**Implementation of different types of LAN topology with IP addressing using PT**

**Objectives:**

* Design the following topology in Packet Tracer.
* Subnet each of the network with the IP and complete the following table.
* Assign the appropriate IP into each of the network.
* //Add one more PC to each of router and assign IP.
* Test connectivity between PC in a router.

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1st subnet: 80 hosts

2^7 = 128

192.168.1. 0 0 0 0 0 0 0 0

192.168.1. 0 111 1111

Starting address: 192.168.1.0/25

Ending address: 192.168.1.127/25

NA: 192.168.1.0/25(Not assignable)

BA: 192.168.1.127/25(Not assignable)

Assignable first address: 192.168.1.1

Assignable last address: 192.168.1.126

2nd subnet: 40 hosts

2^6 =64

Starting address: 192.168.1.128/26

Ending address: 192.168.1.191/26

NA: 192.168.1.128(Not assignable)/26

BA: 192.168.1.191(Not assignable)/26

Assignable first address: 192.168.1.129/26

Assignable last address: 192.168.1.190/26

3rd subnet: 20 hosts

2^5 =32

Starting address: 192.168.1.192/27

Ending address: 192.168.1.221/27

NA: 192.168.1.192(Not assignable)/27

BA: 192.168.1.221(Not assignable)/27

Assignable first address: 192.168.1.193/27

Assignable last address: 192.168.1.220/27

4th subnet: 2 hosts

2^2 =4

8 bit, for host: 2, 8-2=6,24+6=30

Starting address: 192.168.1.222/30

Ending address: 192.168.1.225/30

NA: 192.168.1.222(Not assignable)/30

BA: 192.168.1.225(Not assignable)/30

Assignable first address: 192.168.1.223/30

Assignable last address: 192.168.1.224/30

5th subnet: 2 hosts

2^2 =4

Starting address: 192.168.1.226/30

Ending address: 192.168.1.229/30

NA: 192.168.1.226(Not assignable)/30

BA: 192.168.1.229(Not assignable)/30

Assignable first address: 192.168.1.227/30

Assignable last address: 192.168.1.228/30

**Table 1: Subnet Information**

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| --- | --- | --- | --- | --- |
| **Subnet Number** | **Assignable Address Range** | **Subnet Mask** | **Subnet Address** | **Broadcast Address** |
| **1** | **192.168.1.1/25-192.168.1.126/25** | **255.255.255.128** | **192.168.1.0/25** | **192.168.1.127/25** |
| **2** | **192.168.1.129/26-192.168.1.190/26** | **255.255.255.192** | **192.168.1.128/26** | **192.168.1.191/26** |
| **3** | **192.168.1.193/27-192.168.1.222/27** | **255.255.255.224** | **192.168.1.192/27** | **192.168.1.223/27** |
| **4** | **192.168.1.225/30-192.168.1.226/30** | **255.255.255.252** | **192.168.1.224/30** | **192.168.1.227/30** |
| **5** | **192.168.1.229/30-192.168.1.230/30** | **255.255.255.252** | **192.168.1.228/30** | **192.168.1.231/30** |

**Table 2: Addressing Table**

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| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP address** | **Subnet Mask** | **Default Gateway** |
| **PC1** | **N/A** | **192.168.1.2** | **255.255.255.128** | **192.168.1.1** |
| **PC2** | **N/A** | **192.168.1.130** | **255.255.255.192** | **192.168.1.129** |
| **PC3** | **N/A** | **192.168.1.194** | **255.255.255.224** | **192.168.1.193** |
| **HQ** | **Fastethernet 0/0** | **192.168.1.129** | **255.255.255.192** | **N/A** |
| **Serial 0/0** | **192.168.1.225** | **255.255.255.252** | **N/A** |
| **Serial 0/1** | **192.168.1.229** | **255.255.255.252** | **N/A** |
| **B1** | **Fastethernet 0/0** | **192.168.1.1** | **255.255.255.128** | **N/A** |
| **Serial 0/0** | **192.168.1.226** | **255.255.255.252** | **N/A** |
|  |  |  |  |
| **B2** | **Fastethernent0/0** | **192.168.1.193** | **255.255.255.224** | **N/A** |
| **Serial 0/1** | **192.168.1.230** | **255.255.255.252** | **N/A** |
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