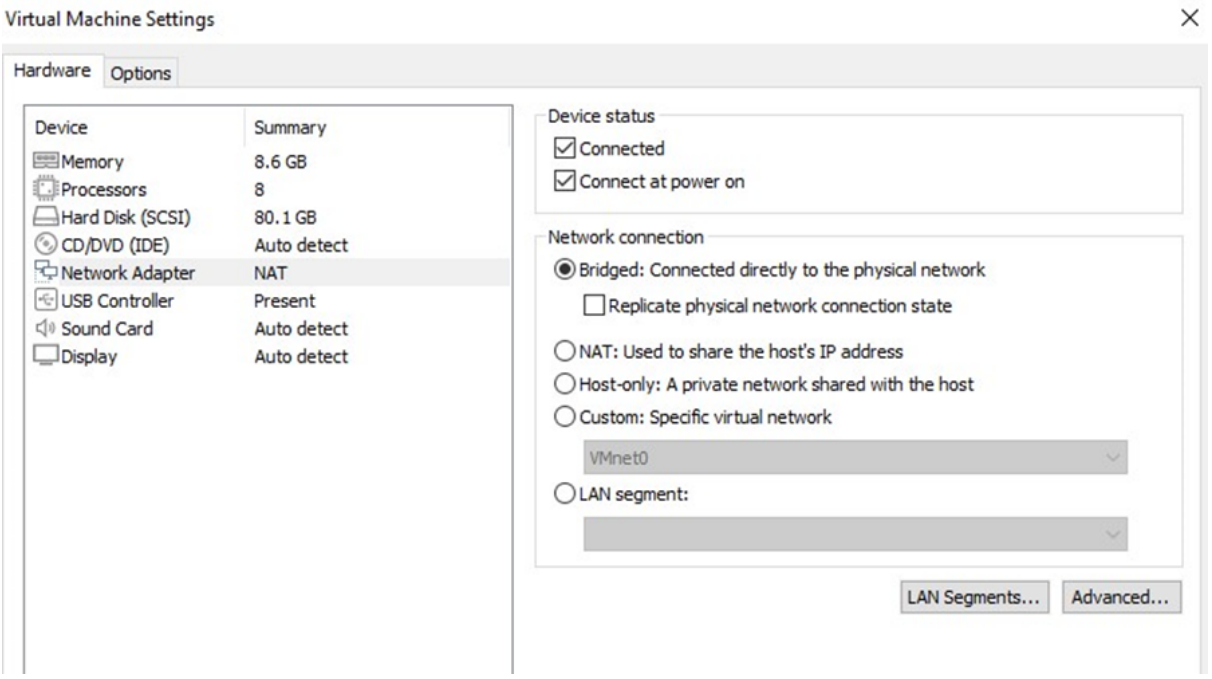
Introduction to Network Intrusion Detection with Snort

> This lab focuses on installing and running Snort, identifying the home network, creating a simple rule, and configuring Snort to alert on specific types of attacks.

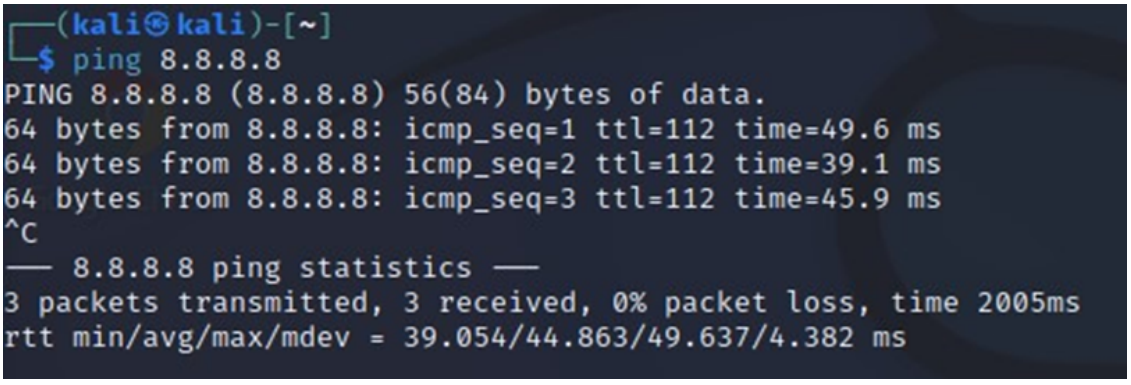
1) Network Setting in VirtualBox

Configure the network setting in Kali Linux as Bridged Adapter:



Make sure you have connection to the Internet: open a terminal and type the following command:

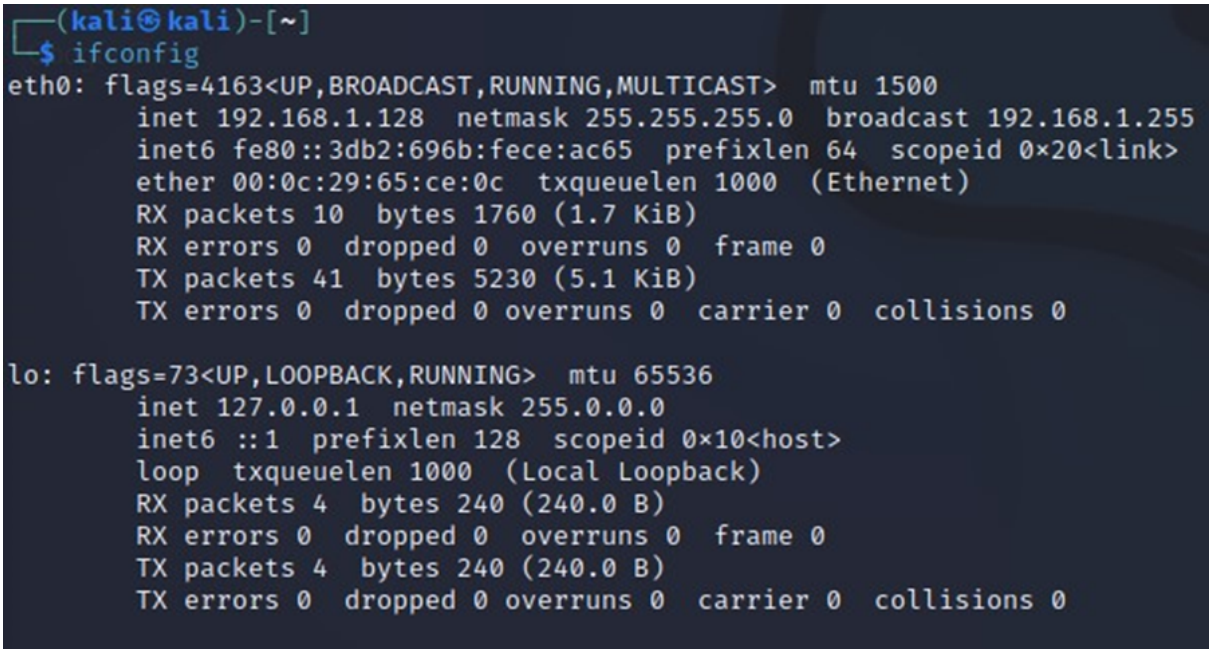
ping 8.8.8.8



2) Identify the Network IP address

Check Kali Linux IP address:

ifconfig



To Identify the network IP address, check the netmask for your IP address.

In the above screenshot, the netmask is 255.255.255.0

Kali IP Address: **192.168.1.**128

Netmask: 255.255.255.0

Network IP Address: 192.168.1.0/24

If you have the netmask 255.255.255.0 you need to add /24 at the end of you network IP address.

Each octet (255) is 8 bits. So, 8+8+8=24.

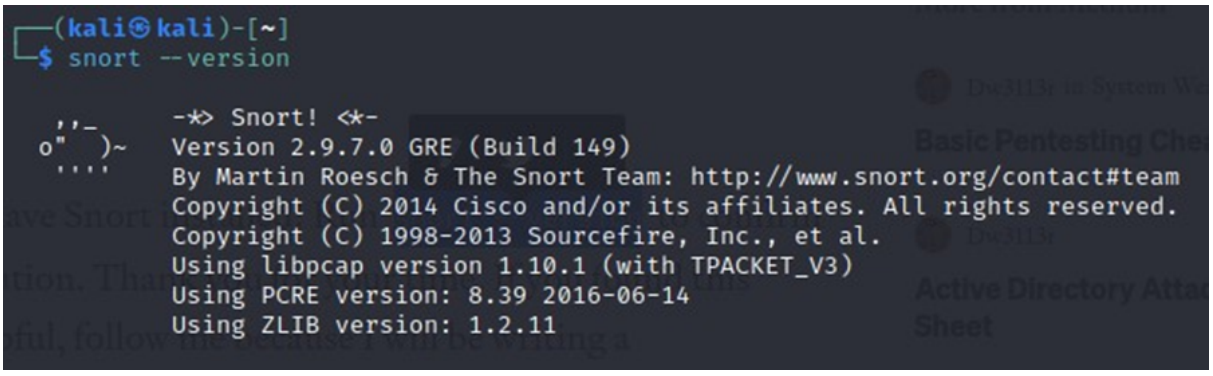
The network IP address will be used in the next step as the network we will be protecting.

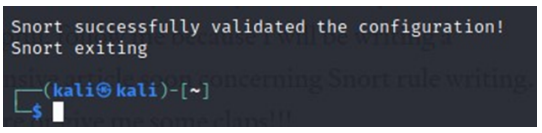
3) Installing and testing Snort NIDS 1

To install Snort on Kali Linux, use the following commands:

sudo apt-get update

sudo apt-get install snort





4) Browsing Snort Rules

Change the directory to the rules' location, cd /etc/snort/rules/

List all the files in the directory ls

All Snort rules files are stored in this location.

```
┌──(kali㉿kali)-[~]
└─$ cd /etc/snort/rules/

┌──(kali㉿kali)-[/etc/snort/rules]
└─$ ls
attack-responses.rules          community-web-dos.rules   policy.rules
backdoor.rules                  community-web-iis.rules   pop2.rules
bad-traffic.rules               community-web-misc.rules  pop3.rules
chat.rules                      community-web-php.rules   porn.rules
community-bot.rules             ddos.rules                rpc.rules
community-deleted.rules         deleted.rules             rservices.rules
community-dos.rules             dns.rules                 scan.rules
community-exploit.rules         dos.rules                 shellcode.rules
community-ftp.rules             experimental.rules        smtp.rules
community-game.rules            exploit.rules             snmp.rules
```

Listing all the available rules in Snort rules directory.

```
┌──(kali㉿kali)-[/etc/snort/rules]
└─$ ls
attack-responses.rules          community-web-dos.rules   policy.rules
backdoor.rules                  community-web-iis.rules   pop2.rules
bad-traffic.rules               community-web-misc.rules  pop3.rules
chat.rules                      community-web-php.rules   porn.rules
community-bot.rules             ddos.rules                rpc.rules
community-deleted.rules         deleted.rules             rservices.rules
community-dos.rules             dns.rules                 scan.rules
community-exploit.rules         dos.rules                 shellcode.rules
community-ftp.rules             experimental.rules        smtp.rules
community-game.rules            exploit.rules             snmp.rules
community-icmp.rules            finger.rules              sql.rules
community-imap.rules            ftp.rules                 telnet.rules
community-inappropriate.rules   icmp-info.rules           tftp.rules
community-mail-client.rules     icmp.rules                virus.rules
community-misc.rules            imap.rules                web-attacks.rules
community-nntp.rules            info.rules                web-cgi.rules
community-oracle.rules          local.rules               web-client.rules
community-policy.rules          misc.rules                web-coldfusion.rules
community-sip.rules             multimedia.rules          web-frontpage.rules
community-smtp.rules            mysql.rules               web-iis.rules
community-sql-injection.rules   netbios.rules             web-misc.rules
community-virus.rules           nntp.rules                web-php.rules
community-web-attacks.rules     oracle.rules              x11.rules
community-web-cgi.rules         other-ids.rules
community-web-client.rules      p2p.rules
```

Question 2: Pick any rule in "web-attacks.rules" and explain what that rule does. You can display all the rules in "web-attacks.rules" by typing the following command:

sudo mousepad /etc/snort/rules/web-attacks.rules

/code

Action	Protocol	Source IP	Source Port	Direction	Destination IP	Destination Port
Alert	TCP	$EXTERNAL_NET	Any	->	$HTTP_SERVERS	$HTTP_PORTS

This rule will display an alert if packets came from any external port to the http ports

6) Create a simple rule

Let's create a Snort rule to detect any ping to 8.8.8.8 (Google DNS IP). Note that "ping" is using ICMP protocol.

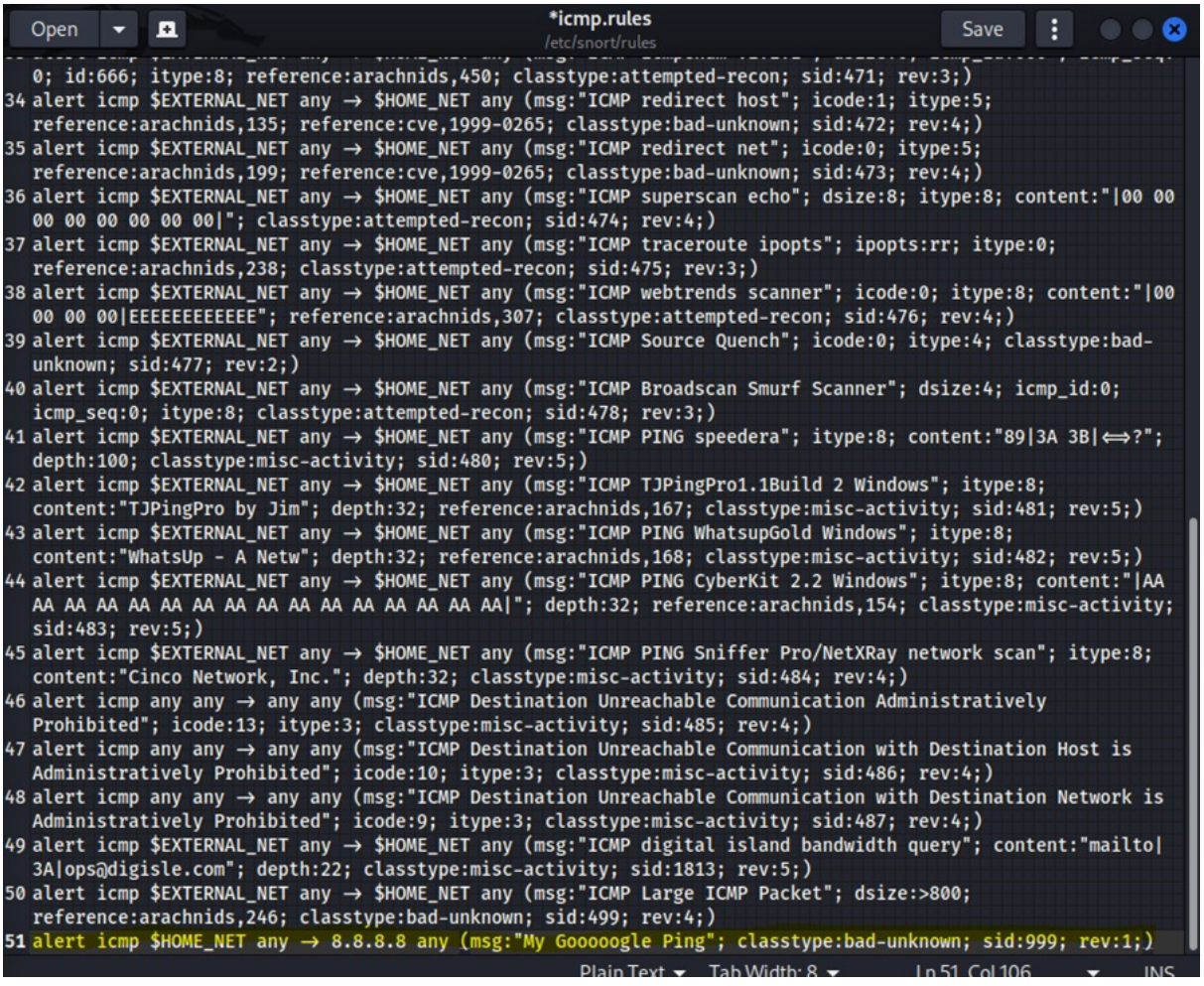
```
alert icmp $HOME_NET any -> 8.8.8.8 any (msg:"My Goooooogle Ping";
classtype:bad-unknown; sid:999; rev:1;)
```

7) Adding Snort Rule

Now, we'll add our simple Snort rule created in the previous stem into "icmp.rules" file that contains all rules related to ICMP protocol.

Open the icmp.rules file

sudo mousepad /etc/snort/rules/icmp.rules



8) Running Snort NIDS and Detecting ICMP request (ping)

In this step, you need to open two command Terminals in Kali Linux. One to run Snort and the other one to run the ping command.

To run Snort, type this command but change the network IP address to yours

```
┌──(kali㉿kali)-[/etc/snort/rules]
└─$ sudo snort -h 192.168.1.128 -A console -c /etc/snort/snort.conf
Running in IDS mode
```

- h to set the home network ($HOME_NET)
- A console: Sends alerts to the console window.
- c Indicates which Snort configuration file to use

In the second terminal type the following ping command:

```
┌──(kali㉿kali)-[~]
└─$ ping 8.8.8.8 -c 2
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=112 time=52.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=112 time=38.3 ms

— 8.8.8.8 ping statistics —
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 38.298/45.321/52.345/7.023 ms
```

```
Commencing packet processing (pid=69647)
12/30-13:52:01.880158  [**] [1:366:7] ICMP PING *NIX [**] [Classification: Misc ac
tivity] [Priority: 3] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:01.880158  [**] [1:999:1] My Goooooogle Ping [**] [Classification: Pote
ntially Bad Traffic] [Priority: 2] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:01.880158  [**] [1:384:5] ICMP PING [**] [Classification: Misc activit
y] [Priority: 3] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:01.932492  [**] [1:408:5] ICMP Echo Reply [**] [Classification: Misc a
ctivity] [Priority: 3] {ICMP} 8.8.8.8 → 192.168.1.128
12/30-13:52:02.882388  [**] [1:366:7] ICMP PING *NIX [**] [Classification: Misc ac
tivity] [Priority: 3] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:02.882388  [**] [1:999:1] My Goooooogle Ping [**] [Classification: Pote
ntially Bad Traffic] [Priority: 2] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:02.882388  [**] [1:384:5] ICMP PING [**] [Classification: Misc activit
y] [Priority: 3] {ICMP} 192.168.1.128 → 8.8.8.8
12/30-13:52:02.920634  [**] [1:408:5] ICMP Echo Reply [**] [Classification: Misc a
ctivity] [Priority: 3] {ICMP} 8.8.8.8 → 192.168.1.128
```

As shown in the above screenshot, Snort has detected ICMP request (ping) according to the direction we have specified in Step 6 (from our HOME_NET to 8.8.8.8 (Google DNS IP) $HOME_NET any -> 8.8.8.8):

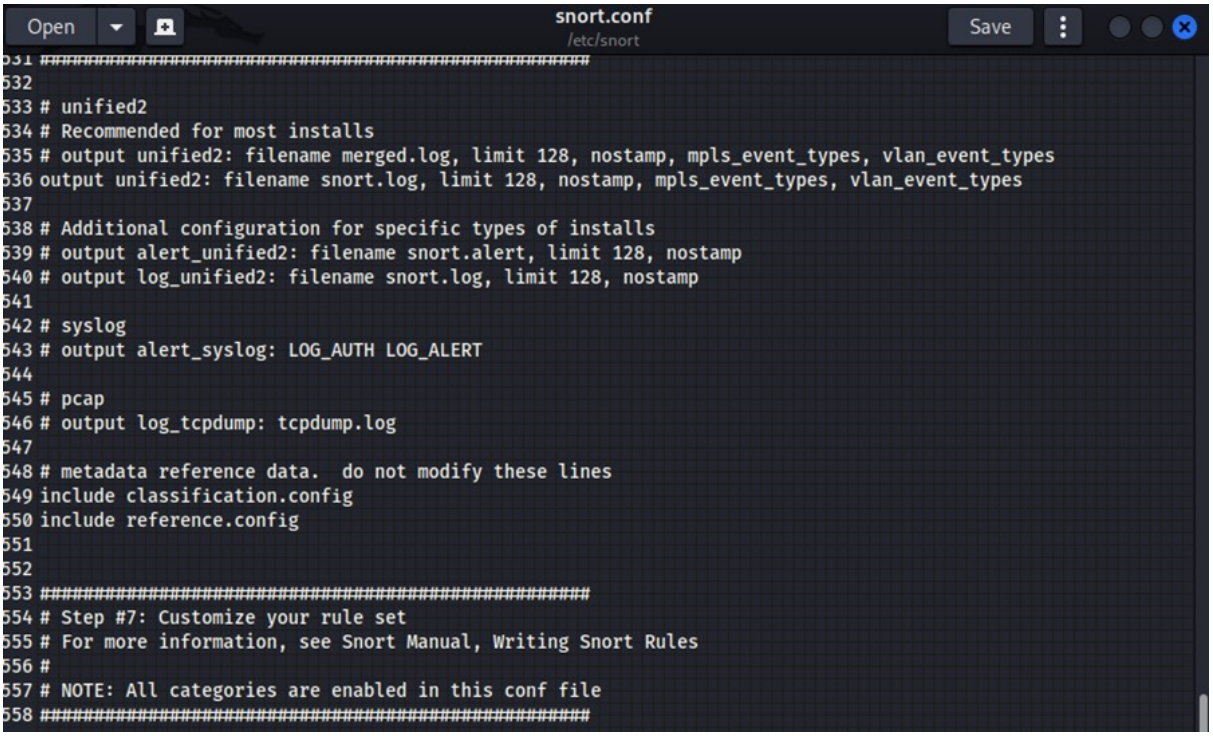
11) Disable / Enable Snort Rules

Snort uses a configuration file called “snort.conf”.

This file allows you to disable or enable rules before running Snort.

To edit the configuration file, run the following command:

sudo mousepad /etc/snort/snort.conf



Any line (rule) begins with # is ignored (disabled), while the remaining rules are enabled (active).

Conclusion

In conclusion, the Snort lab provided hands-on experience in installing, configuring, and utilizing Snort for network intrusion detection. Through this lab, I gained the knowledge and skills to identify and protect my network, create custom rules, and effectively utilize Snort's detection capabilities. The acquired expertise will play a crucial role in enhancing network security by proactively detecting and responding to potential intrusions and attacks.