TNE10005/TNE60002

Network Administration

Lab 4

Established Subnetting Questions

SWINBURNE UNIVERSITY OF TECHNOLOGY

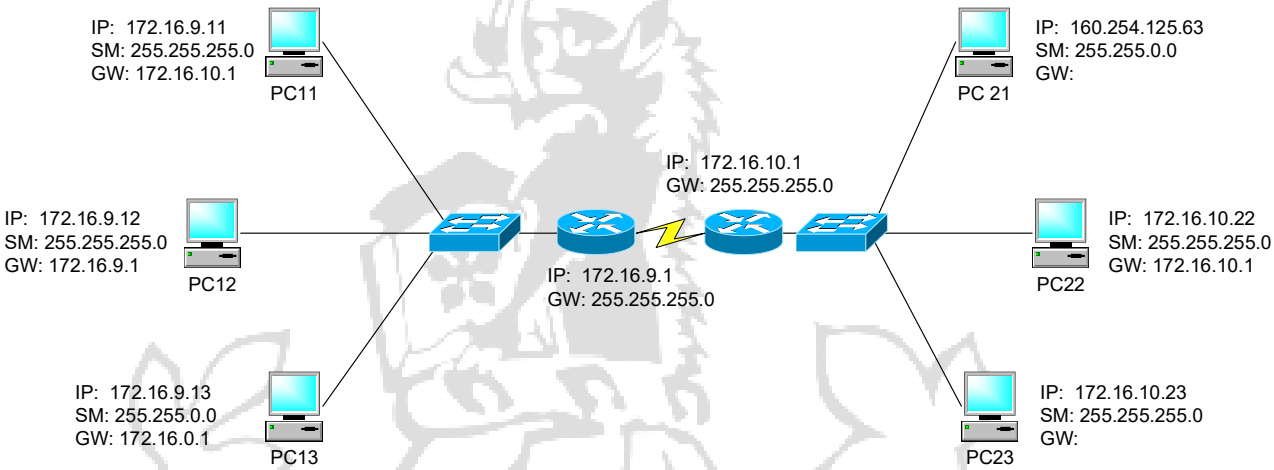
Aims:

To consolidate our intermediate subnetting skills and applying these skills to designing and troubleshooting

Questions:

1. Acme Pty Ltd are opening up in a new country and need to set up 40 new branches. How many subnet bits will they need to borrow? 2^6 = 64 > 40 --> 6 subnet bits need to borrow
2. Pinnacle.com need to open up three branches in regional Queensland. Each branch will have no more than 12 devices that require IP addresses. How many host bits do they need to keep to allow this many addresses? 2^4 - 2 = 14 > 12 --> 4 host bits
3. Zenith International are opening 8 branches in a new country and have obtained the network address of 180.90.45.0/24, and will need to subnet this further. What subnet mask do they need to create to cater for this many subnets? 2^3 = 8 --> 3 net bits /24 + 3 = /27 --> 255.255.255.224
4. Apogee.com are opening up 2 branches in Sarawak, Malaysia, and hope to open many more branches in the future. Each branch will have no more than 20 devices that require IP addresses. They have obtained a network address of 200.100.50.0/24, and will need to subnet this further. What subnet mask should they use to ensure that all subnets will support 20 devices, while allowing new branches to be opened up in the future? 2^5 -2 = 30 > 20 --> 5 host bits --> /27 2 branches and future --> >/25 --> /27 --> 255.255.255.224
5. Incline is a company that own an office building in the city. They lease out rooms to small companies and provide network access as a part of the lease agreement. They have obtained a network address of 160.80.40.0/24, that they can distribute subnets from to their clients. Some clients have requirements for 16 IP addresses:
    a. What would be the subnet mask that would support subnets for 16 devices? 255.255.255.224
    b. How many subnets of 16 IP addresses could their network support? /27 - /24 = 3 2^3 = 8 (subnets)
    c. If the first available address of each subnet is reserved for the default gateway, what would be the gateway address for subnet 5? 160.80.40.161
6. Ascent.net is a company that provide network support to small businesses. They have obtained a network address of 190.45.0.0/16, that they can distribute subnets from to their clients. Some clients have requirements for 1000 IP addresses:
    a. What would be the subnet mask that would support subnets for 1000 devices? 2^10-2= 1022 >1000 -->10 host bits-->255.255.252.0
    b. How many subnets of 1000 IP addresses could their network support? /16 -10 = 6 2^6 = 64
    c. If the first available address of each subnet is reserved for the default gateway, what would be the gateway address for subnet 4? 256-252=4 --> subnet 4= 190.45.12.0 --> 190.45.16.1

7. Identify the errors in this design. Record in the table whether this error prevents communication with which other devices.



PC from	Error	PC to	Result

Solutions

1. 6 bits, **2.** 4 bits, **3.** /27, **4.** /27, **5.** a. /27 b. 8 c. 160.80.40.161 **6.** a. /22 b. 64 c. 190.45.16.1 **7.** Discuss with your tutor