Problem 1

1. 10000100 11001100 00000000 00000000 – 132.216.0.0/16

McGill’s subnet portion is the first 16 bits, so the divided subnets will have to include those first 16 bits.

If each subnet were to have equal and maximum bits for hosts, then it would sufficient to take the 2 MSB of the third portion of the IP address:

10000100 11001100 00000000 00000000 – 132.216.0.0/18

10000100 11001100 01000000 00000000 – 132.216.64.0/18

10000100 11001100 10000000 00000000 – 132.216.128.0/18

10000100 11001100 11000000 00000000 – 132.216.192.0/18

1. 10000100 11001100 11001110 00000000 – 132.216.214.0/28

The transmission will not take place entirely in the link layer. The subnets of the two hosts are different. The least significant bit of the subnet of the first host is 0, but the LSB of the subnet of the second host is 1.

1. (1500-20) / (404-20) ≈ 3.85, so the packet will fragment into 4

|  |  |  |  |
| --- | --- | --- | --- |
| IP identifier | Length | Fragmentation Flag | Offset |
| 987 | 404 | 1 | 0 |
| 987 | 404 | 1 | 48 |
| 987 | 404 | 1 | 96 |
| 987 | 348 | 0 | 144 |