Subnetting exercise

Subnetting will be done in the following order: LAN B, LAN C, LAN A, LAN E, LAN D, router-to-router 1, router-to-router 2.

LAN B is the first to be subnetted, so its subnet address is the network address 172.10.0.0.

A minimum of 12 host bits are required to accommodate 3000 + 2 hosts on LAN B as

212 ≥ 3002.

This leaves 32 – 12 = 20 bits for LAN B mask. Its subnet mask will be /20.

The broadcast address of LAN B can be obtained by flipping the last 12 bits of the subnet address to 1, which is 172.10.15.255

***LAN B:***

* ***Subnet address: 172.10.0.0***
* ***Subnet mask: /20***
* ***Broadcast address: 172.10.15.255***

The subnet address of LAN C will immediately follow the broadcast address of LAN B. As such, LAN C has a subnet address of 172.10.16.0

A minimum of 11 host bits are required to accommodate 2000 + 2 hosts on LAN C.

32 – 11 = 21 bits remain for LAN C mask. Its subnet mask is /21.

The broadcast address of LAN C is 172.10.31.255.

***LAN C:***

* ***Subnet address: 172.10.16.0***
* ***Subnet mask: /21***
* ***Broadcast address: 172.10.23.255***

Repeating the above procedure for each subnet, the following results can be obtained:

***LAN A:***

* ***Subnet address: 172.10.24.0***
* ***Subnet mask: /22***
* ***Broadcast address: 172.10.27.255***

***LAN E:***

* ***Subnet address: 172.10.28.0***
* ***Subnet mask: /23***
* ***Broadcast address: 172.10.29.255***

***LAN D:***

* ***Subnet address: 172.10.30.0***
* ***Subnet mask: /24***
* ***Broadcast address: 172.10.30.255***

***Router-to-router 1:***

* ***Subnet address: 172.10.31.0***
* ***Subnet mask: /30***
* ***Broadcast address: 172.10.31.3***

***Router-to-router 2:***

* ***Subnet address: 172.10.31.4***
* ***Subnet mask: /30***
* ***Broadcast address: 172.10.31.7***