IPv6

1) IPv6 describes the next version of Internet Protocol that was designed to replace IPv4. Describe the concepts that were introduced with IPv6, contrast them with the concepts in IPv4 and discuss 3 improvements of IPv6 over IPv4.
2) Discuss the two proposed formats of addresses for IPv6 and contrast them with the adapted format of addresses for IPv6.

OpenFlow and Clos

3) OpenFlow v1.0 defines a format for flow table entries, shown in figure 2.
   i) Describe how these entries are used to direct traffic in a network with the help of an example.
   ii) Discuss the limitations that this format may pose and suggest how these limitations may be addressed.

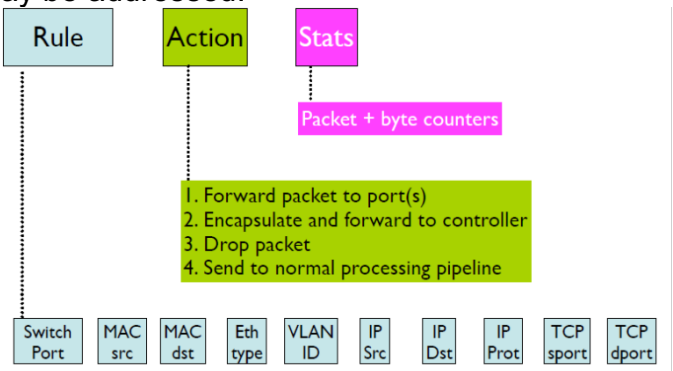

Figure 1: OpenFlow Flow Table Entry

4) Discuss the types of OpenFlow messages that are exchanged at the beginning of a connection between an OpenFlow switch and a controller and the types of message that is issued by a controller to modify a flow table in an OpenFlow switch.

5) Explain the advantages and disadvantages of a data centre where the hardware of the data centre may consist of 512 racks using a fat-tree topology in comparison to a traditional 4-post router approach.

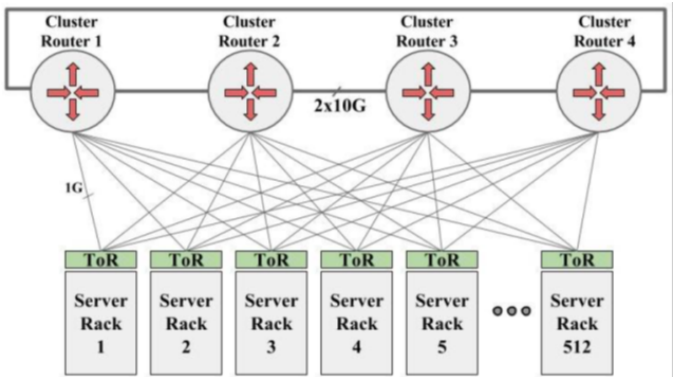

Figure 2: Data centre scenario with 512 racks and 4 routers*