

Problem 1. Consider a router that interconnects three subnets: Subnet 1, Subnet 2, and Subnet 3. Suppose all of the interfaces in each of these three subnets are required to have the prefix 223.1.17.0/24. Also suppose that Subnet 1 is required to support up to 62 interfaces, and is already assigned the subnet address block 223.1.17.0/26.

- a) If subnet 2 is to support up to 106 interfaces, what will be the allocated address block in the form of “IP address/subnet mask” in decimal format, such as a.b.c.d/x?
- b) If subnet 3 is to support up to 14 interfaces in the remaining addresses, what will be the allocated address block in the form of “IP address/subnet mask” in decimal format, such as a.b.c.d/x?

Hint: there shall be no overlap between the assigned network addresses among the three subnets. Otherwise there could be IP address conflict within the router.

Problem 2. Why are different inter-AS and intra-AS protocols used in the Internet?

Problem 3. Consider the network shown below. Suppose AS3 and AS2 are running OSPF for their intra-AS routing protocol. Suppose AS1 and AS4 are running RIP for their intra-AS routing protocol. Suppose eBGP and iBGP are used for the inter-AS routing protocol. Initially suppose there is no physical link between AS2 and AS4.

- a) Router 3c learns about prefix x from which routing protocol: OSPF, RIP, eBGP, or iBGP?
- b) Router 3a learns about x from which routing protocol?
- c) Router 1c learns about x from which routing protocol?
- d) Router 1d learns about x from which routing protocol?

