EXERCISE SHEET 3 – IP and Subnetting

Task 1

a. Name some various options for addressing in networks.

b. List the IPv4 address ranges for private networks along with the number of addressable hosts, and corresponding subnet masks. Then, give examples of non-private Class A, B, and C IPv4 addresses.

c. List all header fields included in an IP packet. Use the following table structure:

IP Packet Field	Size (Byte)	Description
. . .		

Task 2

A protocol analyzer recorded the following data packet. The data packet begins with two addresses (Ethernet) 6 bytes each and an identifier (2 bytes) that indicates a subsequent IP packet. Decode the IP packet as much as possible.

00 02 b3 4f 0b d3 00 80 c7 fd 24 6e 08 00 45 00

00 28 20 86 40 00 80 06 c2 bf 0a 6e 01 ad 0a 6e

01 02 06 8e 00 8b da e4 75 a9 58 50 b9 77 50 10

42 3f ec 9b 00 00

Task 3

a. Discuss whether or why it makes sense to subdivide a network into subnets.

b. A company has a class B IPv4 address: 164.30.0.0. The following subnets are required: one network for 60 computers, one network for 28 computers, one network for 25 computers, one network for 14 computers and 5 networks for point-to-point connections (i.e., networks with two computers each).

Create a subnet with a common subnet mask in which the number of available subnets becomes a maximum. Enter the network address and the broadcast address for each network.

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