Exercise: Exercise: Exposing Container Ports to the Host

1 2

1. Create a container from the 'centos:6' base image on your system. This container does not need to be name but should be run in daemon mode, interactive and connected to the current terminal. Finally, it should start the bash shell on start up.

```
[user@linuxacademy ~]$ docker run -itd
docker.io/centos:6 /bin/bash

99f87625ff34a5a25af8edd7e95ad9b6a4bc70db63c2ac6e0850dd4cfae58c

[user@linuxacademy ~]$ docker ps

CONTAINER ID        IMAGE                COMMAND
    CREATED             STATUS              PORTS
      NAMES

99f87625ff34        docker.io/centos:6   "/bin/bash"
    3 seconds ago       Up 2 seconds
       elegant_bohr

[user@linuxacademy ~]$ docker ps

CONTAINER ID        IMAGE                COMMAND
    CREATED             STATUS              PORTS
      NAMES

99f87625ff34        docker.io/centos:6   "/bin/bash"
    5 seconds ago       Up 5 seconds
       elegant_bohr
```

2. Using the appropriate Docker inspection command, find the IP address and name for the running container. Once you have the IP, ping the IP to be sure it is running. Finally, attach to the running container so you are logged into the shell.

```
[user@linuxacademy ~]$ docker ps
CONTAINER ID        IMAGE               COMMAND
    CREATED             STATUS              PORTS
      NAMES
99f87625ff34        docker.io/centos:6   "/bin/bash"
    7 minutes ago       Up 7 minutes
       elegant_bohr
[user@linuxacademy]$ docker inspect elegant_bohr | grep
IP
        "GlobalIPv6Address": "",
        "GlobalIPv6PrefixLen": 0,
        "IPAddress": "172.17.0.2",
        "IPPrefixLen": 16,
        "IPv6Gateway": "",
        "LinkLocalIPv6Address": "",
        "LinkLocalIPv6PrefixLen": 0,
        "SecondaryIPAddresses": null,
        "SecondaryIPv6Addresses": null
[user@linuxacademy ~]$ ping 172.17.0.2
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.069
ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.096
ms
^C
--- 172.17.0.2 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time
999ms
rtt min/avg/max/mdev = 0.069/0.082/0.096/0.016 ms
[user@linuxacademy ~]$ docker attach elegant_bohr
```

```
[root@99f87625ff34 /]#
```

3. From within the container, install the Open-SSH server and make sure the service is running. From another terminal, try to log into the container over SSH by IP and note the result.

```
[root@99f87625ff34 /]# yum install openssh-server

... Lots of Output Here

Installed:

  openssh-server.x86_64 0:5.3p1-112.el6_7



Dependency Installed:

  fipscheck.x86_64 0:1.2.0-7.el6              fipscheck-
lib.x86_64 0:1.2.0-7.el6       openssh.x86_64 0:5.3p1-
112.el6_7

  tcp_wrappers-libs.x86_64 0:7.6-57.el6


Complete!

[root@99f87625ff34 /]# service sshd start

Generating SSH2 RSA host key:
   [  OK  ]

Generating SSH1 RSA host key:
   [  OK  ]

Generating SSH2 DSA host key:
   [  OK  ]

Starting sshd:

(Different Terminal)

[user@linuxacademy ~]$ ssh test@172.17.0.2

ssh: connect to host 172.17.0.2 port 22: Connection
refused
```

4. Exit and stop the container. Remove the container from the list of previously run containers once you obtain the name from the appropriate Docker command.

```
[user@linuxacademy ~]$ docker ps -a
CONTAINER ID        IMAGE                COMMAND
    CREATED             STATUS
PORTS               NAMES
99f87625ff34        docker.io/centos:6   "/bin/bash"
    About an hour ago   Exited (0) 4 seconds ago
                    elegant_bohr
8ef073d5c7f4        docker.io/centos:6   "/bin/bash"
    About an hour ago   Exited (0) About an hour ago
                    silly_poincare
[user@linuxacademy ~]$ docker rm elegant_bohr
elegant_bohr
[user@linuxacademy ~]$ docker rm silly_poincare
silly_poincare
[user@linuxacademy ~]$ docker images
REPOSITORY          TAG                 IMAGE ID
   CREATED             VIRTUAL SIZE
docker.io/ubuntu    latest              91e54dfb1179
   4 days ago          188.3 MB
docker.io/centos    6                   a005304e4e74
   9 weeks ago         203.1 MB
[user@linuxacademy ~]$
```

5. Create another container, name this container 'test_ssh'. When creating the container, it should be run in interactive mode and attached to the current terminal running the bash shell. Finally, expose port 22 on the container to port 8022 on the host system. Once logged in, install the Open-SSH server and make sure the service is running. Find the IP address of the container and note it.

```
[user@linuxacademy ~]$ docker ps
CONTAINER ID        IMAGE               COMMAND
    CREATED             STATUS              PORTS
      NAMES

[user@linuxacademy ~]$ docker ps -a
CONTAINER ID        IMAGE                COMMAND
    CREATED             STATUS
PORTS               NAMES

99f87625ff34        docker.io/centos:6   "/bin/bash"
    About an hour ago   Exited (0) 4 seconds ago
                    elegant_bohr

8ef073d5c7f4        docker.io/centos:6   "/bin/bash"
    About an hour ago   Exited (0) About an hour ago
                    silly_poincare

[user@linuxacademy ~]$ docker rm elegant_bohr

elegant_bohr

[user@linuxacademy ~]$ docker rm silly_poincare

silly_poincare

[user@linuxacademy ~]$ docker images

REPOSITORY          TAG                 IMAGE ID
   CREATED             VIRTUAL SIZE

docker.io/ubuntu    latest              91e54dfb1179
   4 days ago          188.3 MB

docker.io/centos    6                   a005304e4e74
   9 weeks ago         203.1 MB

[user@linuxacademy ~]$ docker images

REPOSITORY          TAG                 IMAGE ID
   CREATED             VIRTUAL SIZE

docker.io/ubuntu    latest              91e54dfb1179
   4 days ago          188.3 MB
```

```
docker.io/centos    6                   a005304e4e74
   9 weeks ago         203.1 MB

[user@linuxacademy ~]$ docker run -it --name="test_ssh"
-p 8022:22 docker.io/centos:6 /bin/bash

Usage of loopback devices is strongly discouraged for
production use. Either use `--storage-opt dm.thinpooldev`
or use `--storage-opt dm.no_warn_on_loop_devices=true` to
suppress this warning.

[root@de1119934beb /]# yum install openssh-server

Loaded plugins: fastestmirror

Setting up Install Process

base
                                                | 3.7 kB
  00:00

base/primary_db
                                                | 4.6 MB
    00:07

extras
                                                | 3.4 kB
  00:00

extras/primary_db
                                                |  27 kB
    00:00

updates
                                                | 3.4 kB
    00:00

updates/primary_db
                                                | 1.3 MB
  00:01

Resolving Dependencies

--> Running transaction check

---> Package openssh-server.x86_64 0:5.3p1-112.el6_7
will be installed
```

```
--> Processing Dependency: openssh = 5.3p1-112.el6_7 for
package: openssh-server-5.3p1-112.el6_7.x86_64

--> Processing Dependency: libwrap.so.0()(64bit) for
package: openssh-server-5.3p1-112.el6_7.x86_64

--> Processing Dependency: libfipscheck.so.1()(64bit)
for package: openssh-server-5.3p1-112.el6_7.x86_64

--> Running transaction check

---> Package fipscheck-lib.x86_64 0:1.2.0-7.el6 will be
installed

--> Processing Dependency: /usr/bin/fipscheck for
package: fipscheck-lib-1.2.0-7.el6.x86_64

---> Package openssh.x86_64 0:5.3p1-112.el6_7 will be
installed

---> Package tcp_wrappers-libs.x86_64 0:7.6-57.el6 will
be installed

--> Running transaction check

---> Package fipscheck.x86_64 0:1.2.0-7.el6 will be
installed

--> Finished Dependency Resolution


Dependencies Resolved


================================================================

 Package                              Arch
   Version                               Repository
       Size

================================================================

Installing:

 openssh-server                       x86_64
   5.3p1-112.el6_7                     updates
       324 k
```

```
Installing for dependencies:
 fipscheck                          x86_64
  1.2.0-7.el6                          base
      14 k
 fipscheck-lib                      x86_64
  1.2.0-7.el6                          base
     8.3 k
 openssh                            x86_64
  5.3p1-112.el6_7                      updates
      274 k
 tcp_wrappers-libs                  x86_64
  7.6-57.el6                           base
      62 k

Transaction Summary
================================================================================
Install       5 Package(s)

Total download size: 682 k
Installed size: 1.6 M
Is this ok [y/N]: y
Downloading Packages:
(1/5): fipscheck-1.2.0-7.el6.x86_64.rpm
                                                         |  14 kB
   00:00
(2/5): fipscheck-lib-1.2.0-7.el6.x86_64.rpm
                                                         | 8.3 kB
   00:00
(3/5): openssh-5.3p1-112.el6_7.x86_64.rpm
                                                         | 274 kB
   00:00
```

```
(4/5): openssh-server-5.3p1-112.el6_7.x86_64.rpm
                                                     | 324 kB
  00:00
(5/5): tcp_wrappers-libs-7.6-57.el6.x86_64.rpm
                                                     |  62 kB
  00:00
--------------------------------------------------------------
--------------------------------------------------------------
--------------
Total
                                             306 kB/s | 682 kB
    00:02
warning: rpmts_HdrFromFdno: Header V3 RSA/SHA1
Signature, key ID c105b9de: NOKEY
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-
CentOS-6
Importing GPG key 0xC105B9DE:
 Userid : CentOS-6 Key (CentOS 6 Official Signing Key)
<centos-6-key@centos.org>
 Package: centos-release-6-6.el6.centos.12.2.x86_64
(@CentOS/$releasever)
 From   : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
Is this ok [y/N]: y
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
Warning: RPMDB altered outside of yum.
  Installing : fipscheck-1.2.0-7.el6.x86_64
        1/5
```

```
  Installing : fipscheck-lib-1.2.0-7.el6.x86_64

       2/5

  Installing : openssh-5.3p1-112.el6_7.x86_64

       3/5

  Installing : tcp_wrappers-libs-7.6-57.el6.x86_64

      4/5

  Installing : openssh-server-5.3p1-112.el6_7.x86_64

      5/5

  Verifying  : tcp_wrappers-libs-7.6-57.el6.x86_64

      1/5

  Verifying  : fipscheck-lib-1.2.0-7.el6.x86_64

       2/5

  Verifying  : fipscheck-1.2.0-7.el6.x86_64

       3/5

  Verifying  : openssh-5.3p1-112.el6_7.x86_64

       4/5

  Verifying  : openssh-server-5.3p1-112.el6_7.x86_64

      5/5


Installed:

  openssh-server.x86_64 0:5.3p1-112.el6_7



Dependency Installed:
```

```
  fipscheck.x86_64 0:1.2.0-7.el6              fipscheck-
lib.x86_64 0:1.2.0-7.el6       openssh.x86_64 0:5.3p1-
112.el6_7

  tcp_wrappers-libs.x86_64 0:7.6-57.el6


Complete!

[root@de1119934beb /]# service sshd start

Generating SSH2 RSA host key:
   [  OK  ]

Generating SSH1 RSA host key:
   [  OK  ]

Generating SSH2 DSA host key:
   [  OK  ]

Starting sshd:
  [  OK  ]

[root@de1119934beb /]# ifconfig

eth0      Link encap:Ethernet  HWaddr 02:42:AC:11:00:03


          inet addr:172.17.0.3  Bcast:0.0.0.0
 Mask:255.255.0.0

          inet6 addr: fe80::42:acff:fe11:3/64 Scope:Link

          UP BROADCAST RUNNING MULTICAST  MTU:1500
 Metric:1

          RX packets:3944 errors:0 dropped:0 overruns:0
frame:0

          TX packets:2104 errors:0 dropped:0 overruns:0
carrier:0

          collisions:0 txqueuelen:0

          RX bytes:7151212 (6.8 MiB)  TX bytes:116622
(113.8 KiB)
```

```
lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0
frame:0
          TX packets:0 errors:0 dropped:0 overruns:0
carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
[root@de1119934beb /]#
```

6. Install the 'sudo' utility. Add a user called 'test' and set a password for that user. Add the 'test' user to the 'sudoers' file. From another terminal window, attempt to log into the container via SSH on port 8022 as the 'test' user and confirm access.

```
[root@de1119934beb /]# yum install sudo
Loaded plugins: fastestmirror
Setting up Install Process
Determining fastest mirrors
 * base: repos.dfw.quadranet.com
 * extras: centos.mirror.lstn.net
 * updates: mirror.steadfast.net
Resolving Dependencies
--> Running transaction check
---> Package sudo.x86_64 0:1.8.6p3-20.el6_7 will be
installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================
 Package                 Arch
Version                                  Repository
           Size
================================================================
Installing:
 sudo                    x86_64
1.8.6p3-20.el6_7                         updates
          707 k

Transaction Summary
================================================================
Install       1 Package(s)
```

```
Total download size: 707 k
Installed size: 2.4 M
Is this ok [y/N]: y
Downloading Packages:
sudo-1.8.6p3-20.el6_7.x86_64.rpm
                                                        | 707 kB
  00:02
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : sudo-1.8.6p3-20.el6_7.x86_64
         1/1
  Verifying  : sudo-1.8.6p3-20.el6_7.x86_64
         1/1

Installed:
  sudo.x86_64 0:1.8.6p3-20.el6_7



Complete!
[root@de1119934beb /]# adduser test
[root@de1119934beb /]# passwd test
Changing password for user test.
New password:
BAD PASSWORD: it is based on a dictionary word
Retype new password:
```

```
passwd: all authentication tokens updated successfully.

[root@de1119934beb /]#

(Other Terminal Window)

[user@linuxacademy ~]$ ssh test@172.17.0.3

The authenticity of host '172.17.0.3 (172.17.0.3)' can't
be established.

RSA key fingerprint is
e8:5e:28:d8:64:1f:81:3a:d9:4c:2c:0c:8e:a1:27:b7.

Are you sure you want to continue connecting (yes/no)?
yes

Warning: Permanently added '172.17.0.3' (RSA) to the
list of known hosts.

test@172.17.0.3's password:

[test@de1119934beb ~]$
```

Back Mark as Completed