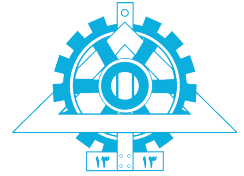


بسم الله الرحمن الرحيم

In the name of Allah



SDN and Nothing Else

LABORATORY MANUAL

University of Tehran
School of Electrical and Computer Engineering

دانشگاه تهران
دانشکده‌ی مهندسی برق و کامپیوتر

Computer Network Lab
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۲۳ آبان ۱۳۹۸

Part I

SDN Introduction

1 Exercise One

Remember one of the previous labs¹ where you are using host rather than router to emulate some routing functionality. In this experiment we want to implement same functionality with SDN switches. To warm up our hands we will start by simple scenario:

- Open `switch.py` and read it's codes carefully.
- Run this code with `sudo python switch.py`
- Ping `h2` from `h1`.
- Capture OpenFlow hello packet on `lo` interface. (Filter `wireshark` output with `of` filter)

Report

1. Explain line 21 to 26 of `switch.py`.
2. Read <http://flowgrammable.org/sdn/openflow/state-machine/> and explain switch handshake with controller. What is `xid` of your packets. Justify your answer with captured packets. **Don't copy and paste text from reference in your lab report.**

2 Exercise Two

Use what you learned in previous exercise and create Figure 1 topology. Configure switches in this topology where ??? we can ping each host from each host. Show your final result to instructors.

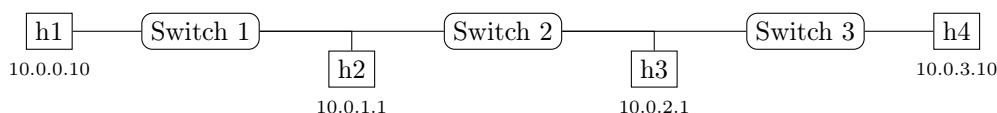


Figure 1: Mininet topology

Part II

Exercises with Multitables Flows

3 Exercise Three

In this section we are loading switch flows from another files and examining it's functionality.

- Execute `sudo python topo.py`
- Execute `sh ovs-ofctl add-flows s1 tables.txt` on mininet console.
- Ping each host from other hosts.
- Capture ICMP packets on each host and observe network behavior.

¹Lab 4: Routing

- Modify `tables.txt` to drop packets between *h1* and *h2*.

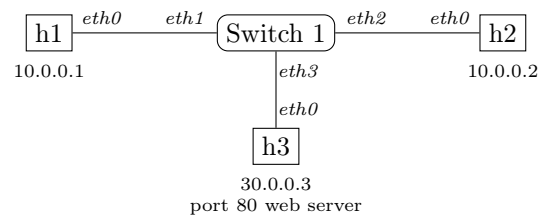


Figure 2: Multitable scenario

Report

1. Can you explain switch behavior? Justify your answer with `wireshark` output and `tables.txt` file.