



Figure 1

You have been given the network of Figure 1. The description of the network is the following:

- Each of the 4 PCs is equipped with a 10Gbps network adapter.
- The 4 PCs are connected via CAT6 ethernet to an L2 switch, which supports 10Gbps per port.
- PC 1 and PC 2 are in VLAN 1, while PC 3 and PC 4 are in VLAN 2.
- The L2 switch is connected to an L3 switch that supports VLANs, via a CAT6 ethernet cable. The L3 switch supports 2.5Gbps per port.
- The L3 switch is connected to a router with NAT, via a CAT6 cable and it supports 1Gbps.
- You are paying your ISP to provide you with an internet connection of 250Mbps.

Answer the following questions:

- 1) What is the bandwidth between PC 1 and PC 2? Why?
- 2) What is the bandwidth between PC 3 and PC 4? Why?
- 3) What is the bandwidth between PC 1 and PC 4? Why?
- 4) If there was no L3 switch, and the L2 switch was directly connected to the router with a CAT6 cable, what would be the bandwidth between PC 1 and PC 4? Would your answers to questions 1 and 2 change?
- 5) What is the bandwidth between any of the four PCs and the rest of the internet?
- 6) Suppose you changed ISPs, and the new company provides you with 2.5Gbps internet connection. Which part(s) of your equipment do you need to change in order to get a 2.5Gbps link from your PCs to the rest of the internet?
- 7) Which part(s) of your equipment do you need to change in order to get a 10Gbps link between PC 1 and PC 4?