CS3543 Lab Assignment for Jan 18th (Deadline: 23:59 on January 22rd (WED), 2019)

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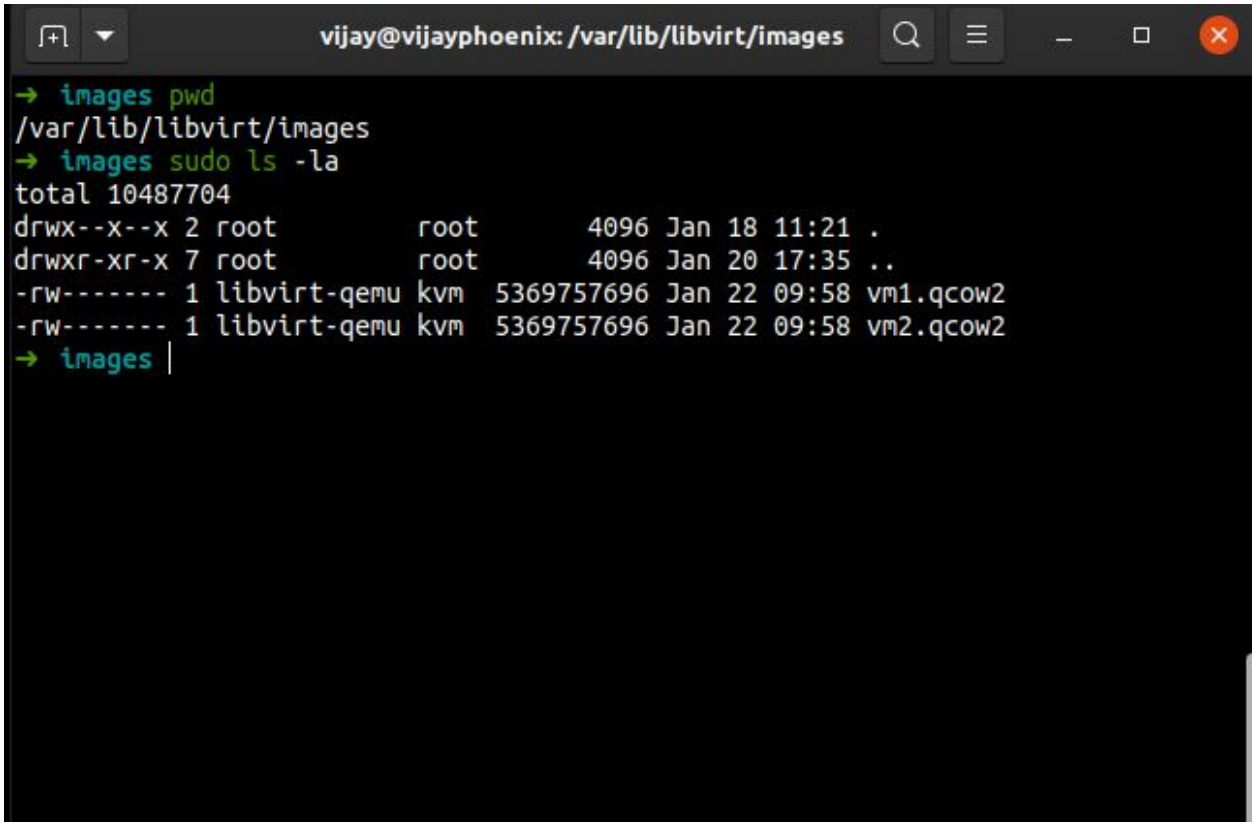
General Information

1. This assignment can be conducted and submitted by a per (up to 2) of students. The same mark will be offered to the pair of students regardless of individual contributions.
2. The assignment is customized for Ubuntu + KVM environment. It is highly recommended for non-Ubuntu users to enable dual boot on your laptop computer and install Ubuntu. If you would like to work on another operating system and virtualization platform, you need to interpret the Ubuntu/KVM terminology to another environment's terminology.
3. Each individual or pair can create a locally copy of this question file, give the answer to the local copy, and submit in a form of PDF file.
4. Only one submission is good enough as far as the student name and ID are properly mentioned.
5. Do not send any private comment to separately mention the buddy.

Question 1.
Fill the blanks in the following table in your VM environment. Be noted that yellow-marked blanks are to be filled as answer of Question 5.1.

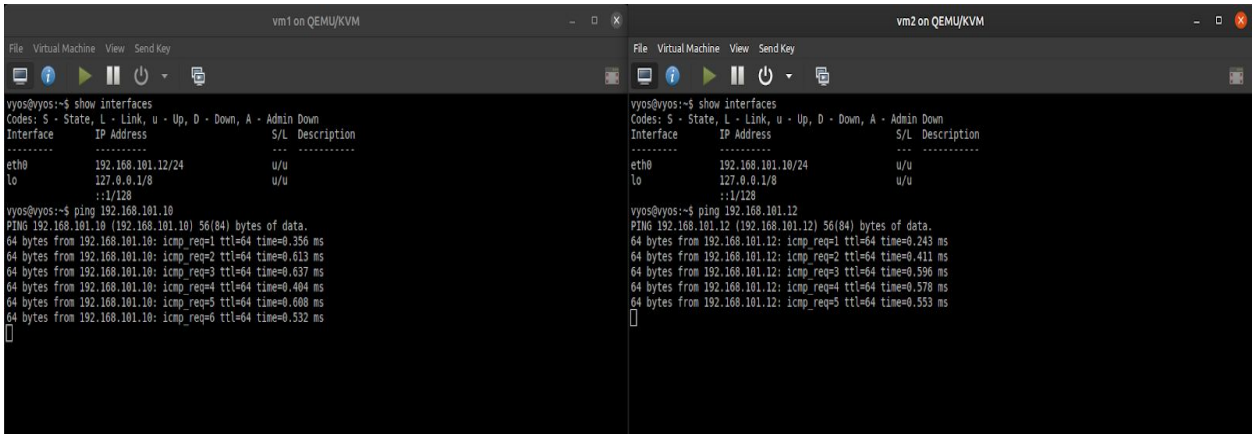
	VyOS1	VyOS2	VyOS3
IPv4 Address and Subnet Mask given to eth0	192.168.101.12/24	192.168.101.10/24	192.168.102.13/24
IPv6 Address and Subnet Mask given to eth0	2013:abcd:101::12/64	2013:abcd:101::10/64	2013:abcd:102::13/64
MAC Address of eth0	52:54:00:37:0a:4e	52:54:00:f2:b4:5c	52:54:00:3c:77:ce
Bridge I/F selected for connecting eth0	bri0	bri0	bri1
IPv4 Address and Subnet Mask given to eth1	N/A	192.168.102.10/24	N/A
IPv6 Address and Subnet Mask given to eth1	N/A	2013:abcd:102::10/64	N/A
MAC Address of eth1	N/A	52:54:00:e8:d1:89	N/A
Bridge I/F selected for connecting eth1	N/A	bri1	N/A

Question 2.
Show the file name and the full path to the disk image file (not ISO image) of VyOS1 in Host Ubuntu's file system. You may answer by pasting the screen capture of the result of "ls -al" command in the directly where the said image file is stored.

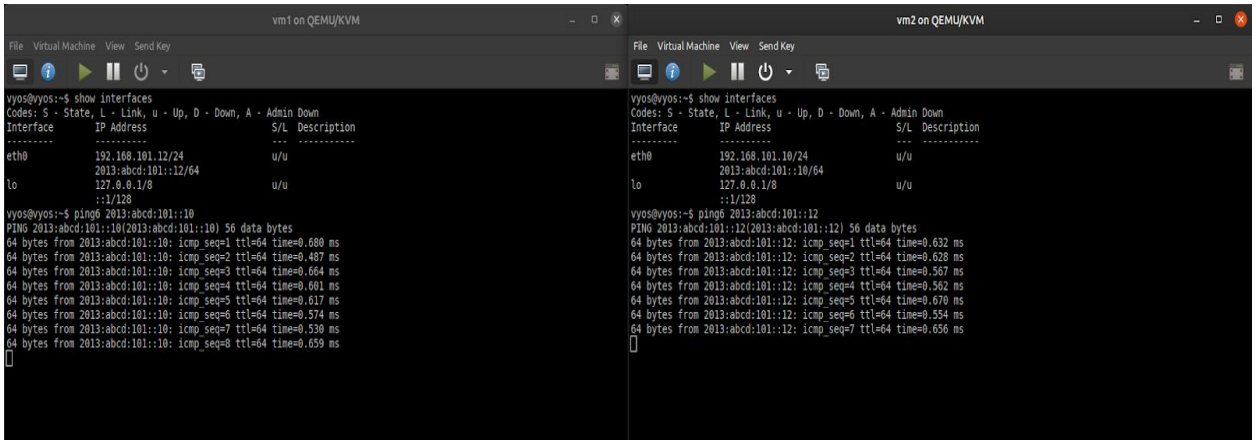


Question 3.
Show that both ping and ping6 are successful between VyOS1 and VyOS2. You may answer by pasting the screen capture of the result of both commands.

Ping :



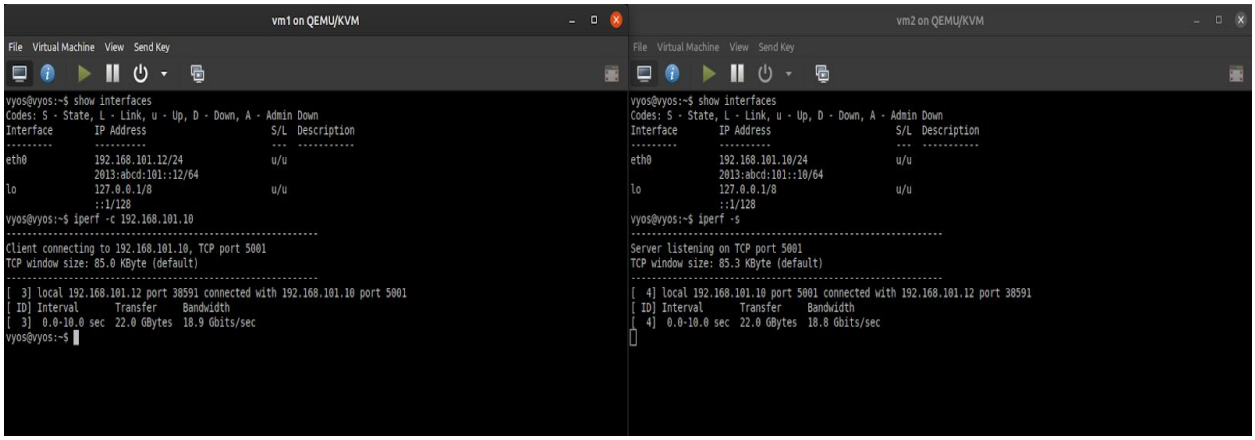
Ping6:



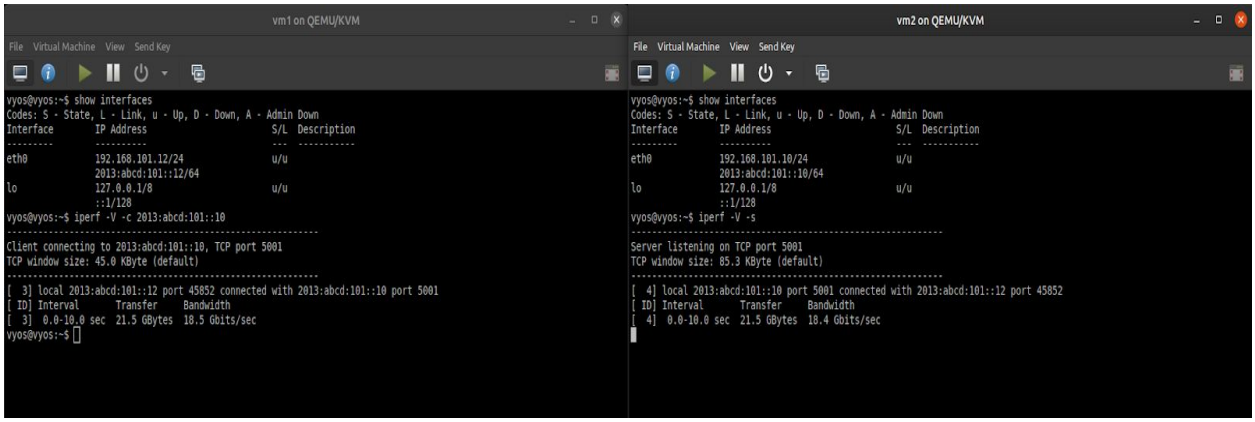
Question 4.

Show the result of iperf and check the TCP throughput from VyOS1 (client) to VyOS2 (server) using IPv4 and IPv6 respectively. You may answer by pasting the screen capture of the result of both commands.

IPv4:



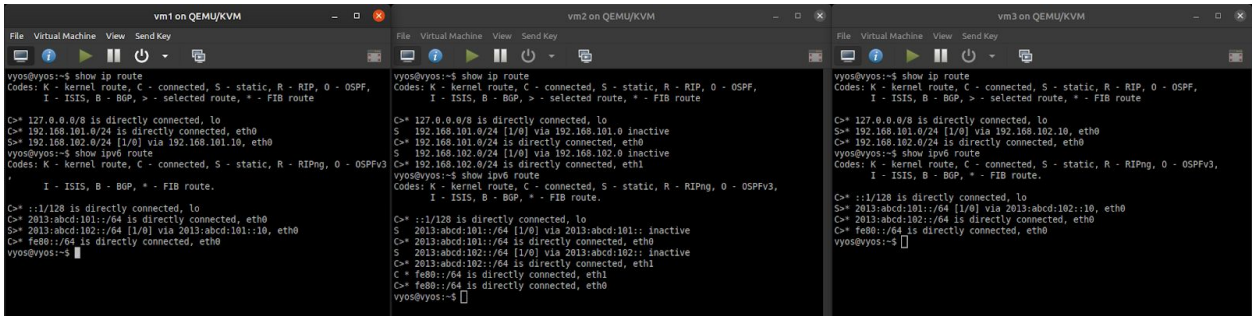
IPv6:



5. Install VyOS3 and connect to VyOS2 using a new bridge I/F referring the network diagram in the course material. The goal of this task is to allow VyOS1 and VyOS3 to successfully ping, ping6 and iperf (using both IPv4 and IPv6) with each other in the following network diagram.

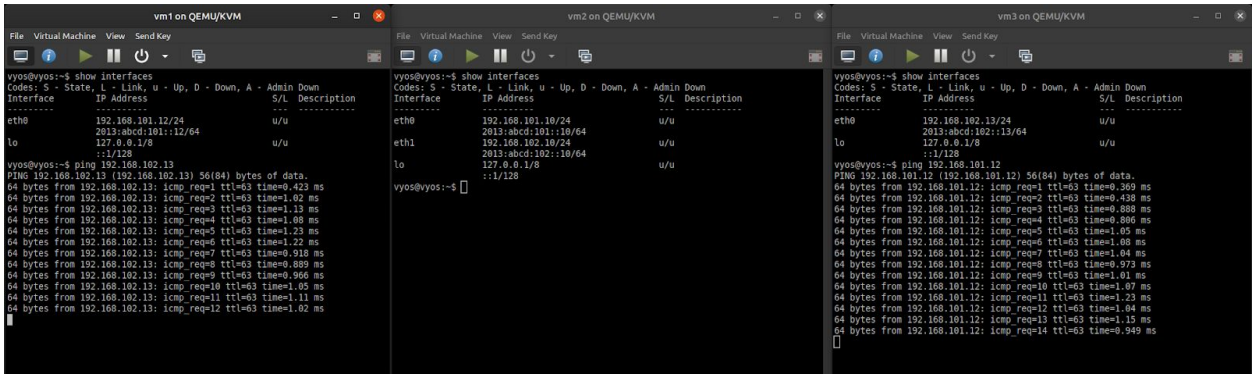
Question 5.1.
Configure the network interface “eth1” of VyOS2 and “eth0” of VyOS3 and fill the blank in the table given in Question 1.

Question 5.2.
Configure the routing tables on VyOS1, VyOS2 and VyOS3 respectively, and paste the screen captures of respective routing tables.

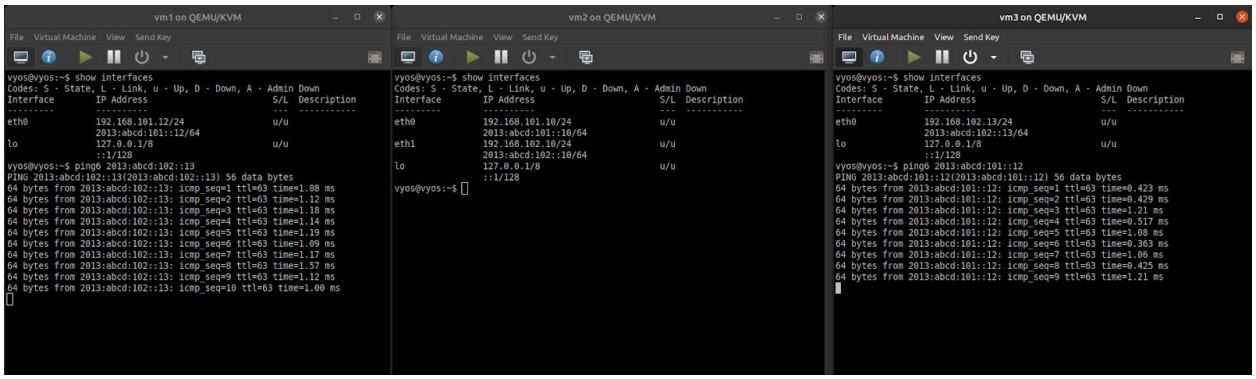


Question 5.3.
Show that both ping and ping6 are successful between VyOS1 and VyOS3. You may answer by pasting the screen capture of the result of both commands.

ping:



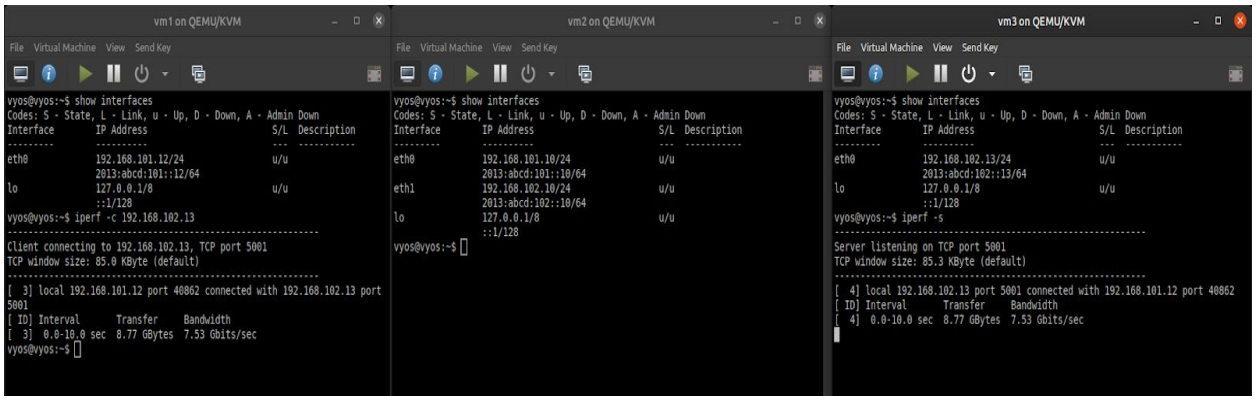
ping6:



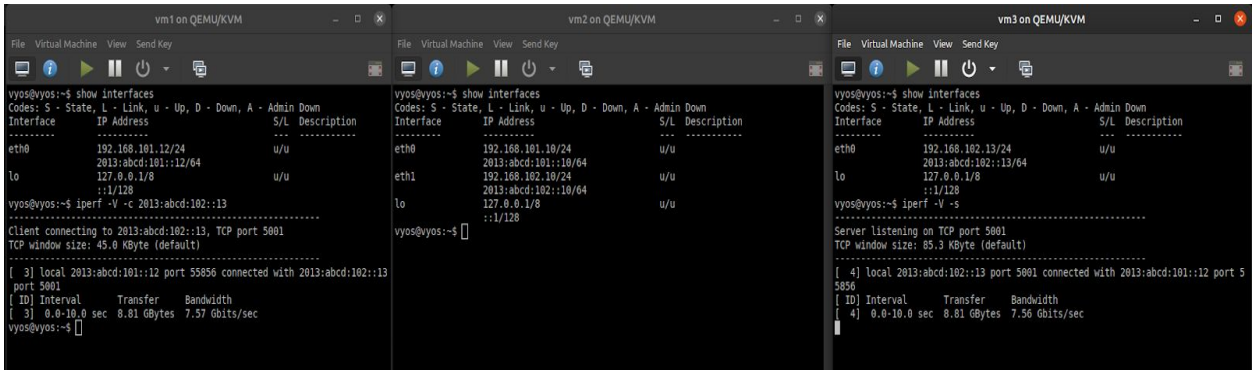
Question 5.4.

a) Show the result of iperf and check the TCP throughput from VyOS1 (client) to VyOS3 (server) using IPv4 and IPv6 respectively. You may answer by pasting the screen capture of the result of both commands.

IPv4:



IPv6:



b) Compare the results between Question 4, and describe your thought (OPTIONAL: and appropriate reference or justification).