

- **This is a preview of Discussion 2 on *Nov.4*.**
- **You can read *discussion_2.pdf* to know the content in advance.**
- **If you want to familiarize yourself with the simulator, the following content may be helpful.**

Prepare IMUNES

For Windows/MacOS Users

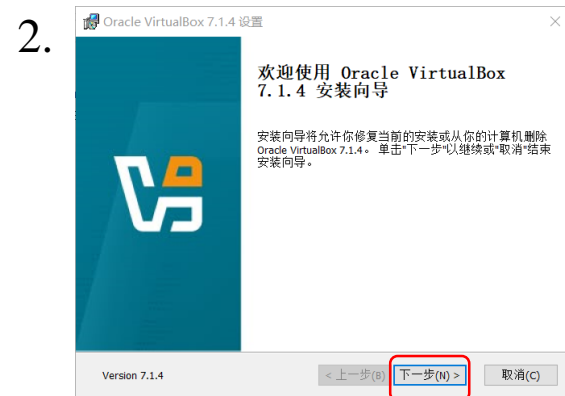
- As IMUNES does not support Windows, you need to install a Linux/FreeBSD virtual machine.
- Ubuntu 18.04 will be used in class. You can download the ISO files of the OSes on:
 - NetEase Mirror Image Station (<http://mirrors.163.com/ubuntu-releases/>), or
 - ShanghaiTech EPAN (<https://epan.shanghaitech.edu.cn/l/SFrhLE>)
- VirtualBox is recommended to install the virtual machine.
 - Download VirtualBox (<https://www.virtualbox.org/wiki/Downloads>)
- Then, install VirtualBox, Ubuntu 18.04 and IMUNES according to following steps.

Prepare IMUNES

For Windows/MacOS Users

- Install VirtualBox

1. Execute  VirtualBox- .xxxxxxxxxxxxxx

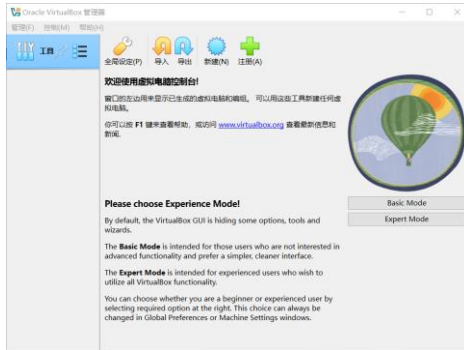


Prepare IMUNES

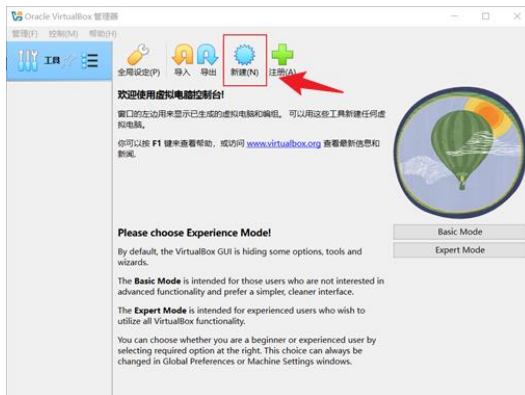
For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

1. Run VirtualBox



2.



3.



Prepare IMUNES

For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

4.

新建虚拟电脑

自动安装

自动安装系统时，可配置用户名、密码及电脑名称。还可以启用扩展增强包安装。Windows系统支持输入产品密钥。

用户名和密码

用户名(S): vboxuser ✓

密码(W): ●●●●

重复密码(R): ●●●●

其它选项

产品标识(P): #####-#####-#####-#####-#####

主机名(M): Ubuntu ✓

域名(D): myguest.virtualbox.org ✓

☐ 在后台安装(I)

☐ 增强功能(E)

增强功能光盘(A): C:\Program Files\Oracle\VirtualBox\VBGuestAdditions.iso

帮助(H) 返回(B) **下一步(N)** 取消(C)

Set your user name and password

Prepare IMUNES

For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

5.



Prepare IMUNES

For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

6.

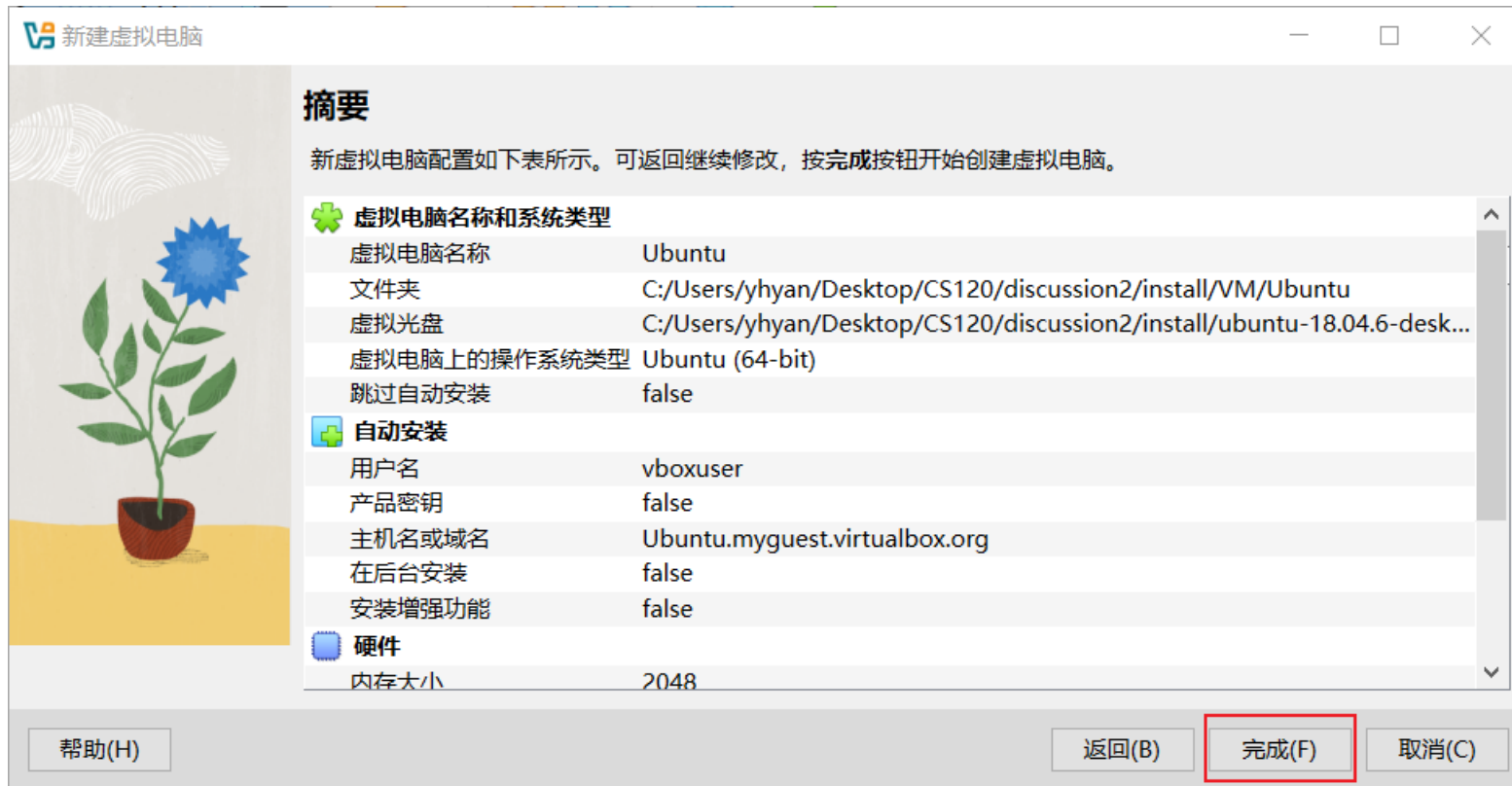


Prepare IMUNES

For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

7.

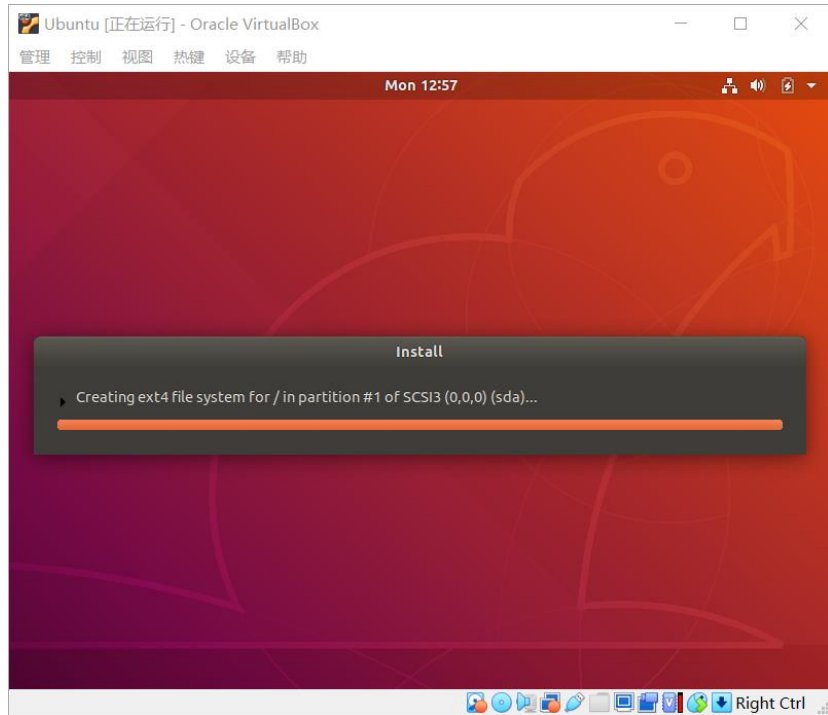


Prepare IMUNES

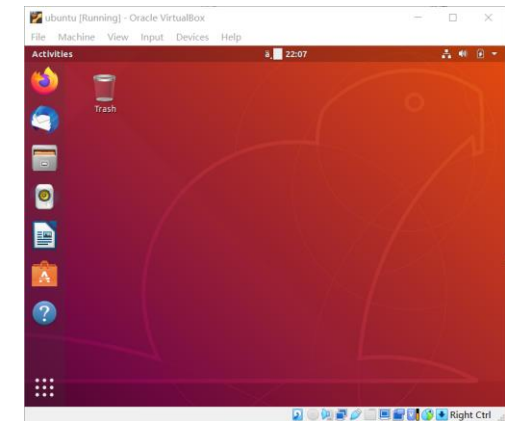
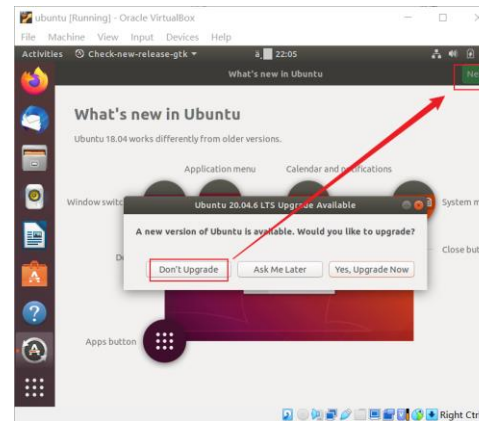
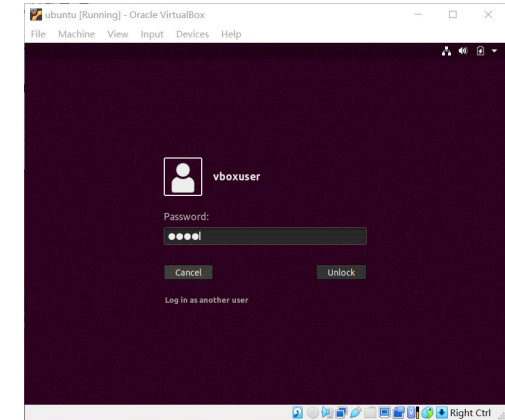
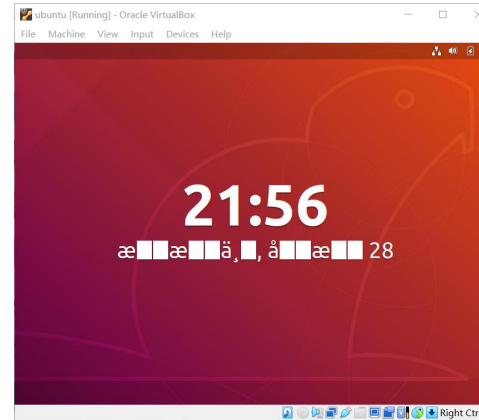
For Windows/MacOS Users

- Install Ubuntu 18.04 in VirtualBox

8. Wait for installation to complete



9. Press **Enter**, input your password, **Unlock**



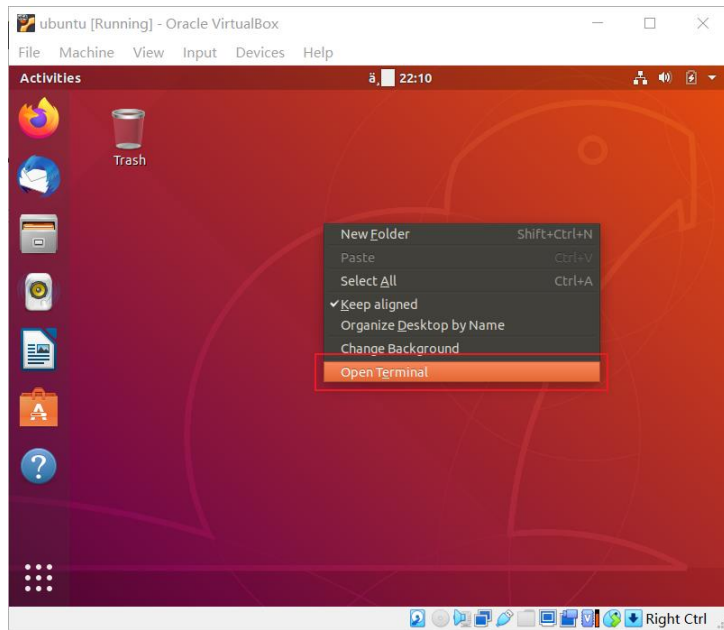
Ubuntu has been installed now!

Prepare IMUNES

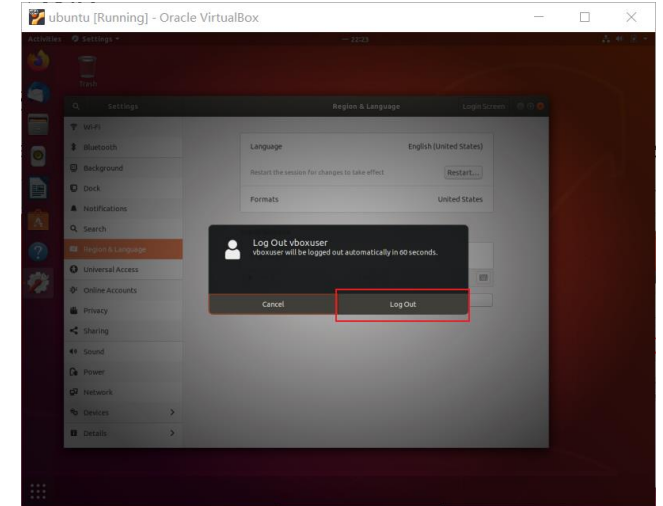
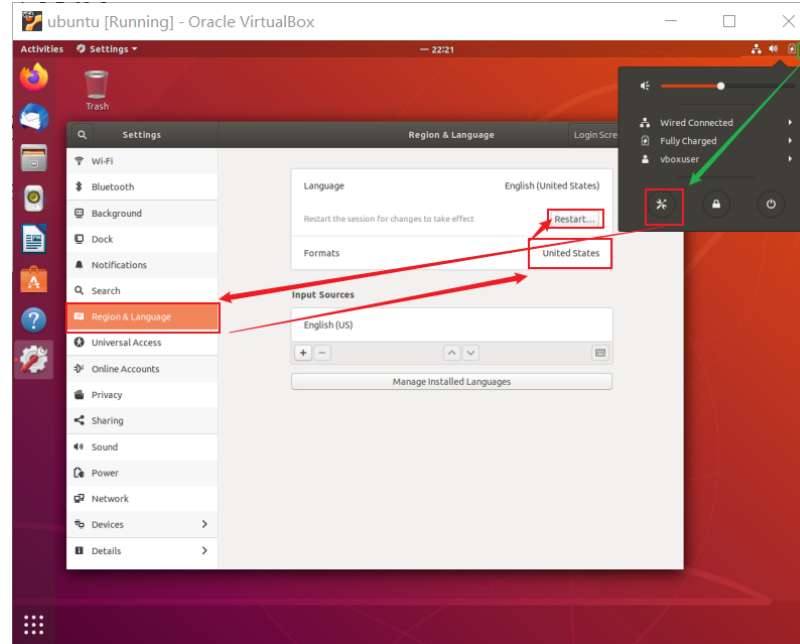
For All Ubuntu (including VM) Users

- Install IMUNES in Ubuntu 18.04

1. Right click and Open Terminal



* If you cannot open terminal, change the **Formats** and **Restart** the system, and login again



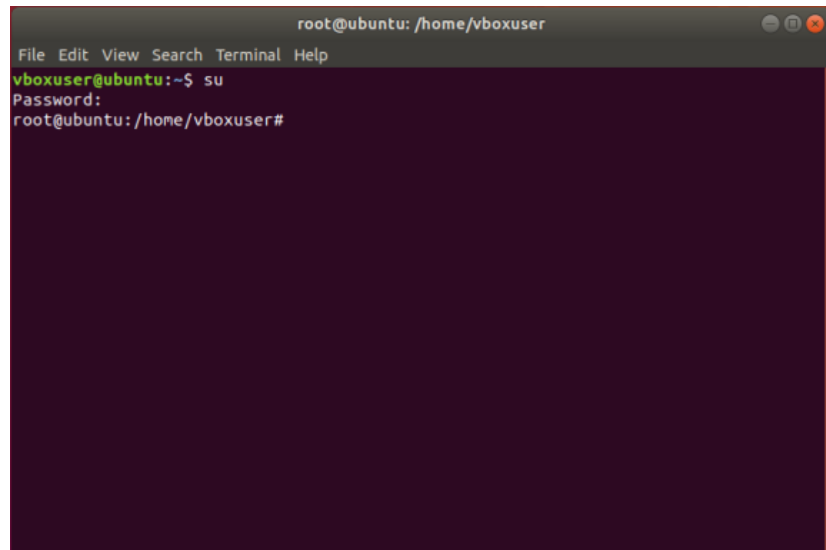
Prepare IMUNES

For All Ubuntu (including VM) Users

- Install IMUNES in Ubuntu 18.04

2. Install software dependencies

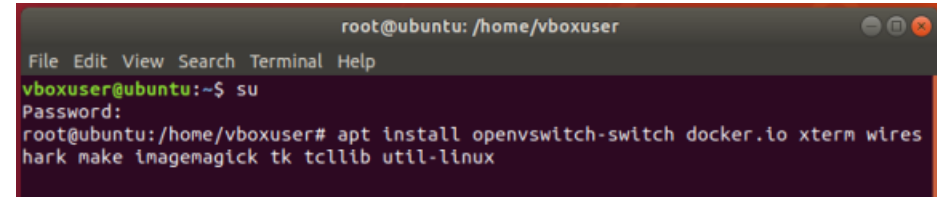
2.1. Obtain root privileges with command “su”, and enter your password



```
root@ubuntu: /home/vboxuser
File Edit View Search Terminal Help
vboxuser@ubuntu:~$ su
Password:
root@ubuntu: /home/vboxuser#
```

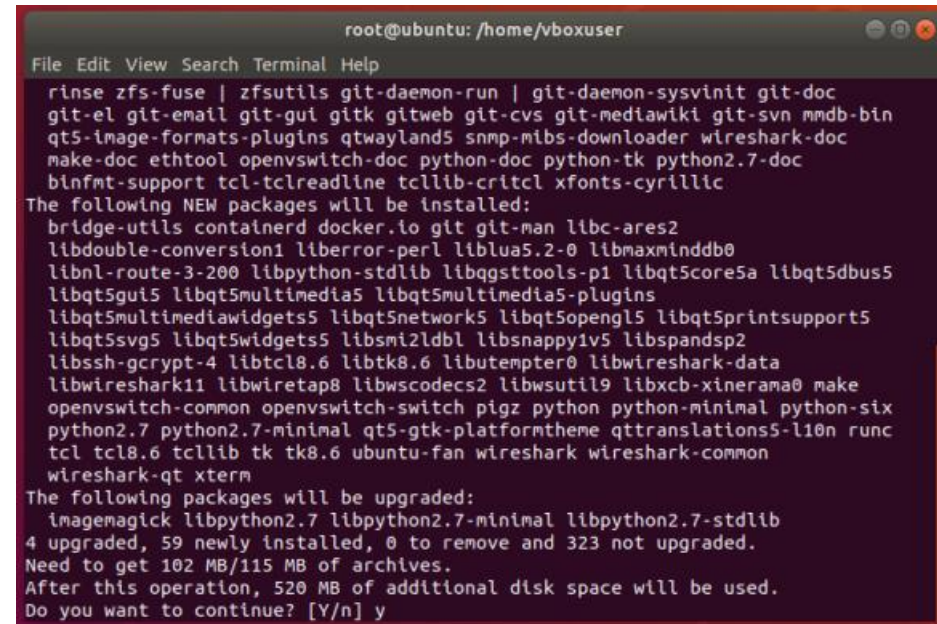
2.2. Install dependencies with following command

- apt install openvswitch-switch docker.io xterm wireshark make imagemagick tk tcllib util-linux



```
root@ubuntu: /home/vboxuser
File Edit View Search Terminal Help
vboxuser@ubuntu:~$ su
Password:
root@ubuntu: /home/vboxuser# apt install openvswitch-switch docker.io xterm wires
hark make imagemagick tk tcllib util-linux
```

Press ‘y’ and Enter



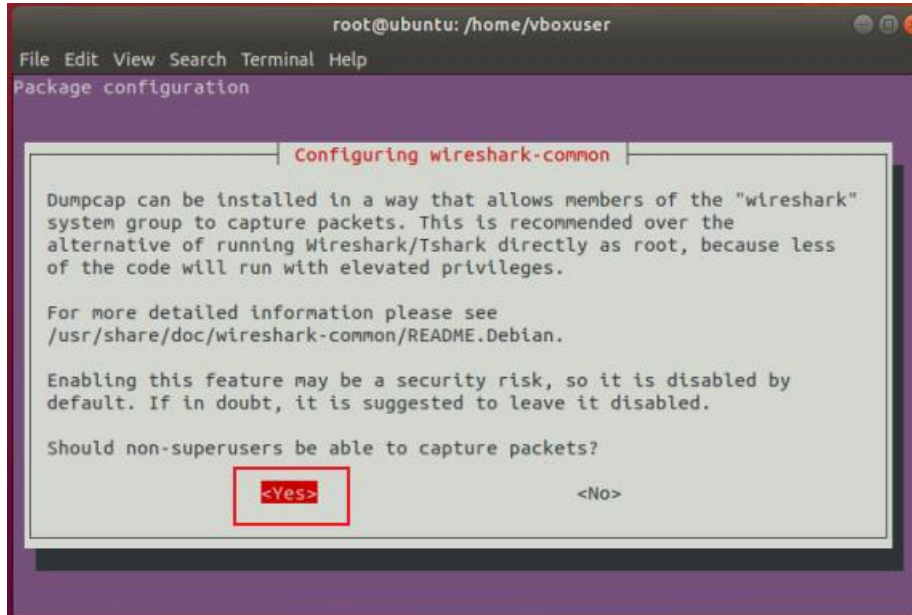
```
root@ubuntu: /home/vboxuser
File Edit View Search Terminal Help
rlnse zfs-fuse | zfsutils git-daemon-run | git-daemon-sysvinit git-doc
git-el git-email git-gui gitk gitweb git-cvs git-mediawiki git-svn mmdb-bin
qt5-image-formats-plugins qtwayland5 snmp-mibs-downloader wireshark-doc
make-doc ethtool openvswitch-doc python-doc python-tk python2.7-doc
binfmt-support tcl-tclreadline tcllib-critcl xfonts-cyrillic
The following NEW packages will be installed:
bridge-utils containrd docker.io git git-man libc-ares2
libdouble-conversion1 liberror-perl liblua5.2-0 libmaxminddb0
libnl-route-3-200 libpython-stdlib libqgsttools-p1 libqt5core5a libqt5dbus
libqt5gui5 libqt5multimedia5 libqt5multimedia5-plugins
libqt5multimediawidgets5 libqt5network5 libqt5opengl5 libqt5sprintsupport5
libqt5svg5 libqt5widgets5 libsmi2ldbl libsnappy1v5 libspandsp2
libssh-gcrypt-4 libtcl8.6 libtk8.6 libutempter0 libwireshark-data
libwireshark11 libwiretap8 libwscodecs2 libwsutil9 libxcb-xinerama0 make
openvswitch-common openvswitch-switch pigz python python-minimal python-six
python2.7 python2.7-minimal qt5-gtk-platformtheme qttranslations5-l10n runc
tcl tcl8.6 tcllib tk tk8.6 ubuntu-fan wireshark wireshark-common
wireshark-qt xterm
The following packages will be upgraded:
imagemagick libpython2.7 libpython2.7-minimal libpython2.7-stdlib
4 upgraded, 59 newly installed, 0 to remove and 323 not upgraded.
Need to get 102 MB/115 MB of archives.
After this operation, 520 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

Prepare IMUNES

For All Ubuntu (including VM) Users

- Install IMUNES in Ubuntu 18.04
 2. Install software dependencies
 - 2.2. Install dependencies (Continue)

Move to 'Yes' with keyboard '←', and **Enter**



```
root@ubuntu: /home/vboxuser
File Edit View Search Terminal Help
Package configuration

Configuring wireshark-common

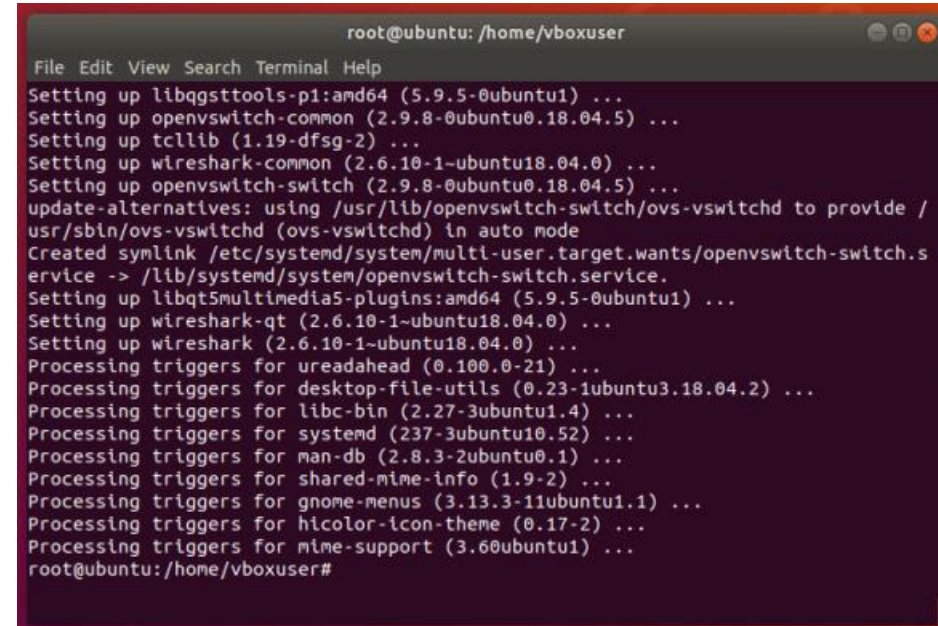
Dumpcap can be installed in a way that allows members of the "wireshark"
system group to capture packets. This is recommended over the
alternative of running Wireshark/Tshark directly as root, because less
of the code will run with elevated privileges.

For more detailed information please see
/usr/share/doc/wireshark-common/README.Debian.

Enabling this feature may be a security risk, so it is disabled by
default. If in doubt, it is suggested to leave it disabled.

Should non-superusers be able to capture packets?
<Yes> <No>
```

Complete



```
root@ubuntu: /home/vboxuser
File Edit View Search Terminal Help

Setting up libqgsttools-p1:amd64 (5.9.5-0ubuntu1) ...
Setting up openvswitch-common (2.9.8-0ubuntu0.18.04.5) ...
Setting up tcclib (1.19-dfsg-2) ...
Setting up wireshark-common (2.6.10-1-ubuntu18.04.0) ...
Setting up openvswitch-switch (2.9.8-0ubuntu0.18.04.5) ...
update-alternatives: using /usr/lib/openvswitch-switch/ovs-vswitchd to provide /
usr/sbin/ovs-vswitchd (ovs-vswitchd) in auto mode
Created symlink /etc/systemd/system/multi-user.target.wants/openvswitch-switch.s
ervice -> /lib/systemd/system/openvswitch-switch.service.
Setting up libqt5multimedia5-plugins:amd64 (5.9.5-0ubuntu1) ...
Setting up wireshark-qt (2.6.10-1-ubuntu18.04.0) ...
Setting up wireshark (2.6.10-1-ubuntu18.04.0) ...
Processing triggers for ureadahead (0.100.0-21) ...
Processing triggers for desktop-file-utils (0.23-1ubuntu3.18.04.2) ...
Processing triggers for libc-bin (2.27-3ubuntu1.4) ...
Processing triggers for systemd (237-3ubuntu10.52) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for shared-mime-info (1.9-2) ...
Processing triggers for gnome-menus (3.13.3-11ubuntu1.1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for mime-support (3.60ubuntu1) ...
root@ubuntu:/home/vboxuser#
```


Prepare IMUNES

For All Ubuntu (including VM) Users

- Install IMUNES in Ubuntu 18.04

2. Install IMUNES with following commands

- `git clone https://github.com/imunes/imunes.git`
- `cd imunes`
- `make install`

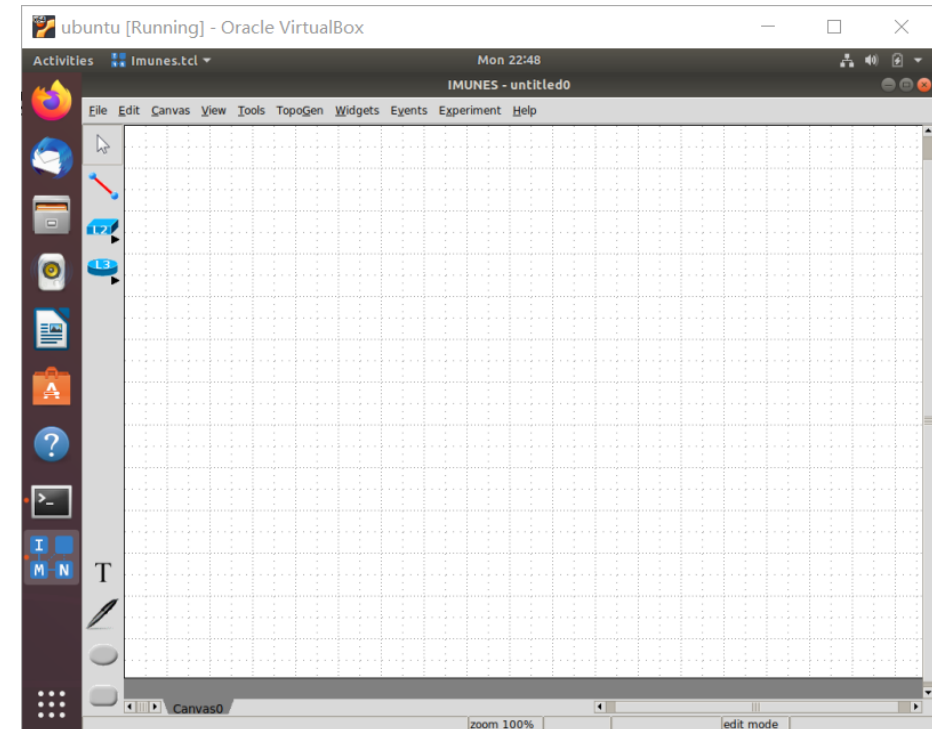
```
root@ubuntu:/home/vboxuser# git clone https://github.com/imunes/imunes.git
Cloning into 'imunes'...
remote: Enumerating objects: 5386, done.
remote: Counting objects: 100% (1962/1962), done.
remote: Compressing objects: 100% (372/372), done.
remote: Total 5386 (delta 1757), reused 1665 (delta 1590), pack-reused 3424 (from 1)
Receiving objects: 100% (5386/5386), 2.32 MiB | 1.08 MiB/s, done.
Resolving deltas: 100% (4005/4005), done.
root@ubuntu:/home/vboxuser# cd imunes
root@ubuntu:/home/vboxuser/imunes#
```

```
root@ubuntu:/home/vboxuser/imunes# make install
rm -rf /usr/local/lib/imunes
for file in imunes pkg_imunes himage.linux vlink.tcl vlink apk_imunes hcp.linux
cleanupAll startxcmd himage cleanupAll.linux hcp apt-get_imunes startxcmd.linux;
do \
    rm -f /usr/local/bin/${file}; \
done ;
rm -rf /usr/local/etc/rc.d/imunes-service.sh
To remove startup topologies, remove /var/imunes-service
mkdir -p /usr/local/lib/imunes
cp COPYRIGHT README.md VERSION /usr/local/lib/imunes
ROOTDIR=/usr/local sh scripts/update_version.sh
mkdir -p /usr/local/bin
sed -e "s,set LIBDIR \"\",set LIBDIR lib/imunes,\" \
-e \"s,set ROOTDIR \"\",set ROOTDIR /usr/local,\" \
imunes.tcl > /usr/local/lib/imunes/imunes.tcl
```

2. Run IMUNES with following command

- `imunes`

```
ing headers)
root@ubuntu:/home/vboxuser/imunes# imunes
```



IMUNES has been installed!