

IMPLEMENTATION

OS: Ubuntu 18.0.4

Required Softwares:

- 1) mininet (Can be downloaded from <http://mininet.org/download/>)
- 2) POX controller (Can be downloaded from <https://github.com/noxrepo/pox>)
- 3) hping3 (Use command “sudo apt-get install hping3”)
- 4) python3

Implementation:

NETWORK :

- 1) To Setup the network use the “MyNetwork2.py” . Copy this file into the mininet folder installed.
- 2) Open terminal from mininet and type “sudo python3 MyNetwork2.py”

CONTROLLER:

- 1) To setup the pox controller open the following folder /home/pox/pox/forwarding and replace the “l2_learning.py” with our “l2_learning.py” which is submitted to you in the google drive folder.
- 2) Open a new terminal in home/pox and execute this command “python ./pox.py openflow.of_01 --address=127.0.0.1 --port=6636 forwarding.l2_learning”
- 3) This starts the controller with DOS detection algorithm implemented in it.

The network has 8 hosts and 4 switches. The hosts are named as h1,h2,h3,h4,h5,h6,h7,h8. Mininet terminal can be used to generate ping between different hosts to test the network.

Commands like “h1 ping h2” can be run in mininet terminal. The related datapacket movements can be observed in the POX controller terminal.

DOS attack:

- 1) Type “xterm h1” in mininet terminal. This will open the terminal for host1.
- 2) Type “xterm h6” in mininet terminal. This will open the terminal for host6.
- 3) Now we want to create a Dos attack from h1 to h4 and while this is happening we do a ping between h6 and h4.

4) To create a Dos attack from h1 in h1 terminal type “hping3 -V -1 -d 1400 --faster 10.0.0.4”, This starts generating a lot of packet from host1 to host 4. All the packet movements can be observed in the POX terminal.

5) Now in h6 terminal start a ping to h4 by using following command “ping -W 0.1 10.0.0.4”. if the ping is succesfull even h1 is making a dos attack we can confirm that the algorithm is successfull defending the Network from DOS attack.

All the Dos detection, threshold updating, calculating the parameter values can be seen in the POX terminal for every packet in message.