NETWORK FUNDAMENTALS

BY

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SUBNETTING

- IMPORTANCE OF SUBNET MASK
- USES OF SUBNETTING
- HOW SUBNETTING WORKS
- SCENARIOs

- **HOW SUBNETING WORKS**

- IT IS THE PROCESS OF CALCULATING WASTED HOST BITS AND
- CONVERTING THE WASTED HOST BIT TO NETWORK BITS.

- SWITCH - PERFORMS BOOLEAN AND'ING OPERATION.
- DEST IP
- 192.168.1.3 ------->11000000.10100000.00000001.00000000
- SUB MASK
- 255.255.255.0 11111111.11111111.11111111.00000000
- BOOLEAN AND 11000000.10100000.00000001.00000000
- RESULT 192.168.1.0 - B
- A=B, SWITCH DECIDES THAT PACKET BELONGS INSIDE LAN AND WILL NOT SEND IT TO ROUTER
- A NOT EQUAL TO B, SWITCH DECIDES PACKET BELONGS TO ANOTHER LAN, SO IT WILL FORWARD IT TO THE ROUTER.

- USES OF SUBNETTING
- TO MINIMIZE COST
- TO MINIMIZE IP WASTAGE
- COMPANY - SALES, HR, DEVELOPERS, SUPPORT - 100, 200, 300, 400
- HOME - DESKTOP,LAPTOP - 2 COMPUTER.
- CLASS C = 254 -2 = 252 HOSTS WASTED.
- THIS CAN BE PREVENTED BY SUBNETTING.

- EX : 255.255.255.0 - 11111111.11111111.11111111.00000000 - 2 COMPUTERS
- 111111 - CONVERTING TO N/W
- 11111111.11111111.11111111.11111100
- 255.255.255.248 - CUSTOM SUBNET MASK
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- **SCENARIO 1**
- TCS - 120
- CTS - 120
- **STEP 1 : TO FIND CLASS**
- **STEP 2 : TO FIND ‘n’**
- **STEP 3 : TO FIND CSM**
- **STEP 4 : CALCULATING NO OF N/W AND HOST**
- **STEP 5 : IP ASSIGNING**
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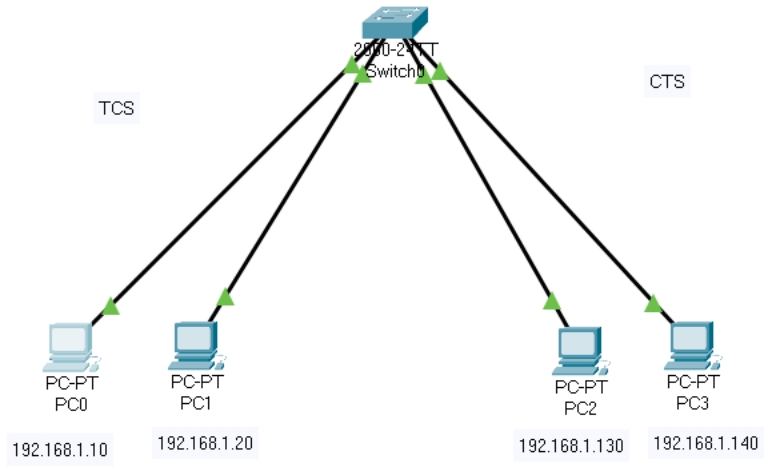
Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x: 1051, y: 82 [Root] 04:27:00



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Ping statistics for 192.168.1.140:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.1.20

Pinging 192.168.1.20 with 32 bytes of data:

Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
Reply from 192.168.1.20: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.20

Pinging 192.168.1.20 with 32 bytes of data:

Reply from 192.168.1.20: bytes=32 time<1ms TTL=128
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C:\>
```

Top

Time: 00:08:38 Realtime Simulation

Copper Straight-Through

Scenario 0 New Delete Toggle PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete

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