SDN Lab2

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Outline

- Goals
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Goals

- Learn how to create network topology in Mininet
- Learn how to SDN controller Ryu to monitor the created network system

Lab Content

- Step 1: Create a specific topology network system in Mininet
- Step 2: Modify the SDN controller code based on "simple_switch_13.py" to make your controller be able to monitor the switches
- Step 3: Show the Layer 2 address table of the switches

Instructions

- Step 1: Create a specific topology in Mininet
  - Find the simple custom topology script in mininet at " ~/mininet/custom/topo-2sw-2host.py "
  - There are some useful commands:

    addHost, addSwitch, addLink
  - Ex: "self.addLink(sw1,sw2,bw=10,loss=10)" means add a link with a bandwidth of 10 Mbps, and 10% packet loss rate

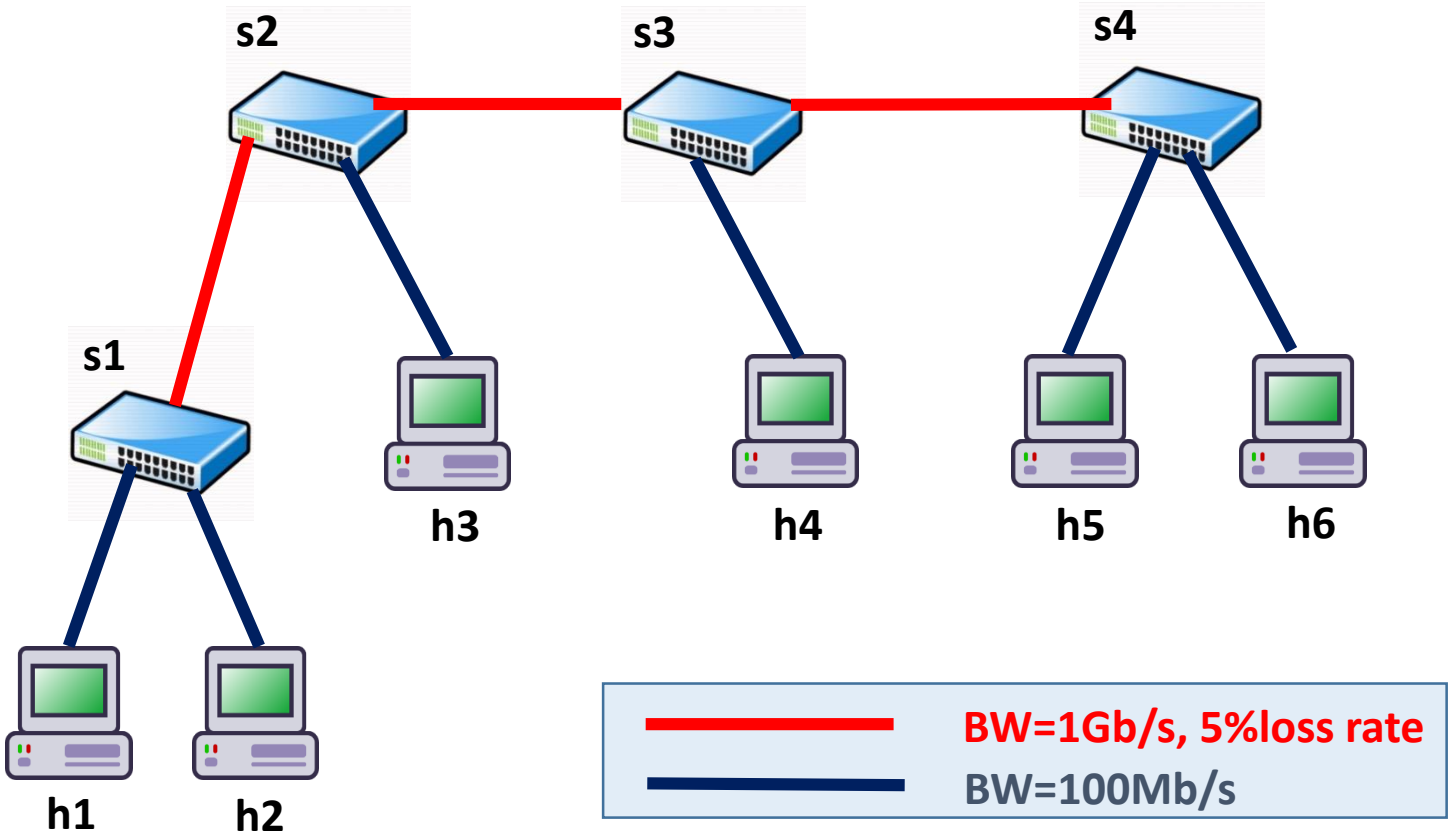
Instructions

- Step 1: Create a specific topology in Mininet
  - Understand the sample script and write your own topology script
  - "--custom" means use custom topology
  - "--topo" means use topology "mytopo" from the dictionary "topos" in the script
  - "--link" means use traffic control link
  - Use the following command to create your topology:

sudo mn --topo mytopo --custom ~/mininet/custom/yourscript.py --controller remote --switch default,protocols=OpenFlow13 --link=tc

Instructions

- Step 1: Create a specific topology in Mininet



Instructions

- Step 2: Modify the SDN controller code
  - Create a thread to monitor the traffic of all the switches every 5 seconds [1]
  - You will have to use "OFPPortStatsRequest( )", "OFPPortStatsReply( )" to get the switch information [2]
  - Run your code by the command:

    "ryu-manager yourcode.py"

Reference :
[1] Chapter 2 of Ryubook: http://osrg.github.io/ryu-book/en/Ryubook.pdf
[2] http://ryu.readthedocs.org/en/latest/ofproto_v1_3_ref.html#multipart-messages

Instructions

- Step 2: Modify the SDN controller code
  - Print the address table and monitor information of all switches every 5 seconds including:
    1. Switch IDs
    2. Port numbers
    3. Number of transmitted and received packets of each port