Virus Identification Pipeline
VIP 0.2.0 Manual

Yang Li

10/Feb/2017

Contents

Why docker with VIP?

Sorry for this very delayed response. I just came back to China from sierra leone. You know, China CDC built a P3 lab there. I am surpised that lots of people worldwide paid attention to VIP.

I cannot check the outlook these days because of the very internet problem there. And we are suggested to not to go anywhere. Thanks to the daily life there, I made some updates for VIP. The most important one is to docker VIP.

Users from world wide used very different operating system, from MAC OS to varitious Linux system. It is a tough task to meet every request. Thanks to docker which can run at every system. So I chose docker.

Hopefully you can enjoy it.

Docker Installation:

Please make sure docker is well installed in your system. You can find guidance here to how to install docker.

Example for installation:

This is an example to install docker for ubuntu system.

```
yeli@ubuntu:~$ docker
The program 'docker' is currently not installed. You can install it by typing:
sudo apt-get install docker
yeli@ubuntu:~$
```

Then we start

```
yeli@ubuntu:~$ curl -fsSL https://get.docker.com/ | sh
[sudo] password for yeli:
apparmor is enabled in the kernel and apparmor utils were already installed
+ sudo -E sh -c apt-key adv --keyserver hkp://ha.pool.sks-keyservers.net:80 --re
cv-keys 58118E89F3A912897C070ADBF76221572C52609D
Executing: gpg --ignore-time-conflict --no-options --no-default-keyring --homedi
r /tmp/tmp.ydfyKj2OmD --no-auto-check-trustdb --trust-model always --keyring /et
c/apt/trusted.gpg --primary-keyring /etc/apt/trusted.gpg --keyserver hkp://ha.po
ol.sks-keyservers.net:80 --recv-keys 58118E89F3A912897C070ADBF76221572C52609D
gpg: requesting key 2C52609D from hkp server ha.pool.sks-keyservers.net
```

curl -fsSL https://get.docker.com/|sh

You will be asked to type the password for installation.

Wait……

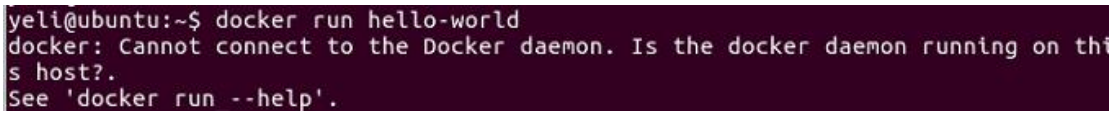
Done.

```
yeli@ubuntu:~$ docker
Usage: docker [OPTIONS] COMMAND [arg...]
       docker [ --help | -v | --version ]

A self-sufficient runtime for containers.

Options:
```

Not yet…



sudo groupadd docker

sudo usermod -aG docker $USER

And Congratulations!

VIP-docker Installation

Firstly we need to localize the docker container with VIP

docker pull yang4li/vip-docker

After downloading the images, you can use command to check:

docker images

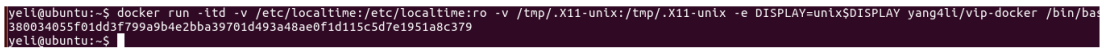
if everything is ok, here:

```
yeli@ubuntu:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
vip                 latest              127299c6fd4f        7 hours ago         6.877 GB
yang4li/vip-docker  latest              127299c6fd4f        7 hours ago         6.877 GB
```

Now, we will enter into the container. It looked like to start a pre-defined computer.

xhost+

docker run -itd -v /etc/localtime:/etc/localtime:ro -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY=unix$DISPLAY yang4li/vip-docker /bin/bash



VIP use ETE to generate tree while ETE required X11 to generate the picture. However, docker container was without X11. We need to use the X11 on host. (Sounds like a tongue twister)

then

docker exec -it 380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5d7e1951a8c379 bash

Notice!!!!!!

380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5d7e1951a8c379 will be different which is a random string generated by docker. The one for you will be generated after the command executed.

Now you enter into the container of vip-docker.

Please type ll and you will see:

```
yeli@ubuntu:~$ docker exec -it 380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5d7e1951a8c379 bash
root@380034055f01:/# ll
total 88
drwxr-xr-x  31 root root 4096 Jan 20 15:06 ./
drwxr-xr-x  31 root root 4096 Jan 20 15:06 ../
-rwxr-xr-x   1 root root    0 Jan 20 15:06 .dockerenv*
drwxr-xr-x   8 root root 4096 Jan 18 00:49 VIP/
drwxr-xr-x   2 root root 4096 Jan 20 07:23 VIPDB/
drwxr-xr-x   2 root root 4096 Jan 18 19:35 VIP_test/
drwxr-xr-x   2 root root 4096 Jan 18 07:03 bin/
drwxr-xr-x   2 root root 4096 Apr 10  2014 boot/
drwxr-xr-x   5 root root  380 Jan 20 15:06 dev/
drwxr-xr-x  90 root root 4096 Jan 20 15:06 etc/
drwxr-xr-x   2 root root 4096 Apr 10  2014 home/
drwxr-xr-x  13 root root 4096 Jan 18 07:03 lib/
drwxr-xr-x   2 root root 4096 Dec 13 17:10 lib64/
drwxr-xr-x   2 root root 4096 Dec 13 17:10 media/
drwxr-xr-x   2 root root 4096 Apr 10  2014 mnt/
drwxr-xr-x   2 root root 4096 Dec 13 17:10 opt/
dr-xr-xr-x 285 root root    0 Jan 20 15:06 proc/
drwx------   5 root root 4096 Jan 18 17:13 root/
drwxr-xr-x   8 root root 4096 Dec 15 09:45 run/
drwxr-xr-x   2 root root 4096 Jan 18 07:03 sbin/
drwxr-xr-x   2 root root 4096 Dec 13 17:10 srv/
dr-xr-xr-x  13 root root    0 Jan 20 07:23 sys/
drwxrwxrwt   6 root root 4096 Jan 20 15:06 tmp/
drwxr-xr-x  10 root root 4096 Jan 17 22:59 usr/
drwxr-xr-x  11 root root 4096 Jan 17 22:56 var/
-rwxrw-rw-   1 root root 1934 Jan 18 22:23 vip-docker-installation.sh*
```

please type:

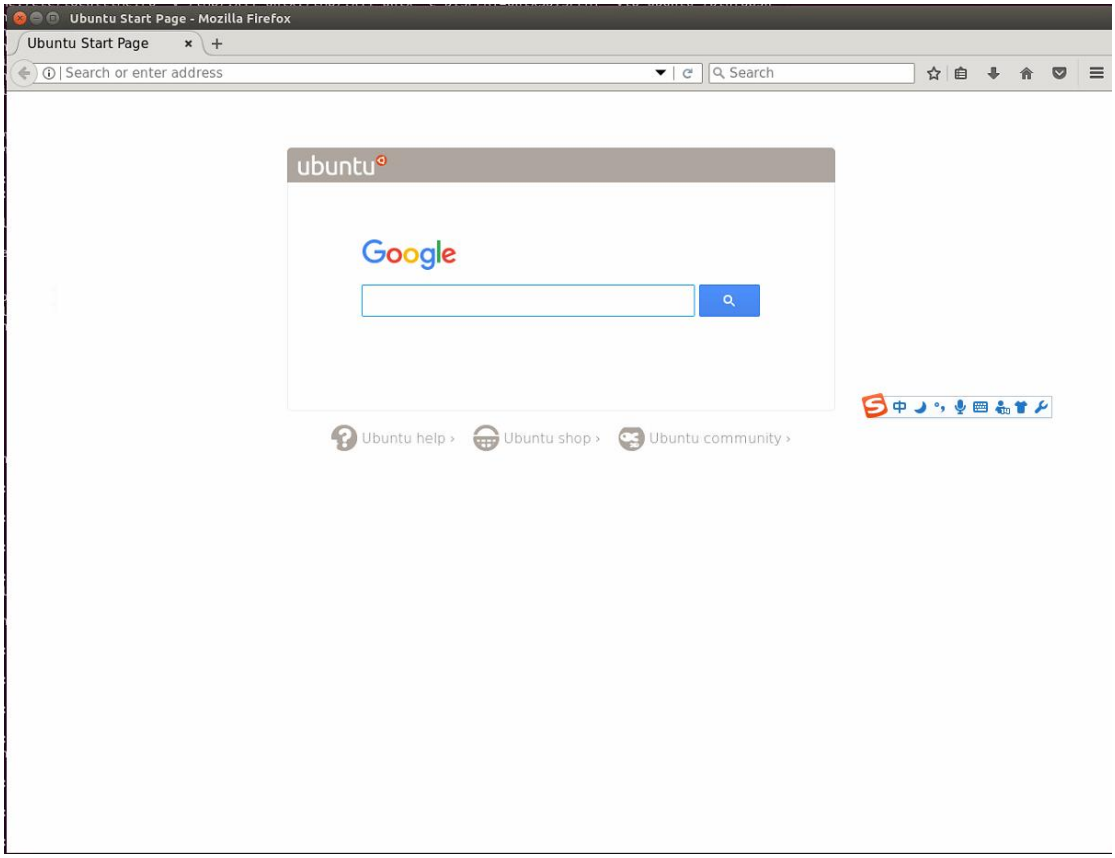
sh vip-docker-installation.sh

and wait for minutes to hours depend on your computer.

Make sure everything is right.

apt-get install firefox

firefox



After you finished the above steps, I strongly recommend to save changes.

```
root@380034055f01:/# exit
exit
yeli@ubuntu:~/Desktop$
```

Then

docker commit [CONTAINER ID] [TAG]

```
yeli@ubuntu:~/Desktop$ docker commit 380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5d7e1951a8c379 vip-installed
sha256:a105c618521edd24211a4e234bcbfbb81b277ec01cef2f841f1ba35e11730abd
```

Please Remember:

Before you enter container, please run xhost+ firstly.

Daily Usage

Make your data into docker

Gernerally there are two ways to transfer your data into the container.

1, Copy local files into docker

docker cp

Copy files/folders between a container and the local filesystem.

2, Make docker mount a volume

docker run –v [PATH]/[TO]/[FILES]:[PATH]/[IN]/[DOCKER]

I recommend the first methond for most users who are not so familiar with docker. For the second method, users should be noticed to save changes in your container after installation.

Here is an example for method 1st.

Firstly, we need to know which container was vip-docker.

docker ps –a

Container ID is an ID :) we are going to use it

IMAGE means the container were built by this image.

Let`s start the container.

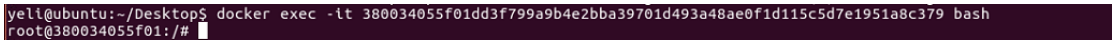
xhost+

Must remember xhost+ before you enter the container.

docker exec -it

380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5

d7e1951a8c379 bash



The command is

docker exex –it [container ID] bash

We need to COPY our data into the container. Please open a new terminal. (Notice you can COPY the file into container firstly before you enter it.)

docker cp /home/yeli/test.fq 380034055f01dd3f799a9b4e2bba39701d493a48ae0f1d115c5d7e1951a8c379:/

The command is:

docker cp [PATH]/[TO]/[FILE] [CONTAINER ID]:[PATH]

You can see:


root@380034055f01:/# ll
total 66136
drwxr-xr-x 32 root root   4096 Feb 9 23:43 ./
drwxr-xr-x 32 root root   4096 Feb 9 23:43 ../
-rwxr-xr-x   1 root root   0 Jan 20 15:06 .dockerenv*
drwxr-xr-x   8 root root   4096 Jan 18 00:49 VIP/
drwxr-xr-x   2 root root   4096 Jan 20 07:23 VIPDB/
drwxr-xr-x   2 root root   4096 Jan 18 19:35 VIP_test/
drwxr-xr-x   2 root root   4096 Jan 18 07:03 bin/
drwxr-xr-x   2 root root   4096 Apr 10 2014 boot/
drwxr-xr-x   5 root root   380 Feb 9 23:08 dev/
drwxr-xr-x 90 root root   4096 Jan 20 15:06 etc/
drwxr-xr-x   2 root root   4096 Apr 10 2014 home/
drwxr-xr-x 13 root root   4096 Jan 18 07:03 lib/
drwxr-xr-x   2 root root   4096 Dec 13 17:10 lib64/
drwxr-xr-x   2 root root   4096 Dec 13 17:10 media/
drwxr-xr-x   2 root root   4096 Apr 10 2014 mnt/
drwxr-xr-x   2 root root   4096 Dec 13 17:10 opt/
dr-xr-xr-x 285 root root   0 Feb 9 23:08 proc/
drwx------   5 root root   4096 Jan 20 15:45 root/
drwxr-xr-x   8 root root   4096 Dec 15 09:45 run/
drwxr-xr-x   2 root root   4096 Jan 18 07:03 sbin/
drwxr-xr-x   2 root root   4096 Dec 13 17:10 srv/
dr-xr-xr-x 13 root root   0 Feb 9 23:08 sys/
-rwxrwxr-x   1 root root 67631090 Feb 9 23:43 test.fq*
drwxrwxrwt   6 root root   4096 Feb 9 23:09 tmp/
drwxr-xr-x 10 root root   4096 Jan 17 22:59 usr/
drwxr-xr-x 11 root root   4096 Jan 17 22:56 var/
-rwxrw-rw-   1 root root   1934 Jan 18 22:23 vip-docker-installation.sh*
root@380034055f01:/#

Q&A

1, If I want to shut down the host, how to enter the docker again?

A: Shutting down the host will make all the container stop, including those ran in backgroud. Now the docker container can not keep the parameters after stop. Please use docker run to start a new container from images.

Here is an example:

After I finished the installation, a new images as vip-installed was developed. Follow the commands

Xhost+

docker run -itd -v /etc/localtime:/etc/localtime:ro -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY=unix$DISPLAY vip-installed /bin/bash

docker exec –it [CONTAINER ID] bash

DONE