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Password less Authentication on two Docker Containers

Password less Authentication on two Docker Containers

Note : This article is reply to the question posted by Vijay Kumar Balaji

Steps :

1.Build a Docker Image from Dockerfile, create two Containers
2.Setup Public and Private key

Lets Do it, I have used Azure Docker Virtual Machine,you can have your own docker setup.

It is pre-assumed that you know docker.

1.Build a Docker Image, create two Containers

Here i have used Dockerfile,you can also do it manually pulling a bare OS and set up SSH.

Create a Dockerfile

vim Dockerfile

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```
                                                      sylesh@sylesh: ~/osgroup
FROM ubuntu:16.04

MAINTAINER Shailesh Thakur

RUN apt-get update && apt-get install -y openssh-server
RUN mkdir /var/run/sshd
RUN echo 'root:admin' | chpasswd
RUN sed -i 's/PermitRootLogin prohibit-password/PermitRootLogin yes/' /etc/ssh/sshd_config
RUN sed 's@session\s*required\s*pam_loginuid.so@session optional pam_loginuid.so@g' -i /etc/pam.d/sshd
ENV NOTVISIBLE "in users profile"
RUN echo "export VISIBLE=now" >> /etc/profile
EXPOSE 22
CMD ["/usr/sbin/sshd", "-D"]

~
~
~
```

write and quit.Lets build image from the docker file that is done as..

docker build -t osgroup/ssh_machine1   .

. means from the current directory.

```
                                                      sylesh@sylesh: ~/osgroup
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker build -t osgroup/ssh_machine1 .
Sending build context to Docker daemon 2.048 kB
Step 1/11 : FROM ubuntu:16.04
16.04: Pulling from library/ubuntu
8aec416115fd: Pull complete
695f074e24e3: Pull complete
946d6c48c2a7: Pull complete
bc7277e579f0: Pull complete
2508cbcde94b: Pull complete
Digest: sha256:71cd81252a3563a03ad8daee81047b62ab5d892ebbfbf71cf53415f29c130950
Status: Downloaded newer image for ubuntu:16.04
 ---> f49eec89601e
Step 2/11 : MAINTAINER Shailesh Thakur
 ---> Running in 777039f0906c
 ---> 3f3058eb97bc
Removing intermediate container 777039f0906c
Step 3/11 : RUN apt-get update && apt-get install -y openssh-server
 ---> Running in 251b2f75b6c1
Get:1 http://archive.ubuntu.com/ubuntu xenial InRelease [247 kB]
Get:2 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [102 kB]
Get:3 http://archive.ubuntu.com/ubuntu xenial-security InRelease [102 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial/main Sources [1103 kB]
Get:5 http://archive.ubuntu.com/ubuntu xenial/restricted Sources [5179 B]
```

```
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker images
REPOSITORY           TAG         IMAGE ID        CREATED          SIZE
osgroup/ssh_machine1 latest      98665634f159    2 minutes ago    224 MB
ubuntu               16.04       f49eec89601e    2 days ago       129 MB
sylesh@sylesh:~/osgroup$
```

Creating first container

docker run -tid osgroup/ssh_machine1

we can run it twice to create two containers

```
                                                      sylesh@sylesh: ~/osgroup
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker images
REPOSITORY           TAG         IMAGE ID        CREATED          SIZE
osgroup/ssh_machine1 latest      98665634f159    2 minutes ago    224 MB
ubuntu               16.04       f49eec89601e    2 days ago       129 MB
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker run -itd osgroup/ssh_machine1
1456ad2c43bb6c278fc3f8e1da4a9e4163c3542c969e9d56a83af4612ae04945
sylesh@sylesh:~/osgroup$
```

Checking the running containers

docker ps

```
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker run -itd osgroup/ssh_machine1
0a44d0617c60843ace72c159617e668918055ebdc808d1d0682b17c2a19dd22
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$
sylesh@sylesh:~/osgroup$ docker ps
CONTAINER ID    IMAGE               COMMAND             CREATED         STATUS          PORTS       NAMES
0a44d0617c6     osgroup/ssh_machine1  "/usr/sbin/sshd -D"  11 seconds ago   Up 9 seconds    22/tcp      hungry_yalow
1456ad2c43bb    osgroup/ssh_machine1  "/usr/sbin/sshd -D"  3 minutes ago    Up 3 minutes    22/tcp      practical_kelle
sylesh@sylesh:~/osgroup$
```

Checking the IP assigned to containers

docker inspect <container_name > | grep IPAddress

```
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$ docker inspect hungry_yalow | grep IPAddress
            "SecondaryIPAddresses": null,
            "IPAddress": "172.17.0.3",
                "IPAddress": "172.17.0.3",
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$ docker ps
CONTAINER ID    IMAGE               COMMAND             CREATED         STATUS          PORTS       NAMES
0a44d0617c6     osgroup/ssh_machine1  "/usr/sbin/sshd -D"  13 minutes ago   Up 13 minutes   22/tcp      hungry_yalow
1456ad2c43bb    osgroup/ssh_machine1  "/usr/sbin/sshd -D"  17 minutes ago   Up 17 minutes   22/tcp      practical_keller
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$ docker inspect practical_keller | grep IPAddress
            "SecondaryIPAddresses": null,
            "IPAddress": "172.17.0.2",
                "IPAddress": "172.17.0.2",
sylesh@sylesh:~$
```

Getting Inside the first container

docker exec -ti <container_name> bash

```
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$ docker exec -ti hungry_yalow bash
root@0a444d0617c6:/# ssh
usage: ssh [-1246AaCfGgKkMNnqsTtVvXxYy] [-b bind_address] [-c cipher_spec]
           [-D [bind_address:]port] [-E log_file] [-e escape_char]
           [-F configfile] [-I pkcs11] [-i identity_file] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] [user@]hostname [command]
root@0a444d0617c6:/#
```

Checking with ssh and logging on second container with password

ssh -l root <ip-address_of second container>

```
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/# ssh -l root 172.17.0.2
The authenticity of host '172.17.0.2 (172.17.0.2)' can't be established.
ECDSA key fingerprint is SHA256:2Z4aE9dfRWqM1My29/onQ5q5OL6rmjCZ6ssygI1iJWY.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '172.17.0.2' (ECDSA) to the list of known hosts.
root@172.17.0.2's password:
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-28-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@1456ad2c43bb:~#
```

2.Setup Public and Private key

We generated a public and private key pair on first machine

ssh-keygen

```
sylesh@sylesh:~$
sylesh@sylesh:~$ docker exec -ti hungry_yalow bash
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/# ls
bin  boot  dev  etc  home  lib  lib64  machine1  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:tIFazf6wXR31h7j49EwY4+zqWkmI4W4LNd6aBqObQc0 root@0a444d0617c6
The key's randomart image is:
+---[RSA 2048]----+
|              .|  |
|       +    . + | |
|      + =   + o o| |
|   o + = + + ' ..| |
|  . E = S o B o  | |
| . o+ o * * +    | |
| ...o+ o = o o   | |
|  .o o.+ . .     | |
|  o. .+ .oo      | |
+----[SHA256]-----+
root@0a444d0617c6:/#
```

Copy the public key to the other machine

   ssh-copy-id -i ~/.ssh/id_rsa.pub <ip_of_remote container>

```
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$
sylesh@sylesh:~$ docker exec -ti hungry_yalow bash
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/# ssh-copy-id -i ~/.ssh/id_rsa.pub 172.17.0.2
```

That's all Done !!!!

```
                                                  root@1456ad2c43bb: ~
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/#
root@0a444d0617c6:/# ssh -l root 172.17.0.2
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-28-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage
Last login: Mon Jan 23 06:39:29 2017 from 172.17.0.3
root@1456ad2c43bb:~#
```
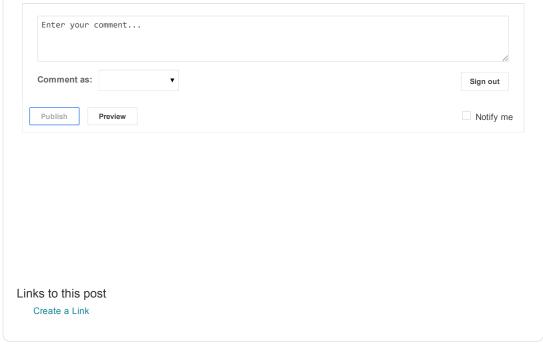
Thanks Happy Virtualization !!!! Feel Free to post as may question possible we try to solve as much as we can

Posted by shailesh thakur at 05:35

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