# Computer Networks and Distributed Systems
Exercise Sheet 9

Exercise 9.1 Network planning

Assume, you have to buy hubs, switches and routers for the shown network. There are two rooms with workstations and two file servers (one for lectures one for project groups), that have to be linked together and connected with the internet. Participants of both courses are allowed to work in each of the two rooms with workstations.
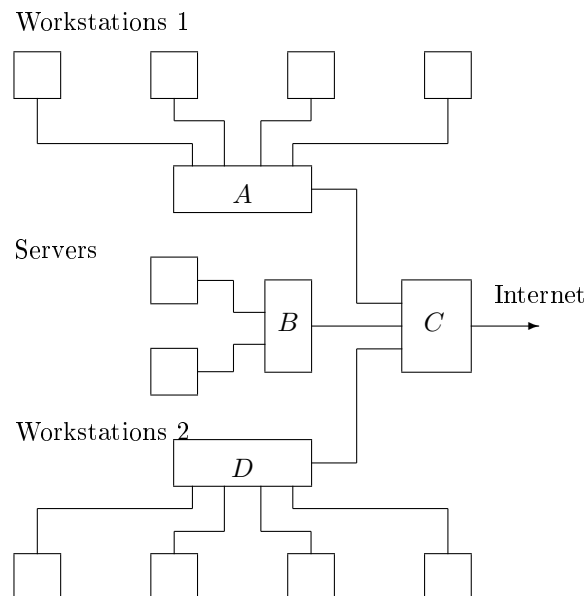
Assess the following alternatives regarding their practicability, capacity and costs.

   i) A: Hub, B: Hub, C: Router, D: Hub

  ii) A: Switch, B: Switch, C: Router, D: Switch

 iii) A: Hub, B: Switch, C: Switch, D: Hub

 iv) A: Router, B: Switch, C: Router, D: Router

Exercise 9.2 Routing and Subnets

The following problem about routing and subnets is taken from an exam from 2005.

Network, Routing and Routing Tables

Consider an internet-based company network that is connected to the public internet and consists of hosts H1, H2, H3, H4, H5 and H6 and routers R1 and R2 (each of them with the interfaces eth0, eth1, ...). The topology is shown below. The company network may use the address range <Address: 196.218.64.224, Subnet mask: 255.255.255.224>.
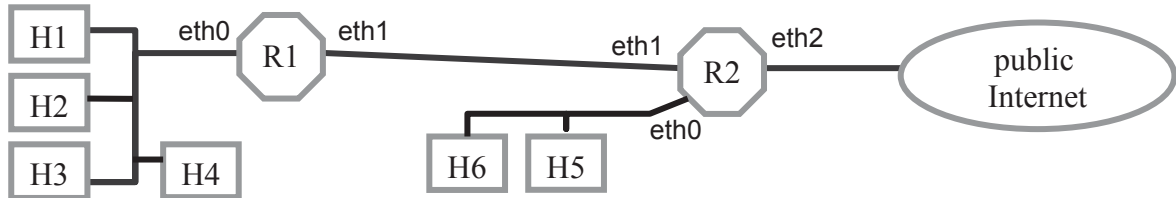
a) Divide the company network into the required number of subnets and assign an address range to each subnet from the company address range <Address: 196.218.64.224, Subnet mask: 255.255.255.224>.

  – Assign each subnet in the figure a subnet name (N1, N2, ...)!
  – Complete the following table with an address range for each of the subnets. Strike out not required subnet names!

Subnet name	Address range	
	Address	Subnet mask
N1		
N2		
N3		
N4		
N5		

b) Create a suitable routing table for router R2 by completing the following table.
A row of a routing table is a triple <Address, subnet mask, interface>. The range <0.0.0.0, 0.0.0.0> addresses the complete range of the internet.

Address	Subnet mask	Interface