CS4226 SDN Project Report

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mininetTopo.py

Normal stuff as it should be. There isn't anything special here.

controller.py

Import firewall policies as well as QoS user priorities during initiation of Controller.

At every ConnectionUp event, send every firewall policy to the switch. Determine the type of firewall policy by length, and make the corresponding flow entry.

At every PacketIn event, assuming it's either an ARP or ICMP or normal IPv4 packet, extract all relevant attributes of the event. Update corresponding switch's host mac -> port mapping dictionary, if and only if this host mac's port is not determined yet. (This prevents the longer path from flushing shorter path due to flooding.)

Instruct the switch to flood the packet only if destination_mac is multicast address, or the controller does not know the port the destination_mac is on. Additional checking is done via source_ip and destination_ip to check if this switch has already flooded such a packet. This prevents a highly connected mesh of switches from flooding each other endlessly, as the reply from destination_ip to source_ip will never touch a lot of these switches.

On the other hand, if the controller knows the port number for destination_mac, it determines the queue for the packet based on the most previlaged host out of source_ip or destination_ip. This information is taken from the user_queue dictionary initiated during Controller initiation.

Conclusion

I'd like to send my warmest regards to the Mininet team for their pure lack of effort in their documentation.