**OneNote Link:** [**https://onedrive.live.com/view.aspx?resid=C09A73B9C3376B0E%21s35adc950e55d48649b0889c2e9bd50d4&id=documents**](https://onedrive.live.com/view.aspx?resid=C09A73B9C3376B0E%21s35adc950e55d48649b0889c2e9bd50d4&id=documents)

1. **Scenario**

Design a network in CISCO packet tracer to connect ACCOUNTS and DELIVERY departments through the following:

1. Each department should contain at least 2 PCs.
2. Appropriate number of switches and routers should be used in the network.
3. Using the given network address 192.168.40.0, all interfaces should be configured with appropriate IP addresses, subnet mask and gateways.
4. All devices in the network should be connected using appropriate cables.
5. Test the connectivity between ACCOUNT and DELIVERY department -PCs in DELIVERY department should be able to ping PCs in ACCOUNTS department.
6. **Subnetting**

Solution from Subnetting

Network : 192.168.40.0

Number of departments is 2 so we need 2 Subnets

Formula :

2n = no of networks

n = 1(number of borrowed bets from network)

No of networks : 21 = 2

Subnet after borrowed beat :

11111111.11111111.11111111.10000000

255.255.255.128 or /25 = Subnet Mask

Block size : 128

First Subnet :

Subnet Mask = 255.255.255.128

Network ID = 192.168.40.0

Valid Range of Host = 192.168.40.1 - 192.168.40.126

Broadcast ID = 192.168.40.127

Second Subnet :

Subnet Mask = 255.255.255.128

Network ID = 192.168.40.128

Valid Range of Host = 192.168.40.129 - 192.168.40.254

Broadcast ID = 192.168.40.255

|  |  |  |
| --- | --- | --- |
| **Subnet Mask** | **Block Size** | |
| 128 | 128 | |
| 192 | 64 | |
| 224 | 32 | |
| 240 | 16 | |
| 248 | 8 | |
| 252 | 4 | |
| 254 | 2 | |
| 255 | 1 | |
| Block size :Number of Ips in each Block | |

1. **Router Configuration code**

Router>

Router>

Router>

Router>en

Router#config t

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

Router(config)#int range gig0/0 0-1

^

% Invalid input detected at '^' marker.

Router(config)#int range gig0/0-1

Router(config-if-range)#no shut

Router(config-if-range)#no shutdown

Router(config-if-range)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if-range)#exit

Router(config)#

Router(config)#int gig0/0

Router(config-if)#

Router(config-if)#ip aa

^

% Invalid input detected at '^' marker.

Router(config-if)#ip ad

% Incomplete command.

Router(config-if)#ip address 192.168.40.1 255.255.255.128

Router(config-if)#int gig0/1

Router(config-if)#ip address 192.168.40.129 255.255.255.128

Router(config-if)#exit

Router(config)#do wr

Building configuration...

[OK]

Router(config)#do sh start

Using 723 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO2911/K9 sn FTX1524VW73-

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

ip address 192.168.40.1 255.255.255.128

duplex auto

speed auto

!

interface GigabitEthernet0/1

ip address 192.168.40.129 255.255.255.128

duplex auto

speed auto

!

interface GigabitEthernet0/2

no ip address

duplex auto

speed auto

shutdown

!

interface Vlan1

no ip address

shutdown

!

ip classless

!

ip flow-export version 9

!

!

Router(config)#

Router#

%SYS-5-CONFIG\_I: Configured from console by console

1. **Account Department Devices Configuration Details**

PC0 Configuration Details:

IPV4 address = 192.168.40.2

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.1

PC1 Configuration Details:

IPV4 address = 192.168.40.3

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.1

Printer0 Configuration Details:

IPV4 address = 192.168.40.4

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.1

1. **Delivery Department Devices Configuration Details**

PC2 Configuration Details:

IPV4 address = 192.168.40.130

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.129

PC1 Configuration Details:

IPV4 address = 192.168.40.131

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.129

Printer0 Configuration Details:

IPV4 address = 192.168.40.132

Subnet mask = 255.255.255.128

Default Gateway = 168.192.40.129

1. **Ping Command Details view**

Cisco Packet Tracer PC Command Line 1.0

Ping PC0 from PC3

C:\>ping 192.168.40.2

Pinging 192.168.40.2 with 32 bytes of data:

Request timed out.

Reply from 192.168.40.2: bytes=32 time<1ms TTL=127

Reply from 192.168.40.2: bytes=32 time<1ms TTL=127

Reply from 192.168.40.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.40.2:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

Ping PC1 from PC3

C:\>ping 192.168.40.3

Pinging 192.168.40.3 with 32 bytes of data:

Request timed out.

Reply from 192.168.40.3: bytes=32 time<1ms TTL=127

Reply from 192.168.40.3: bytes=32 time<1ms TTL=127

Reply from 192.168.40.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.40.3:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

Ping Printer0 from PC3

C:\>ping 192.168.40.4

Pinging 192.168.40.4 with 32 bytes of data:

Request timed out.

Reply from 192.168.40.4: bytes=32 time<1ms TTL=127

Reply from 192.168.40.4: bytes=32 time<1ms TTL=127

Reply from 192.168.40.4: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.40.4:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>