For this project you will be required to install suricata. This is an IDS/IPS. Here are the instructions that I used:

```
apt-get install -y software-properties-common
add-apt-repository ppa:oisf/suricata-stable
apt-get update
apt-get install libnetfilter-queue-dev libnetfilter-queue-ueql libnfnetlink-dev
apt-get install libnetfilter-queue-dev libnetfilter-queue-ueql libnfnetlink-dev
apt-get install libpcap3-dev libpcap-3-dev autoconf automake libtool libpcap-dev libnet1-dev libyaml-dev libjansson4 libcap-ng-dev libmagic-dev libjansson-dev zlib1g-dev
apt install suricata suricata-dbg
```

Now for some detailed edits.

Edit `/etc/suricata/rules/test.rules` to have the following:

```
alert icmp any any -> $HOME_NET any (msg:"ICMP connection attempt"; sid:1000002; rev:1;)
alert tcp any any -> $HOME_NET 23 (msg:"TELNET connection attempt"; sid:1000003; rev:1;)
```

This gives us some sample rules that will cause an alert to trigger.

Now edit `/etc/suricata/suricata.yaml`. Find the `rule-files` section and add:

```
- test.rules
```

Note that in the previous file the values for HOME_NET. Leave them be.

**NAT**

In our setup, we are going to have traffic flow through our suricata box. It will perform NAT functionality for us. In order to do this, we will make it listen on 2 interfaces. (These instructions are for pre-Ubuntu 18.04). Ubuntu 18.04 is a little different.

Begin my making sure your normal networking works. Now, edit your `/etc/network/interfaces` to include something like following, but DON’T DELETE or CHANGE your current iface.

```
iface ens18:0 inet static
    address 10.100.1.1
    netmask 255.255.255.0
    #the gateway address should be the public ip address of this NAT machine
    gateway 144.38.193.207
```

My primary interface was ens18. Your is PROBABLY something different. Change to reflect what your is. You can use the same address and netmask since we are on separate networks. See if you can bring the interface up `ifup ens18:0`. If you get errors, first check to see what the output of `ip a | grep 10.100.1.1` is. If the ip address is listed, then everything worked ok.

Use the following commands to enable NAT. Note that my primary interface was ens18 (public), my private interface (as shown above) was ens18:0. YOURE WILL BE DIFFERENT. Make changes to reflect that.

```
iptables -t nat -A POSTROUTING -o ens18 -j MASQUERADE
iptables -A FORWARD -i ens18:0 -o ens18 -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -A FORWARD -i ens18:0 -o ens18 -j ACCEPT
```

We also need to tell the suricata system that it should forward packets. You need to make sure the contents of `/proc/sys/net/ipv4/ip_forward` is a 1. If it isn’t, change it by doing something like `echo 1 > /proc/sys/net/ipv4/ip_forward`. To make this change persist you should edit `/etc/sysctl.conf` and add `net.ipv4.ip_forward = 1`.

Start suricata by doing something like this:

```
/usr/bin/suricata -D -c /etc/suricata/suricata.yaml -i ens18:0
```

Create another linux machine that is on the same PRIVATE network as above. It need not be on the public
network. It will not do NAT. The gateway for this machine will be 10.100.1.1. Make sure this machine can ping out.

After successfully doing a ping, you should be able to see your alert fire, by looking on suricata machine:

```
tail -f /var/log/suricata/fast.log
```

Once it is working right, you can kill suricata and change every reference of eth0 to ens18:0 (or whatever your nic is) in /etc/suricata/suricata.yaml. And then service suricata start. Double check it still can log.

### Some more tests

From client machine:

- use `apt` to install something (or upgrade)
- use `curl` to send an emerging threats user agent string through it (i.e. something like `curl -A REKOM www.google.com`)
- use `wget` to create a tcp connection to an ip listed in `tor.rules`
- Look at rules and see if you can get others to fire (without actually generating malicious traffic)

It would be interesting to see if it can detect the rootkit traffic/RAT tool we installed a few weeks ago.

### TO pass off

Take a screenshot of your `fast.log`.