L2switch Documentation

Files:

1. l2switch.conf : configuration file for network topology
2. l2switch.rb: l2switch implemetation using Trema
3. fdb.rb : module used by l2switch.rb to store hosts and their port number information

To run it:

./trema run src/cs470/l2switch.rb -c src/cs470/l2switch.conf

It’s output:

When there’s packet coming in, output will be printed out for details such as

Datapath\_id

transaction\_id

buffer\_id

Total\_len

Reason

Table\_id

cookie

In\_port

packet\_info

eth\_src

eth\_dst

Eth\_type

Ip\_dscp

Ip\_ecn

Ip\_proto

Ipv4\_src

ipv4\_dst

How it works:

L2switch learns “host mac address” and “in-port number” combination by using fdb module.

Before it learns the host information, it doesn’t have a routing table to lookup. So the switch ask controller for instruction. The controller instructs by the following rule:

When source IP is 192.168.0.1, then forward to port 2

When source IP is 102.168.0.2, then forward to port 1

L2switch learns hosts and their in-port information after the first a few connections by

@fdb.learn macsa, message.in\_port

After the host information has been saved into the routing table, it can lookup the host’s mac address to get the in-port number

out\_port = @fdb.lookup(macda)

If l2switch finds the information from the routing table, it prints

“l2switch found match from what it learnt before!”

So we know that this is the result from looking up the routing table, not through the controller instruction.

Private Functions:

def flow\_mod(datapath\_id, macsa, macda, out\_port)

This function takes in datapath\_id, source and destination mac address, and out\_port as argument

It uses Trema’s “send\_flow\_mod\_add” method to change vswitch’s flow table

def packet\_out(datapath\_id, message, out\_port)

This function takes in datapath\_id and message, out\_port as argument

It sends packets from packet-in out to port specified by out\_port

Module fdb.rb ( Used the fdb.rb in Trema’s example code by Yasuhito Takamiya)

It stores “host mac address” and “in-port number” combination for hosts which sends packet in by learn method:

def learn(mac, port\_number)

It can also find out the in-port number by host mac address if the host information has been learnt already

Lookup method has only 1 argument of host mac address to lookup.

def lookup(mac)