-mime-info.
```

```
Preparing to unpack .../15-shared-mime-info_1.9-2_amd64.deb ...
Unpacking shared-mime-info (1.9-2) ...
Selecting previously unselected package xdg-user-dirs.
Preparing to unpack .../16-xdg-user-dirs_0.17-1ubuntu1_amd64.deb ...
Unpacking xdg-user-dirs (0.17-1ubuntu1) ...
Selecting previously unselected package xz-utils.
Preparing to unpack .../17-xz-utils_5.2.2-1.3_amd64.deb ...
Unpacking xz-utils (5.2.2-1.3) ...
Selecting previously unselected package libgpm2:amd64.
Preparing to unpack .../18-libgpm2_1.20.7-5_amd64.deb ...
Unpacking libgpm2:amd64 (1.20.7-5) ...
Selecting previously unselected package libssh2-1:amd64.
Preparing to unpack .../19-libssh2-1_1.8.0-1_amd64.deb ...
Unpacking libssh2-1:amd64 (1.8.0-1) ...
Selecting previously unselected package mc-data.
Preparing to unpack .../20-mc-data_3%3a4.8.19-1_all.deb ...
Unpacking mc-data (3:4.8.19-1) ...
Selecting previously unselected package mc.
Preparing to unpack .../21-mc_3%3a4.8.19-1_amd64.deb ...
Unpacking mc (3:4.8.19-1) ...
Selecting previously unselected package unzip.
Preparing to unpack .../22-unzip_6.0-21ubuntu1_amd64.deb ...
Unpacking unzip (6.0-21ubuntu1) ...
Setting up libicu60:amd64 (60.2-3ubuntu3.1) ...
Setting up mime-support (3.60ubuntu1) ...
Setting up libgpm2:amd64 (1.20.7-5) ...
Setting up libglib2.0-0:amd64 (2.56.4-0ubuntu0.18.04.6) ...
No schema files found: doing nothing.
Setting up mc-data (3:4.8.19-1) ...
Setting up unzip (6.0-21ubuntu1) ...
Setting up perl-modules-5.26 (5.26.1-6ubuntu0.3) ...
Setting up libgdbm5:amd64 (1.14.1-6) ...
Setting up libxml2:amd64 (2.9.4+dfsg1-6.1ubuntu1.3) ...
Setting up libmagic-mgc (1:5.32-2ubuntu0.3) ...
Setting up libmagic1:amd64 (1:5.32-2ubuntu0.3) ...
Setting up libssh2-1:amd64 (1.8.0-1) ...
Setting up libglib2.0-data (2.56.4-0ubuntu0.18.04.6) ...
Setting up xz-utils (5.2.2-1.3) ...
update-alternatives: using /usr/bin/xz to provide /usr/bin/lzma (lzma) in auto mode
update-alternatives: warning: skip creation of /usr/share/man/man1/lzma.1.gz because associated file /usr/share/man/man1/xz.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/unlzma.1.gz because associated file /usr/share/man/man1/unxz.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzcat.1.gz because associated file /usr/share/man/man1/xzcat.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzmore.1.gz because associated file /usr/share/man/man1/xzmore.1.gz (of link group lzma) doesn't exis
t
```

```
Setting up unzip (6.0-21ubuntu1) ...
Setting up perl-modules-5.26 (5.26.1-6ubuntu0.3) ...
Setting up libgdbm5:amd64 (1.14.1-6) ...
Setting up libxml2:amd64 (2.9.4+dfsg1-6.1ubuntu1.3) ...
Setting up libmagic-mgc (1:5.32-2ubuntu0.3) ...
Setting up libmagic1:amd64 (1:5.32-2ubuntu0.3) ...
Setting up libssh2-1:amd64 (1.8.0-1) ...
Setting up libglib2.0-data (2.56.4-0ubuntu0.18.04.6) ...
Setting up xz-utils (5.2.2-1.3) ...
update-alternatives: using /usr/bin/xz to provide /usr/bin/lzma (lzma) in auto mode
update-alternatives: warning: skip creation of /usr/share/man/man1/lzma.1.gz because associated file /usr/share/man/man1/xz.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/unlzma.1.gz because associated file /usr/share/man/man1/unxz.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzcat.1.gz because associated file /usr/share/man/man1/xzcat.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzmore.1.gz because associated file /usr/share/man/man1/xzmore.1.gz (of link group lzma) doesn't exis
t
update-alternatives: warning: skip creation of /usr/share/man/man1/lzless.1.gz because associated file /usr/share/man/man1/xzless.1.gz (of link group lzma) doesn't exis
t
update-alternatives: warning: skip creation of /usr/share/man/man1/lzdiff.1.gz because associated file /usr/share/man/man1/xzdiff.1.gz (of link group lzma) doesn't exis
t
update-alternatives: warning: skip creation of /usr/share/man/man1/lzcmp.1.gz because associated file /usr/share/man/man1/xzcmp.1.gz (of link group lzma) doesn't exist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzgrep.1.gz because associated file /usr/share/man/man1/xzgrep.1.gz (of link group lzma) doesn't exis
t
update-alternatives: warning: skip creation of /usr/share/man/man1/lzegrep.1.gz because associated file /usr/share/man/man1/xzegrep.1.gz (of link group lzma) doesn't ex
ist
update-alternatives: warning: skip creation of /usr/share/man/man1/lzfgrep.1.gz because associated file /usr/share/man/man1/xzfgrep.1.gz (of link group lzma) doesn't ex
ist
Setting up shared-mime-info (1.9-2) ...
Setting up libgdbm-compat4:amd64 (1.14.1-6) ...
Setting up libslang2:amd64 (2.3.1a-3ubuntu1) ...
Setting up xdg-user-dirs (0.17-1ubuntu1) ...
Setting up netbase (5.4) ...
Setting up file (1:5.32-2ubuntu0.3) ...
Setting up libperl5.26:amd64 (5.26.1-6ubuntu0.3) ...
Setting up mc (3:4.8.19-1) ...
update-alternatives: using /usr/bin/mcview to provide /usr/bin/view (view) in auto mode
update-alternatives: warning: skip creation of /usr/share/man/man1/view.1.gz because associated file /usr/share/man/man1/mcview.1.gz (of link group view) doesn't exist
update-alternatives: using /usr/bin/mcedit to provide /usr/bin/editor (editor) in auto mode
update-alternatives: warning: skip creation of /usr/share/man/man1/editor.1.gz because associated file /usr/share/man/man1/mcedit.1.gz (of link group editor) doesn't ex
ist
Setting up perl (5.26.1-6ubuntu0.3) ...
Processing triggers for libc-bin (2.27-3ubuntu1) ...
root@49ae10aa468a:/#
```

```
   Left      File     Command     Options     Right
1<q  /  qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq.[^]>k1<q / qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq.[^]>k
x.n                    Name                  x Size  xModify time xx.n                          Name                     x Size  xModify time x
x/bin                                        x   4096xMar 11 21:05xx/bin                                                x   4096xMar 11 21:05x
x/boot                                       x   4096xApr 24  2018xx/boot                                               x   4096xApr 24  2018x
x/dev                                        x    360xApr  4 16:11xx/dev                                                x    360xApr  4 16:11x
x/etc                                        x   4096xApr  4 16:12xx/etc                                                x   4096xApr  4 16:12x
x/home                                       x   4096xApr 24  2018xx/home                                               x   4096xApr 24  2018x
x/lib                                        x   4096xMay 23  2017xx/lib                                                x   4096xMay 23  2017x
x/lib64                                      x   4096xMar 11 21:03xx/lib64                                              x   4096xMar 11 21:03x
x/media                                      x   4096xMar 11 21:03xx/media                                              x   4096xMar 11 21:03x
x/mnt                                        x   4096xMar 11 21:03xx/mnt                                                x   4096xMar 11 21:03x
x/opt                                        x   4096xMar 11 21:03xx/opt                                                x   4096xMar 11 21:03x
x/proc                                       x      0xApr  4 16:11xx/proc                                               x      0xApr  4 16:11x
x/root                                       x   4096xApr  4 16:14xx/root                                               x   4096xApr  4 16:14x
x/run                                        x   4096xMar 20 19:20xx/run                                                x   4096xMar 20 19:20x
x/sbin                                       x   4096xMar 20 19:20xx/sbin                                               x   4096xMar 20 19:20x
x/srv                                        x   4096xMar 11 21:03xx/srv                                                x   4096xMar 11 21:03x
x/sys                                        x      0xApr  4 16:11xx/sys                                                x      0xApr  4 16:11x
x/tmp                                        x   4096xApr  4 16:14xx/tmp                                                x   4096xApr  4 16:14x
x/usr                                        x   4096xMar 11 21:03xx/usr                                                x   4096xMar 11 21:03x
x/var                                        x   4096xMar 11 21:05xx/var                                                x   4096xMar 11 21:05x
x*.dockerenv                                 x      0xApr  4 16:11x*.dockerenv                                          x      0xApr  4 16:11x
tqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqutqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqu
x/bin                                                        xx/bin                                                        x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq 41G/48G (84%) qjmqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq 41G/48G (84%) qj
Hint: Want your plain shell? Press C-o, and get back to MC with C-o again.
root@49ae10aa468a:/#
1Help      2Menu      3View      4Edit      5Copy      6RenMov      7Mkdir      8Delete      9PullDn      10Quit
```

```
root@ubuntu:~# docker run -d --name ubnt1 ubuntu:18.04 /bin/bash
c9b68c77d05a00e002ca92f62af51d4e5064cc4ffa3162075158de9555c3bc29
root@ubuntu:~# docker ps -a
CONTAINER ID      IMAGE           COMMAND          CREATED          STATUS                     PORTS          NAMES
c9b68c77d05a      ubuntu:18.04    "/bin/bash"      38 seconds ago   Exited (0) 37 seconds ago                 ubnt1
root@ubuntu:~# ls
test_file
root@ubuntu:~# docker cp ubnt1:/etc/hostname ./
root@ubuntu:~# cat hostname
c9b68c77d05a
root@ubuntu:~# docker cp ./test_file ubnt1:/tmp/
root@ubuntu:~# docker commit ubnt1 ubnt_my
sha256:b342e54261375b52d10fdaaa5f871f444975339f027af0f2d3acdd94d25467e3
root@ubuntu:~# docker run -it --name ubnt2 ubnt_my /bin/bash
root@7ba5f0f701b5:/# ls /tmp
test_file
root@7ba5f0f701b5:/#
```

Docker command	Short description
pull	Pulls an image or a repository from a registry
push	Pushes an image or a repository to a registry
run	Runs a command in a new container
exec	Runs a command in a run-time container
start	Starts one or more stopped containers
stop	Stops one or more running containers
attach	Attaches to a running container
images	Show all top level images
search	Searches the Docker Hub for images
commit	Creates a new image from a container's changes
export	Exports a container's filesystem as a tar archive
build	Builds an image from a Docker file
save	Save one or more images to a tar archive

K8S

root@ubuntu: ~

```
root@ubuntu:~# snap install microk8s --classic --channel=1.18/stable
microk8s (1.18/stable) v1.18.0 from Canonical✓ installed
root@ubuntu:~# microk8s status --wait-ready
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
root@ubuntu:~#
```

ak@ubuntu: ~

```
ak@ubuntu:~$ kubectl get nodes
NAME       STATUS    ROLES     AGE      VERSION
ubuntu     Ready     <none>    33m      v1.18.0
ak@ubuntu:~$ kubectl get services
NAME          TYPE         CLUSTER-IP      EXTERNAL-IP    PORT(S)    AGE
kubernetes    ClusterIP    10.152.183.1    <none>         443/TCP    34m
ak@ubuntu:~$
```

root@ubuntu: ~

```
root@ubuntu:~# docker build -t my-httpd:local .
Sending build context to Docker daemon  173.9MB
Step 1/2 : FROM httpd:2.4
 ---> 8326be82abe6
Step 2/2 : COPY ./html/ /usr/local/apache2/htdocs/
 ---> 32b63ca6b9cf
Successfully built 32b63ca6b9cf
Successfully tagged my-httpd:local
root@ubuntu:~# docker images
REPOSITORY         TAG        IMAGE ID        CREATED          SIZE
my-httpd           local      32b63ca6b9cf    7 seconds ago    166MB
httpd              2.4        8326be82abe6    5 days ago       166MB
ubuntu             18.04      4e5021d210f6    2 weeks ago      64.2MB
docker/whalesay    latest     6b362a9f73eb    4 years ago      247MB
root@ubuntu:~# docker save -o my-httpd.tar my-httpd
root@ubuntu:~# ls
Dockerfile  html  my-httpd.tar  snap
root@ubuntu:~# microk8s ctr image import my-httpd.tar
unpacking docker.io/library/my-httpd:local (sha256:1b5cdc510d57213fdb31f3383fcf3839ee321cd353ca3b79a94c28912d402600)...done
root@ubuntu:~# microk8s ctr images ls | grep httpd
docker.io/library/my-httpd:local                                            application/vnd.oci.image.manifest.v1+json
    sha256:1b5cdc510d57213fdb31f3383fcf3839ee321cd353ca3b79a94c28912d402600 162.8 MiB linux/amd64                    io.cri-containerd.im
age=managed
root@ubuntu:~#
```

root@ubuntu: ~

```
root@ubuntu:~# microk8s kubectl apply -f ./deployment.yml
deployment.apps/httpd-deployment created
root@ubuntu:~# kubectl get pods
NAME                                 READY    STATUS     RESTARTS    AGE
httpd-deployment-65fcf84b79-2h25s    1/1      Running    0           116s
root@ubuntu:~#
```

```
root@ubuntu:~# kubectl describe pod httpd-deployment-65fcf84b79-2h25s
Name:          httpd-deployment-65fcf84b79-2h25s
Namespace:     default
Priority:      0
Node:          ubuntu/10.100.0.5
Start Time:    Sun, 05 Apr 2020 14:18:30 +0000
Labels:        app=httpd
               pod-template-hash=65fcf84b79
Annotations:   <none>
Status:        Running
IP:            10.1.80.9
IPs:
  IP:          10.1.80.9
Controlled By: ReplicaSet/httpd-deployment-65fcf84b79
Containers:
  httpd:
    Container ID:  containerd://4cf51bb18296d90641555d21ce6954a25804c456dd7293c2664ed4630f3cd522
    Image:         my-httpd:local
    Image ID:      sha256:32b63ca6b9cf58b6d0e20f86e51793a19755546e218453b4b2bc35d8c16899d3
    Port:          80/TCP
    Host Port:     0/TCP
    State:         Running
      Started:     Sun, 05 Apr 2020 14:18:31 +0000
    Ready:         True
    Restart Count: 0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from default-token-ztqdt (ro)
Conditions:
  Type              Status
  Initialized       True
  Ready             True
  ContainersReady   True
  PodScheduled      True
Volumes:
  default-token-ztqdt:
    Type:          Secret (a volume populated by a Secret)
    SecretName:    default-token-ztqdt
    Optional:      false
QoS Class:         BestEffort
Node-Selectors:    <none>
Tolerations:       node.kubernetes.io/not-ready:NoExecute for 300s
                   node.kubernetes.io/unreachable:NoExecute for 300s
```

```
root@ubuntu:~# curl http://10.1.80.9
<html>
        <head>
                <title>
                        EPAM homework 2.4
                </title>
        </head>
        <body>
                <center><h1>Hello from K8s!</h1></center>
        </body>
</html>
root@ubuntu:~#
```