ASSIGNMENT

Course Name: Sessional Based on CSE 3205 (Computer Networks)

Course No.: CSE 3206

Topic: Subnet

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Default Gateway |
| R1 | G 0/0  S 0/0/0 | 172. 31. 1. 1  172. 31. 1. 64 | 255.255.255.240  255.255.255.240 | N/A  N/A |
| R2 | G 0/0  S 0/0/0  S 0/0/1 | 172. 31. 1. 17  172. 31. 1. 78  172. 31. 1. 81 | 255.255.255.240  255.255.255.240  255.255.255.240 | N/A  N/A  N/A |
| R3 | G 0/0  S 0/0/0  S 0/0/1 | 172. 31. 1. 33  172. 31. 1. 97  172. 31. 1. 94 | 255.255.255.240  255.255.255.240  255.255.255.240 | N/A  N/A  N/A |
| R4 | G 0/0  S 0/0/0 | 172. 31. 1. 49  172. 31. 1. 110 | 255.255.255.240  255.255.255.240 | N/A  N/A |
| S1 | VLAN1 | 172. 31. 1. 2 | 255.255.255.240 | 172. 31. 1. 1 |
| S2 | VLAN1 | 172. 31. 1. 18 | 255.255.255.240 | 172. 31. 1. 17 |
| S3 | VLAN1 | 172. 31. 1. 34 | 255.255.255.240 | 172. 31. 1. 33 |
| S4 | VLAN1 | 172. 31. 1. 50 | 255.255.255.240 | 172. 31. 1. 49 |
| PC1 | NIC | 172. 31. 1. 15 | 255.255.255.240 | 172. 31. 1. 1 |
| PC2 | NIC | 172. 31. 1. 30 | 255.255.255.240 | 172. 31. 1. 17 |
| PC3 | NIC | 172. 31. 1. 46 | 255.255.255.240 | 172. 31. 1. 33 |
| PC4 | NIC | 172. 31. 1. 62 | 255.255.255.240 | 172. 31. 1. 49 |

**Packet Tracer – Subnet Scenario 2**

**PART 1: Design and Ip Addressing Scheme**

**Step 1:**

1. 7 subnets are needed
2. 4 bits
3. 16 subnets (24)
4. 14 (16-2)
5. First 5 subnet’s binary value:

172. 31. 1. 0 = 172. 31. 1. 0 0 0 0 0 0 0 0

172. 31. 1. 16 = 172. 31. 1. 0 0 0 1 0 0 0 0

172. 31. 1. 32 = 172. 31. 1. 0 0 1 0 0 0 0 0

172. 31. 1. 48 = 172. 31. 1. 0 0 1 1 0 0 0 0

172. 31. 1. 64 = 172. 31. 1. 0 1 0 0 0 0 0 0

1. Binary value of new subnet masking:

1 1 1 1 1 1 1 1. 1 1 1 1 1 1 1 1. 1 1 1 1 1 1 1 1. 1 1 1 1 0 0 0 0

Decimal Value of new subnet masking:

255. 255. 255. 240

1. Completion of the subnet table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subnet No. | Subnet IP N/W Address | 1st Possible Host Address | Last Possible Host Address | Broadcast Address |
| 0 | 172. 31. 1. 0 | 172. 31. 1. 1 | 172. 31. 1. 14 | 172. 31. 1. 15 |
| 1 | 172. 31. 1. 16 | 172. 31. 1. 17 | 172. 31. 1. 30 | 172. 31. 1. 31 |
| 2 | 172. 31. 1. 32 | 172. 31. 1. 33 | 172. 31. 1. 46 | 172. 31. 1. 47 |
| 3 | 172. 31. 1. 48 | 172. 31. 1. 49 | 172. 31. 1. 62 | 172. 31. 1. 63 |
| 4 | 172. 31. 1. 64 | 172. 31. 1. 65 | 172. 31. 1. 78 | 172. 31. 1. 79 |
| 5 | 172. 31. 1. 80 | 172. 31. 1. 81 | 172. 31. 1. 94 | 172. 31. 1. 95 |
| 6 | 172. 31. 1. 96 | 172. 31. 1. 97 | 172. 31. 1. 110 | 172. 31. 1. 111 |
| 7 | 172. 31. 1. 112 | 172. 31. 1. 113 | 172. 31. 1. 126 | 172. 31. 1. 127 |

**Step 2:**

1. R1 = 172. 31. 1. 1 to 172. 31. 1. 15
2. R2 = 172. 31. 1. 17 to 172. 31. 1. 30
3. R3 = 172. 31. 1. 33 to 172. 31. 1. 46
4. R4 = 172. 31. 1. 49 to 172. 31. 1. 62
5. R1-R2 = 172. 31. 1. 65 to 172. 31. 1. 78
6. R2-R3 = 172. 31. 1. 81 to 172. 31. 1. 94
7. R3-R4 = 172. 31. 1. 97 to 172. 31. 1. 110

**Step 3:**

1. R1 = 172. 31. 1. 1, R2 = 172. 31. 1. 17, R3 = 172. 31. 1. 33, R4 = 172. 31. 1. 49
2. Done above
3. S1 = 172. 31. 1. 2, S2 = 172. 31. 1. 18, S3 = 172. 31. 1. 34, S4 = 172. 31. 1. 50
4. PC1 = 172. 31. 1. 15, PC2 = 172. 31. 1. 30, PC3 = 172. 31. 1. 46, PC4 = 62

**PART 2: Assign IP Addressing to Network Devices and Verify Connectivity**

**Step1:**

R1>en

R1#config t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#interface G0/0

R1(config-if)#ip address 172.31.1.1 255.255.255.240

R1(config-if)#no shutdown

R2>en

R2#config t

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#interface G0/0

R2(config-if)#ip address 172.31.1.17 255.255.255.240

R2(config-if)#no shutdown

**Step 2:**

S3>en

S3#config t

Enter configuration commands, one per line. End with CNTL/Z.

S3(config)#interface vlan1

S3(config-if)#ip address 172.31.1.34 255.255.255.240

S3(config-if)#no shutdown

S3(config-if)#exit

S3(config)#ip default-gateway 172.31.1.33

**Step 3:**

PC4 Connected.

