LAB 07

Understanding packet routing in mininet openflow

CO515: Advances in Computer Networks: Selected topics

Install Mininet

Ensure Mininet is installed on your system. You can either run Mininet on a virtual machine (like a VM using VirtualBox or VMware) or in a Docker container. Below is an installation guide for Ubuntu-based systems:

 # Update package lists
sudo apt-get update

 # Install Mininet
sudo apt-get install -y mininet

#Install POX controller:

Download the POX controller from its GitHub repository and install it. Clone the repository and navigate to the pox directory:

git clone https://github.com/noxrepo/pox.git

cd pox

Create a Basic Mininet Topology

With Mininet, you can create a simple network topology to demonstrate packet switching. Here's an example of a simple network with two hosts and a switch:

 # Launch Mininet with a basic topology (1 switch and 3 hosts)
sudo mn --topo single,3

- This command creates a single switch with three hosts (h1, h2 and h3) and uses Open vSwitch (OVS) as the switch type.
- Configure the IP addresses
    - h1 ifconfig h1-eth0 10.0.0.1 netmask 255.255.255.0
    - h2 ifconfig h2-eth0 10.0.0.2 netmask 255.255.255.0
    - h3 ifconfig h3-eth0 10.0.0.3 netmask 255.255.255.0

Write the static routing logic: Create a Python script for your routing logic. Below is an example of how you start a simple static routing logic

```
from pox.core import core
importpox.openflow.libopenflow_01 as of
from pox.lib.util import dpid_to_str
from pox.lib.packet.ethernet import ethernet
from pox.lib.packet.ipv4 import ipv4

log = core.getLogger()

class SimpleRouter(object):

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def launch():
    core.registerNew(SimpleRouter)
```

Run the POX controller: In a new terminal window, navigate to the directory where you saved the routing logic script and run the POX controller with the script:

cd <path_to_pox_directory>
./pox.py <path_to_routing_logic_script>

Launch Mininet: In another terminal window, launch Mininet with the desired topology. For example:

sudo mn --topo single,3

Test connectivity: Once Mininet is running, test connectivity between hosts to verify that routing is working as expected.

Task

1. Test packet switching again by using ping or other connectivity checks.

   mininet> h1 ping h2

2. You are required to submit the routing.py written by yourself and the test results.