HW6

Background

This assignment is in continuation to the previous assignment where you installed mininet in a VM environment along with POX. Once you have have everything setup, you are ready to write custom topologies and controller. Real-world topologies and controllers are job specific and pre-defined ones are hardly ever used. That said, the pre-defined versions are really good for gaining the understanding required to move forward with customizing your network.

Task – (Create a Blocker)

L2 learning switch found in the forwarding folder inside the pox directory creates a learning switch that is able to enable forwarding in almost all types of topologies. It installs flows based on traffic it receives. Go ahead and run the topology with this controller instead of the default controller that mininet uses. Once you have the topology running with a custom topology and the custom L2 Learning controller, you will write your own controller (Blocker) that will override flows installed by L2 Learning. Your controller will run alongside L2 Learning.

In the topology below, which you will create using the Mininet API, you will block communication between h1 and h3. Communication between all other nodes must work as usual but h1 and h3 must not be able to talk with each other.

Your controller must install flows in the switch as a result of which the blocking occurs.

Network Topology

Create a custom topology using the Mininet API that looks like a single, 4 topology available as a pre-defined topology. You cannot use the pre-defined topology.

Handling Conflicts

POX allows running multiple applications concurrently i.e., MAC learning can be done in conjunction with your Blocker, but it doesn’t automatically handle rule conflicts. You have to make sure, yourself, that conflicting rules are not being installed by the two applications e.g., both applications trying to install a rule with same src/dst MAC but with different actions. L2 learning will install rules as it is designed to do and your Blocker controller will try to override those rule by

1) Installing high-priority rules of its own or
2) Deleting rules installed by L2 Learning and installing rules of its own

Submitting your Code

Submit on OnCourse.

Make sure your firewall file is named **yourname-blocker.py**.

Your code should work out-of-the-box from pox/pox/misc/ folder. Since you are not making any changes in the l2_learning.py I will use one that I have on my VM for testing.