



Daffodil *International* **University**

DAFFODIL INTERNATIONAL UNIVERSITY

Lab Project

Course Title: Computer Networks Lab

Course code: CSE314

Submitted To

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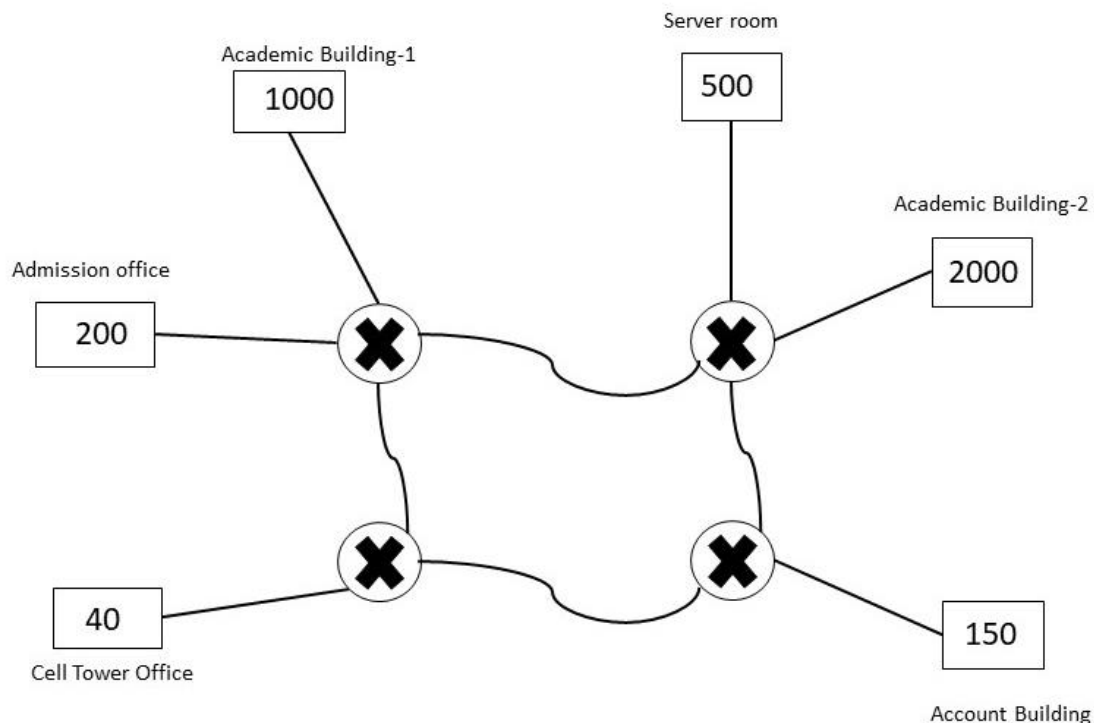
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1st section: My network scenario: Explain what I am trying to build, what are the features are included

Campus Network Design

A campus network has to be designed for a University. There are 10000 students in the University. There are 200 users in admission Office, 1000 users in academic building-1, 2000 users in academic building-2, 150 users in account building, 500 users in server building and 40 users in cell tower office. Every place in the university, where wireless access to the network is required. Only university students and faculty members can access to the wireless network. A high speed cable internet connection is available for the admission office, Computer lab and faculty members which devices are connect with static IP address. In the faculty room and admission office have IP phone and printer. There are also have email, DNS, HTTP and FTP server service.

Now implement the scenario with the necessary equipment's and appropriate topology required for the campus network design along with the IP address.



2nd section: What are the topics/features that are new (most important part)

I try to apply the given topics/features in my project.

- Static IP
- DHCP
- EIGRP
- PAT
- ACL
- EMAIL
- DNS
- HTTP
- FTP
- Cell tower
- Printer
- Wireless service
- CO server etc.

3rd section: calculation, Design, Codes

Calculation

①

Calculation

1st network :

$$\text{Host} = 2001$$

$$h_b = 11$$

$$n_b = 21$$

$$\text{IP} : 12.13.14.15 / 21$$

$$\text{Mask} : 255.255.248.0$$

$$\text{Net} : 12.13.8.0$$

$$\text{1st} : 12.13.8.1$$

$$\text{last} : 12.13.15.254$$

$$\text{Broadcast} : 12.13.15.255$$

2nd network :

$$\text{Host} = 10010$$

$$h_b = 10$$

$$n_b = 22$$

$$\text{IP} : 12.13.16.0 / 22$$

$$\text{Mask} : 255.255.252.0$$

$$\text{Net} : 12.13.16.0$$

$$\text{1st} : 12.13.16.1$$

$$\text{last} : 12.13.19.254$$

$$\text{Broadcast} : 12.13.19.255$$

$$m = 256 - 248 \\ = 8$$

$$h = 8 \left(\begin{array}{l} 14 \\ 8 \end{array} \right)$$

$$= 8$$

$$b = 8 + 8 - 1$$

$$= 15$$

$$m = 256 - 252 \\ = 4$$

$$h = 4 \left(\begin{array}{l} 16 \\ 16 \end{array} \right)$$

$$= 16$$

$$b = 16 + 4 - 1 = 19$$

②

3rd network:

Host = 501

hb = 9

mb = 23

IP: 12.13.20.0 /23

Mask: 255.255.254.0

Net: 12.13.20.0

1st: 12.13.20.1

last: 12.13.21.254

Broad: 12.13.21.255

4th network:

host = 201

hb = 8

mb = 24

IP: 12.13.22.0 /24

Mask: 255.255.255.0

Net: 12.13.22.0

1st: 12.13.22.1

last: 12.13.22.254

Broad: 12.13.22.255

Calculation

1st network:

Host = 501

NP = 9

m = 256 - 254

= 2

h = 2 (20)

= 20

b = 20 + 21 - 1

= 21

2nd network:

Host = 1001

NP = 10

NP = 55

Net: 12.13.22.0

1st: 12.13.22.1

last: 12.13.22.254

Broad: 12.13.22.255

③

5th network:

$$\text{host} = 151$$

$$hb = 8$$

$$nb = 24$$

$$\text{IP: } 12.13.23.0/24$$

$$\text{Mask: } 1255.255.255.0$$

$$\text{Net: } 12.13.23.0$$

$$\text{1st: } 12.13.23.1$$

$$\text{last: } 12.13.23.254$$

$$\text{Broad: } 12.13.23.255$$

6th network:

$$\text{host} = 101$$

$$hb = 7$$

$$nb = 25$$

$$\text{IP: } 12.13.24.0/25$$

$$\text{Mask: } 255.255.255.128$$

$$\text{Net: } 12.13.24.0$$

$$\text{1st: } 12.13.24.1$$

$$\text{last: } 12.13.24.126$$

$$\text{Broad: } 12.13.24.127$$

$$m = 256 - 128$$

$$= 128$$

$$h = 128(0)(0)$$

$$b = 128 + 0 - 1$$

$$= 127$$

④

7th network:

$$\text{host} = 101$$

$$\text{hb} = 7$$

$$\text{nb} = 25$$

$$\text{IP: } 12.13.24.128/25$$

$$\text{Mask: } 255.255.255.128$$

$$\text{Net: } 12.13.24.128$$

$$\text{1st: } 12.13.24.129$$

$$\text{last: } 12.13.24.254$$

$$\text{Broad: } 12.13.24.255$$

8th network:

$$\text{host} = 101$$

$$\text{hb} = 7$$

$$\text{nb} = 25$$

$$\text{IP: } 12.13.25.0/25$$

$$\text{Mask: } 255.255.255.128$$

$$\text{Net: } 12.13.25.0$$

$$\text{1st: } 12.13.25.1$$

$$\text{last: } 12.13.25.126$$

$$\text{Broad: } 12.13.25.127$$

7th network:

$$\text{host} = 101$$

$$\text{hb} = 7$$

$$\text{nb} = 25$$

$$\text{IP: } 12.13.24.128/25$$

$$\text{Mask: } 255.255.255.128$$

$$m = 256 - 128$$

$$= 128$$

$$h = 128 \left(\frac{128}{128} \right)$$

$$= 128$$

$$b = 128 + 128 - 1$$

$$= 255$$

$$\text{Net: } 12.13.24.128$$

$$\text{1st: } 12.13.24.129$$

$$\text{last: } 12.13.24.254$$

$$\text{Broad: } 12.13.24.255$$

$$m = 256 - 128$$

$$= 128$$

$$h = 128 \left(\frac{0}{0} \right) = 0$$

$$b = 128 + 0 - 1 = 127$$

(5)

9th network:

$$\text{host} = 101$$

$$\text{hb} = 2$$

$$\text{nb} = 25$$

$$\text{IP: } 12 \cdot 13 \cdot 25 \cdot 128 / 25$$

$$\text{Mask: } 255 \cdot 255 \cdot 255 \cdot 128$$

$$\text{Net: } 12 \cdot 13 \cdot 25 \cdot 128$$

$$\text{Net: } 12 \cdot 13 \cdot 25 \cdot 129$$

$$\text{last: } 12 \cdot 13 \cdot 25 \cdot 254$$

$$\text{Broad: } 12 \cdot 13 \cdot 25 \cdot 255$$

$$m = 256 - 128 \\ = 128$$

$$h = 128 \cdot 128 (1) \\ = 128 \times 1 = 128$$

$$b = 128 + 128 - 1 \\ = 255$$

10th network:

$$\text{host} = 41$$

$$\text{hb} = 6$$

$$\text{nb} = 26$$

$$\text{IP: } 12 \cdot 13 \cdot 26 \cdot 0 / 26$$

$$\text{Mask: } 255 \cdot 255 \cdot 255 \cdot 192$$

$$\text{Net: } 12 \cdot 13 \cdot 26 \cdot 0$$

$$\text{Net: } 12 \cdot 13 \cdot 26 \cdot 1$$

$$\text{last: } 12 \cdot 13 \cdot 26 \cdot 62$$

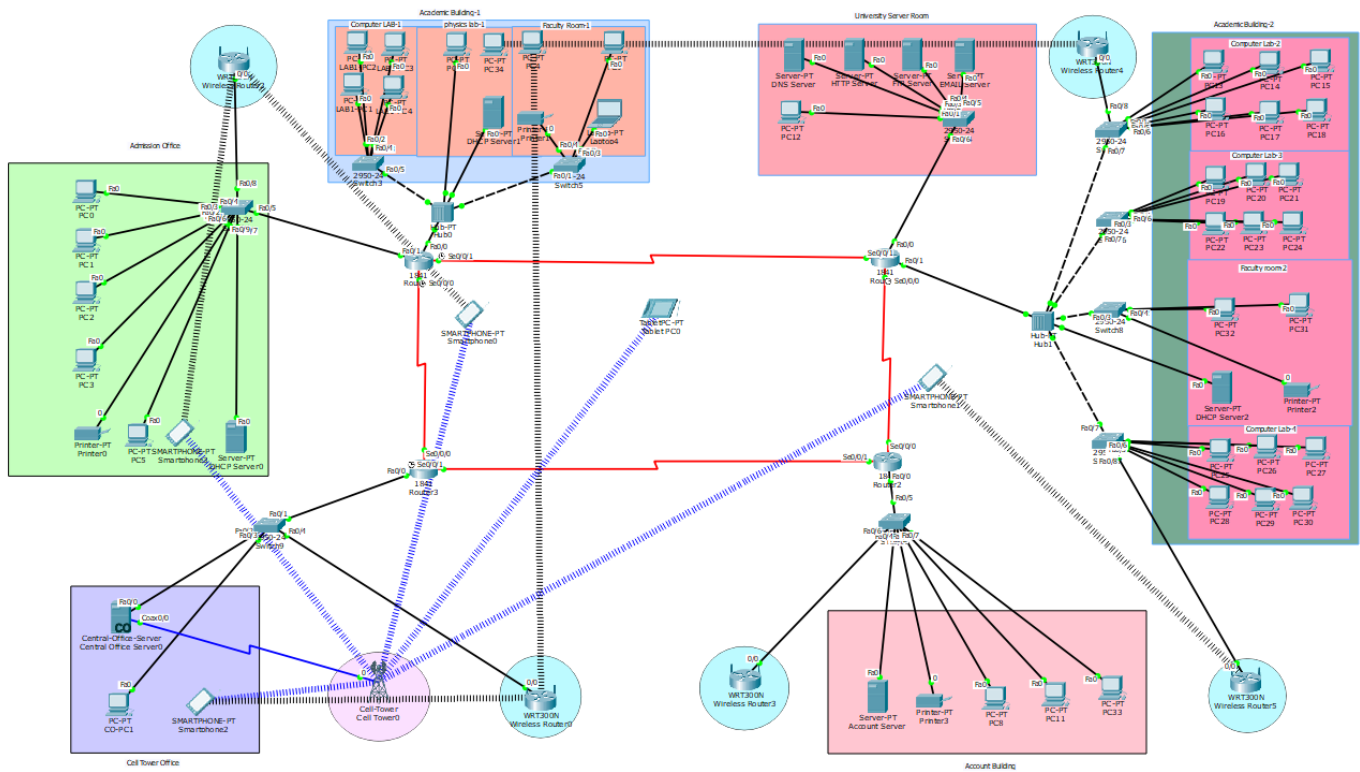
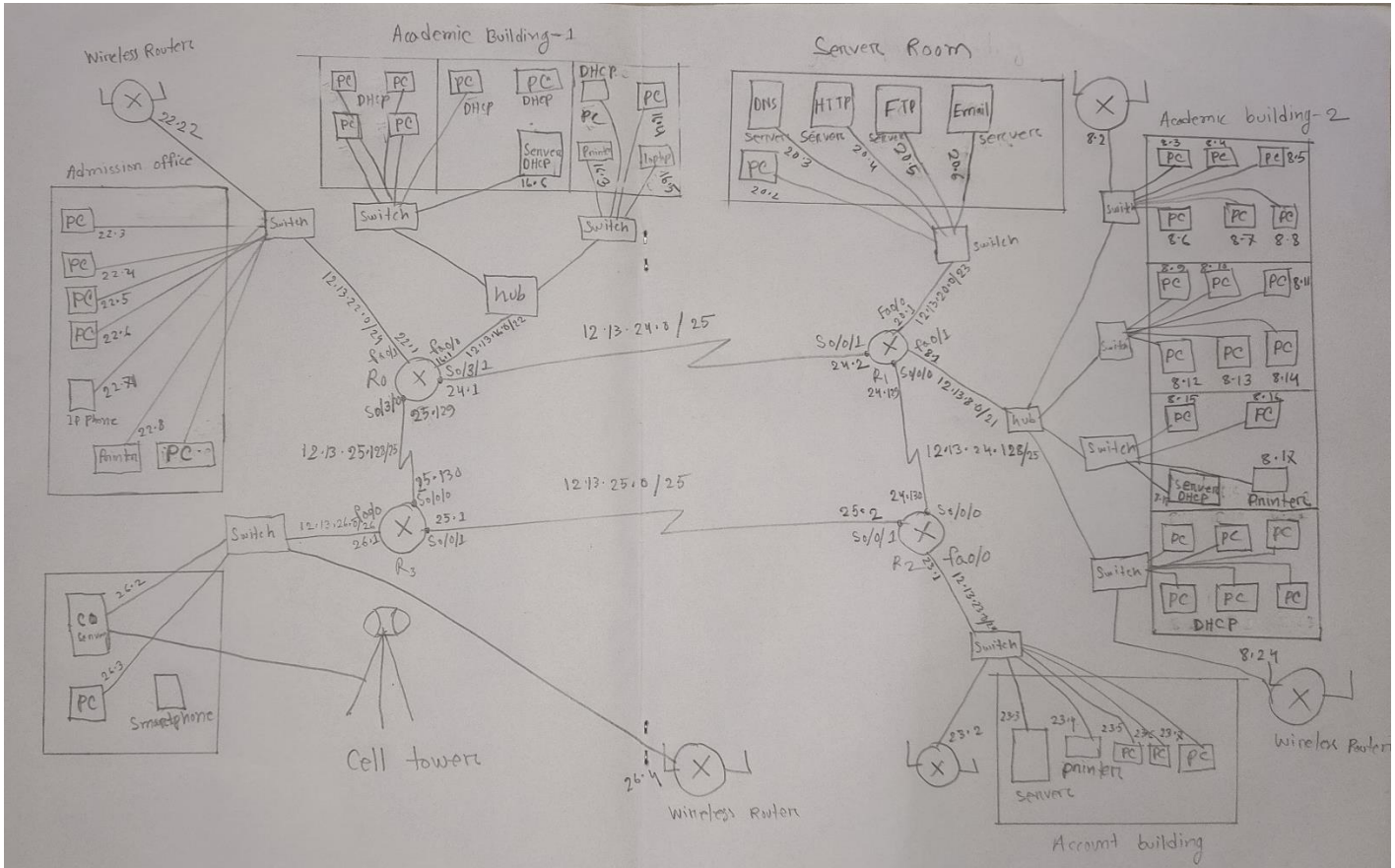
$$\text{Broad: } 12 \cdot 13 \cdot 26 \cdot 63$$

$$m = 256 - 192 \\ = 64$$

$$h = 64 \cdot 0 (0) \\ = 0$$

$$b = 64 + 0 - 1 = 63$$

Design



Cisco packet tracer simulation

Codes

IP address configuration:

Router0:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip address 12.13.16.1 255.255.252.0
Router(config-if)#no shut
```

```
Router#conf t
Router(config)#int fa0/1
Router(config-if)#ip address 12.13.22.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#exit
```

```
Router(config)#int s0/0/0
Router(config-if)#ip address 12.13.25.129 255.255.255.128
Router(config-if)#clock rate 56000
Router(config-if)#no shut
```

```
Router(config-if)#exit
Router(config)#int s0/0/1
Router(config-if)#ip address 12.13.24.1 255.255.255.128
Router(config-if)#no shut
```

Router1:

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip address 12.13.20.1 255.255.254.0
Router(config-if)#no shut

Router(config-if)#exit
```

```
Router(config)#int fa0/1
Router(config-if)#ip dhcp pool al
Router(dhcp-config)#network 12.13.8.0 255.255.248.0
Router(dhcp-config)#default-router 12.13.8.1
Router(dhcp-config)#ip dhcp excluded-address 12.13.8.2 12.13.10.0
```

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int s0/0/1
Router(config-if)#ip address 12.13.24.2 255.255.255.128
Router(config-if)#no shut
```

```
Router(config-if)#exit
Router(config)#int s0/0/0
Router(config-if)#ip address 12.13.24.129 255.255.255.128
Router(config-if)#no shut
```

Router 2:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip address 12.13.23.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#exit
```

```
Router(config)#int s0/0/0
Router(config-if)#ip address 12.13.24.130 255.255.255.128
Router(config-if)#no shut

Router(config-if)#exit
Router(config)#int s0/0/1
Router(config-if)#ip address 12.13.25.2 255.255.255.128
Router(config-if)#no shut
```


Router 3:

Router>en

Router#conf t

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

Router(config)#int fa0/0

Router(config-if)#ip address 12.13.26.1 255.255.255.192

Router(config-if)#no shut

Router(config-if)#exit

Router(config)#int s0/0/0

Router(config-if)#ip address 12.13.25.130 255.255.255.128

Router(config-if)#no shut

Router(config-if)#exit

Router(config)#int s0/0/1

Router(config-if)#ip address 12.13.25.1 255.255.255.128

Router(config-if)#no shut

Protocol set:

Router0:

```
Router>en
Router#conf t
Router(config)#router eigrp 20
Router(config-router)#network 12.13.16.0
Router(config-router)#network 12.13.22.0
Router(config-router)#network 12.13.24.0
Router(config-router)#network 12.13.25.128
```

Router1:

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 20
Router(config-router)#network 12.13.8.0
Router(config-router)#network 12.13.20.0
Router(config-router)#network 12.13.24.0
Router(config-router)#network 12.13.24.128
Router(config-router)#exit

Router(config)#int fa0/1
Router(config-if)#ip nat inside
Router(config)#int s0/0/0
Router(config-if)#ip nat outside
Router(config-if)#ip nat pool ala 12.13.24.131 12.13.24.131 netmask
255.255.255.128
Router(config)#access-list 2 permit 12.13.20.0 0.0.1.255
Router(config)#access-list 2 permit 12.13.8.0 0.0.7.255
Router(config)#ip nat inside source list 2 pool ala overload

Router(config)#int s0/0/1
Router(config-if)#ip nat outside
Router(config-if)#ip nat pool alamin 12.13.24.3 12.13.24.3 netmask
255.255.255.128
```

```
Router(config)#access-list 1 permit 12.13.20.0 0.0.1.255
Router(config)#access-list 1 permit 12.13.8.0 0.0.7.255
Router(config)#ip nat inside source list 1 pool alamin overload
```

Router2:

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 20
Router(config-router)#network 12.13.23.0
Router(config-router)#network 12.13.24.128
Router(config-router)#network 12.13.25.0
```

Router3:

```
Router>en
Router#conf t
Router(config)#router eigrp 20
Router(config-router)#network 12.13.25.0
Router(config-router)#network 12.13.25.128
Router(config-router)#network 12.13.26.0
```

ACL(Extended):

```
Router3>en
Router3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router3(config)#access-list 100 deny ip host 12.13.26.3 host 12.13.20.5
Router3(config)#access-list 100 permit ip any any
Router3(config)#int fa0/0
Router3(config-if)#ip access-group 100 in
```


4th section: Results

“sh ip int br” for all the routers:

Router0:

```
Router0#
Router0#sh ip int br
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	12.13.16.1	YES	manual	up	up
FastEthernet0/1	12.13.22.1	YES	manual	up	up
Serial0/0/0	12.13.25.129	YES	manual	up	up
Serial0/0/1	12.13.24.1	YES	manual	up	up

Router1:

```
Router1#
Router1#sh ip int br
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	12.13.20.1	YES	manual	up	up
FastEthernet0/1	12.13.8.1	YES	manual	up	up
Serial0/0/0	12.13.24.129	YES	manual	up	up
Serial0/0/1	12.13.24.2	YES	manual	up	up

Router2:

```
Router2#
Router2#sh ip int br
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	12.13.23.1	YES	manual	up	up
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	12.13.24.130	YES	manual	up	up
Serial0/0/1	12.13.25.2	YES	manual	up	up

Router3:

```
Router3#
Router3#sh ip int br
Interface                IP-Address      OK? Method Status      Protocol
FastEthernet0/0          12.13.26.1      YES manual up          up
FastEthernet0/1          unassigned      YES unset  administratively down down
Serial10/0/0              12.13.25.130    YES manual up          up
Serial10/0/1              12.13.25.1      YES manual up          up
```

show ip route for all the routers after the completion(EIGRP):

Router0:

```
Router0#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

12.0.0.0/8 is variably subnetted, 10 subnets, 6 masks
D    12.13.8.0/21 [90/2172416] via 12.13.24.2, 00:16:12, Serial10/0/1
C    12.13.16.0/22 is directly connected, FastEthernet0/0
D    12.13.20.0/23 [90/2172416] via 12.13.24.2, 00:16:12, Serial10/0/1
C    12.13.22.0/24 is directly connected, FastEthernet0/1
D    12.13.23.0/24 [90/2684416] via 12.13.24.2, 00:16:12, Serial10/0/1
       [90/2684416] via 12.13.25.130, 00:16:12, Serial10/0/0
C    12.13.24.0/25 is directly connected, Serial10/0/1
D    12.13.24.128/25 [90/2681856] via 12.13.24.2, 00:16:12, Serial10/0/1
D    12.13.25.0/25 [90/2681856] via 12.13.25.130, 00:16:12, Serial10/0/0
C    12.13.25.128/25 is directly connected, Serial10/0/0
D    12.13.26.0/26 [90/2172416] via 12.13.25.130, 00:16:12, Serial10/0/0
Router0#
```

Router1:

```
Router1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
      12.0.0.0/8 is variably subnetted, 10 subnets, 6 masks
C       12.13.8.0/21 is directly connected, FastEthernet0/1
D       12.13.16.0/22 [90/2172416] via 12.13.24.1, 00:17:15, Serial0/0/1
C       12.13.20.0/23 is directly connected, FastEthernet0/0
D       12.13.22.0/24 [90/2172416] via 12.13.24.1, 00:17:15, Serial0/0/1
D       12.13.23.0/24 [90/2172416] via 12.13.24.130, 00:17:17, Serial0/0/0
C       12.13.24.0/25 is directly connected, Serial0/0/1
C       12.13.24.128/25 is directly connected, Serial0/0/0
D       12.13.25.0/25 [90/2681856] via 12.13.24.130, 00:17:16, Serial0/0/0
D       12.13.25.128/25 [90/2681856] via 12.13.24.1, 00:17:15, Serial0/0/1
D       12.13.26.0/26 [90/2684416] via 12.13.24.130, 00:17:16, Serial0/0/0
                        [90/2684416] via 12.13.24.1, 00:17:15, Serial0/0/1
```

Router1#

Router2:

```
Router2#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
      12.0.0.0/8 is variably subnetted, 10 subnets, 6 masks
D       12.13.8.0/21 [90/2172416] via 12.13.24.129, 00:17:40, Serial0/0/0
D       12.13.16.0/22 [90/2684416] via 12.13.24.129, 00:17:38, Serial0/0/0
                        [90/2684416] via 12.13.25.1, 00:17:38, Serial0/0/1
D       12.13.20.0/23 [90/2172416] via 12.13.24.129, 00:17:40, Serial0/0/0
D       12.13.22.0/24 [90/2684416] via 12.13.24.129, 00:17:38, Serial0/0/0
                        [90/2684416] via 12.13.25.1, 00:17:38, Serial0/0/1
C       12.13.23.0/24 is directly connected, FastEthernet0/0
D       12.13.24.0/25 [90/2681856] via 12.13.24.129, 00:17:38, Serial0/0/0
C       12.13.24.128/25 is directly connected, Serial0/0/0
C       12.13.25.0/25 is directly connected, Serial0/0/1
D       12.13.25.128/25 [90/2681856] via 12.13.25.1, 00:17:38, Serial0/0/1
```

--More--

Router3:

```
Router3#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    12.0.0.0/8 is variably subnetted, 10 subnets, 6 masks
D       12.13.8.0/21 [90/2684416] via 12.13.25.2, 00:17:59, Serial0/0/1
        [90/2684416] via 12.13.25.129, 00:17:58, Serial0/0/0
D       12.13.16.0/22 [90/2172416] via 12.13.25.129, 00:17:58, Serial0/0/0
D       12.13.20.0/23 [90/2684416] via 12.13.25.2, 00:17:59, Serial0/0/1
        [90/2684416] via 12.13.25.129, 00:17:58, Serial0/0/0
D       12.13.22.0/24 [90/2172416] via 12.13.25.129, 00:17:58, Serial0/0/0
D       12.13.23.0/24 [90/2172416] via 12.13.25.2, 00:17:59, Serial0/0/1
D       12.13.24.0/25 [90/2681856] via 12.13.25.129, 00:17:58, Serial0/0/0
D       12.13.24.128/25 [90/2681856] via 12.13.25.2, 00:17:59, Serial0/0/1
C       12.13.25.0/25 is directly connected, Serial0/0/1
C       12.13.25.128/25 is directly connected, Serial0/0/0
--More--
```

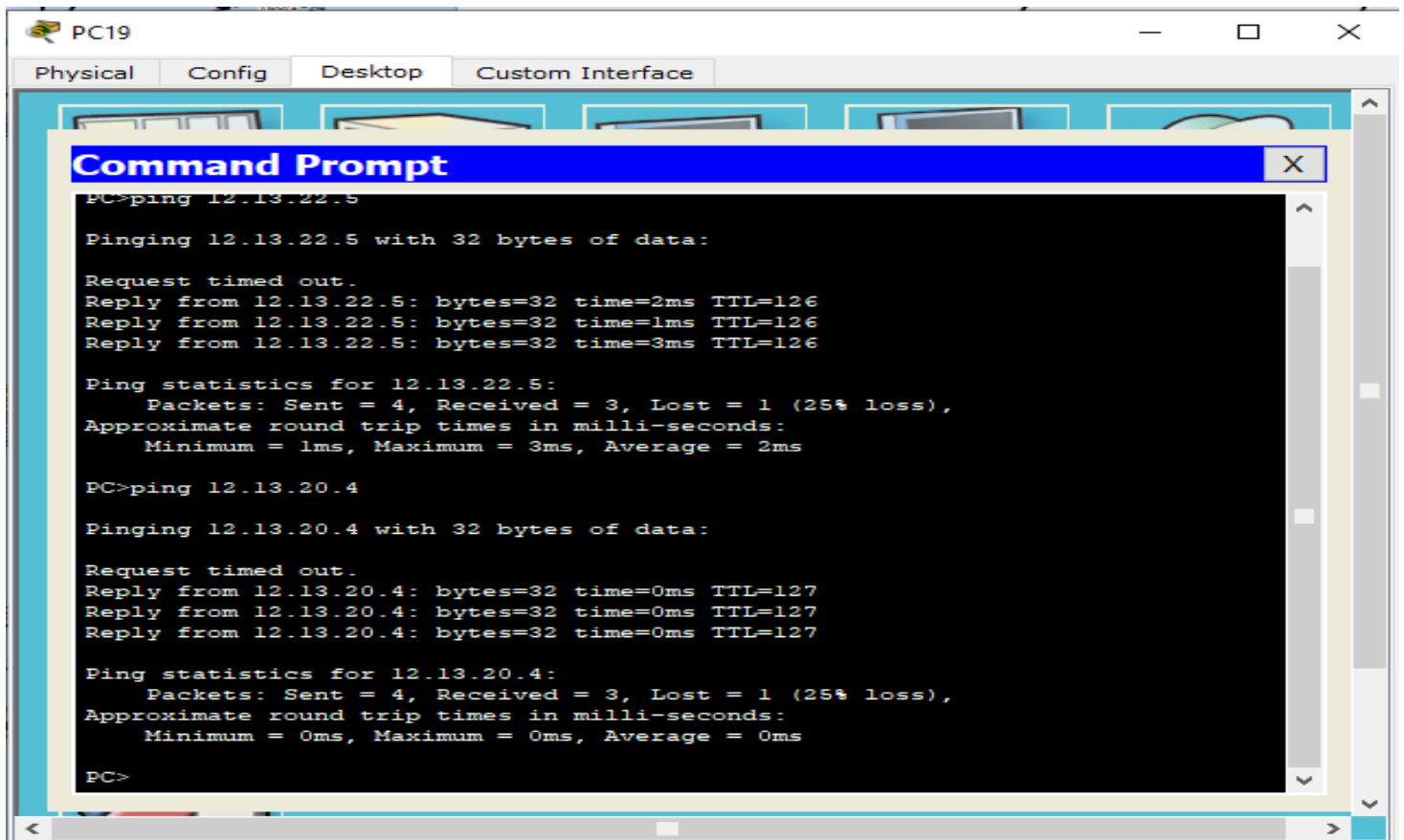
“sh ip nat tr” for PAT:

Router2:

```
Router1#sh ip nat tr
Pro  Inside global      Inside local      Outside local     Outside global
icmp 12.13.24.3:1        12.13.10.23:1    12.13.23.6:1     12.13.23.6:1
icmp 12.13.24.3:2        12.13.10.23:2    12.13.23.6:2     12.13.23.6:2
icmp 12.13.24.3:3        12.13.10.23:3    12.13.23.6:3     12.13.23.6:3
icmp 12.13.24.3:4        12.13.10.23:4    12.13.23.6:4     12.13.23.6:4
icmp 12.13.24.3:5        12.13.10.23:5    12.13.22.6:5     12.13.22.6:5
icmp 12.13.24.3:6        12.13.10.23:6    12.13.22.6:6     12.13.22.6:6
icmp 12.13.24.3:7        12.13.10.23:7    12.13.22.6:7     12.13.22.6:7
icmp 12.13.24.3:8        12.13.10.23:8    12.13.22.6:8     12.13.22.6:8

Router1#
```

Ping one PC to another PC:



The screenshot shows a virtual machine window for PC19. The desktop has icons for folders and applications. A 'Command Prompt' window is open, displaying the results of two ping commands. The first command is 'ping 12.13.22.5', which shows a 25% loss of packets. The second command is 'ping 12.13.20.4', which also shows a 25% loss of packets.

```
PC19
Physical Config Desktop Custom Interface

Command Prompt

PC>ping 12.13.22.5

Pinging 12.13.22.5 with 32 bytes of data:

Request timed out.
Reply from 12.13.22.5: bytes=32 time=2ms TTL=126
Reply from 12.13.22.5: bytes=32 time=1ms TTL=126
Reply from 12.13.22.5: bytes=32 time=3ms TTL=126

Ping statistics for 12.13.22.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms

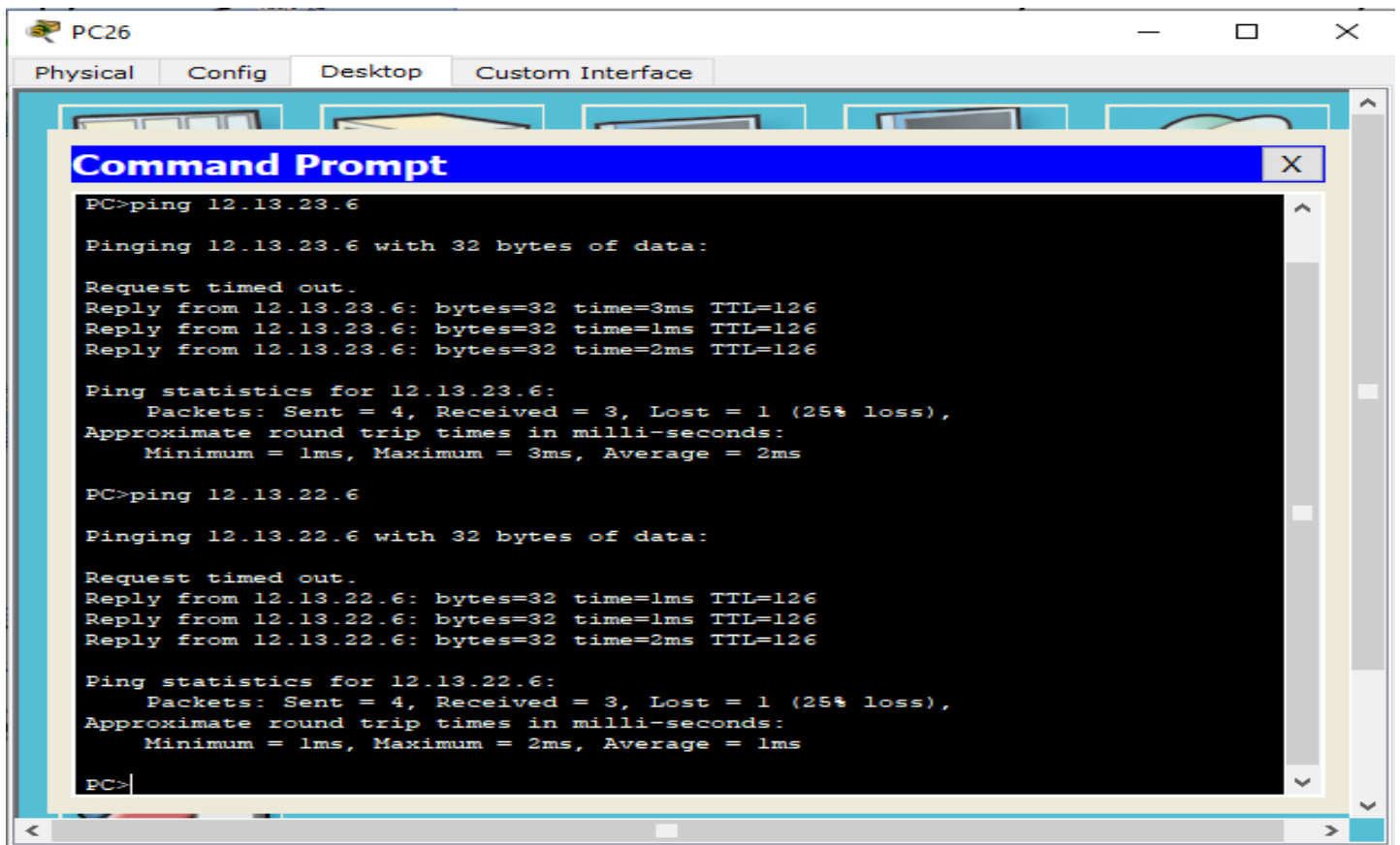
PC>ping 12.13.20.4

Pinging 12.13.20.4 with 32 bytes of data:

Request timed out.
Reply from 12.13.20.4: bytes=32 time=0ms TTL=127
Reply from 12.13.20.4: bytes=32 time=0ms TTL=127
Reply from 12.13.20.4: bytes=32 time=0ms TTL=127

Ping statistics for 12.13.20.4:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```



The screenshot shows a virtual machine window for PC26. The desktop has icons for folders and applications. A 'Command Prompt' window is open, displaying the results of two ping commands. The first command is 'ping 12.13.23.6', which shows a 25% loss of packets. The second command is 'ping 12.13.22.6', which also shows a 25% loss of packets.

```
PC26
Physical Config Desktop Custom Interface

Command Prompt

PC>ping 12.13.23.6

Pinging 12.13.23.6 with 32 bytes of data:

Request timed out.
Reply from 12.13.23.6: bytes=32 time=3ms TTL=126
Reply from 12.13.23.6: bytes=32 time=1ms TTL=126
Reply from 12.13.23.6: bytes=32 time=2ms TTL=126

Ping statistics for 12.13.23.6:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms

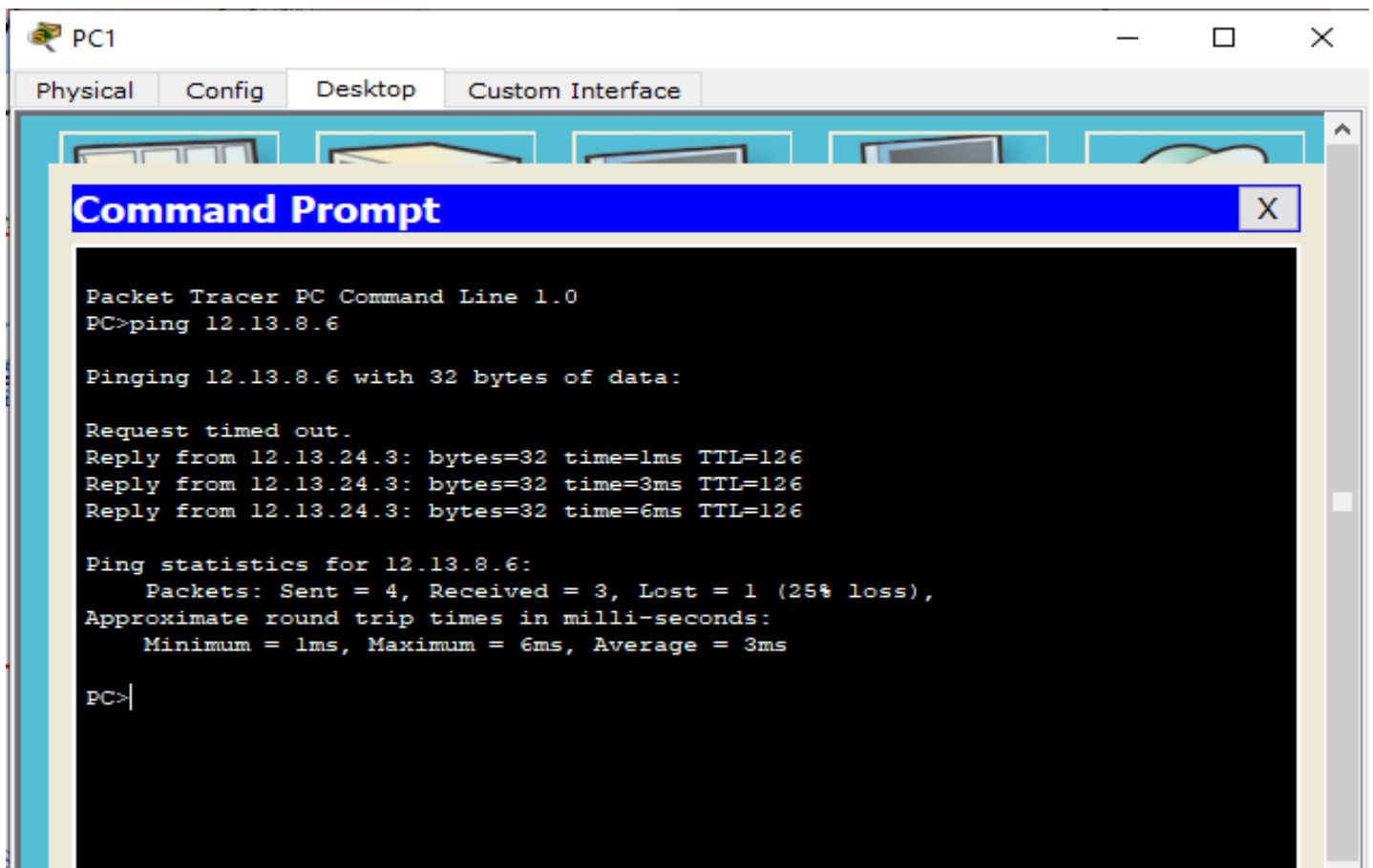
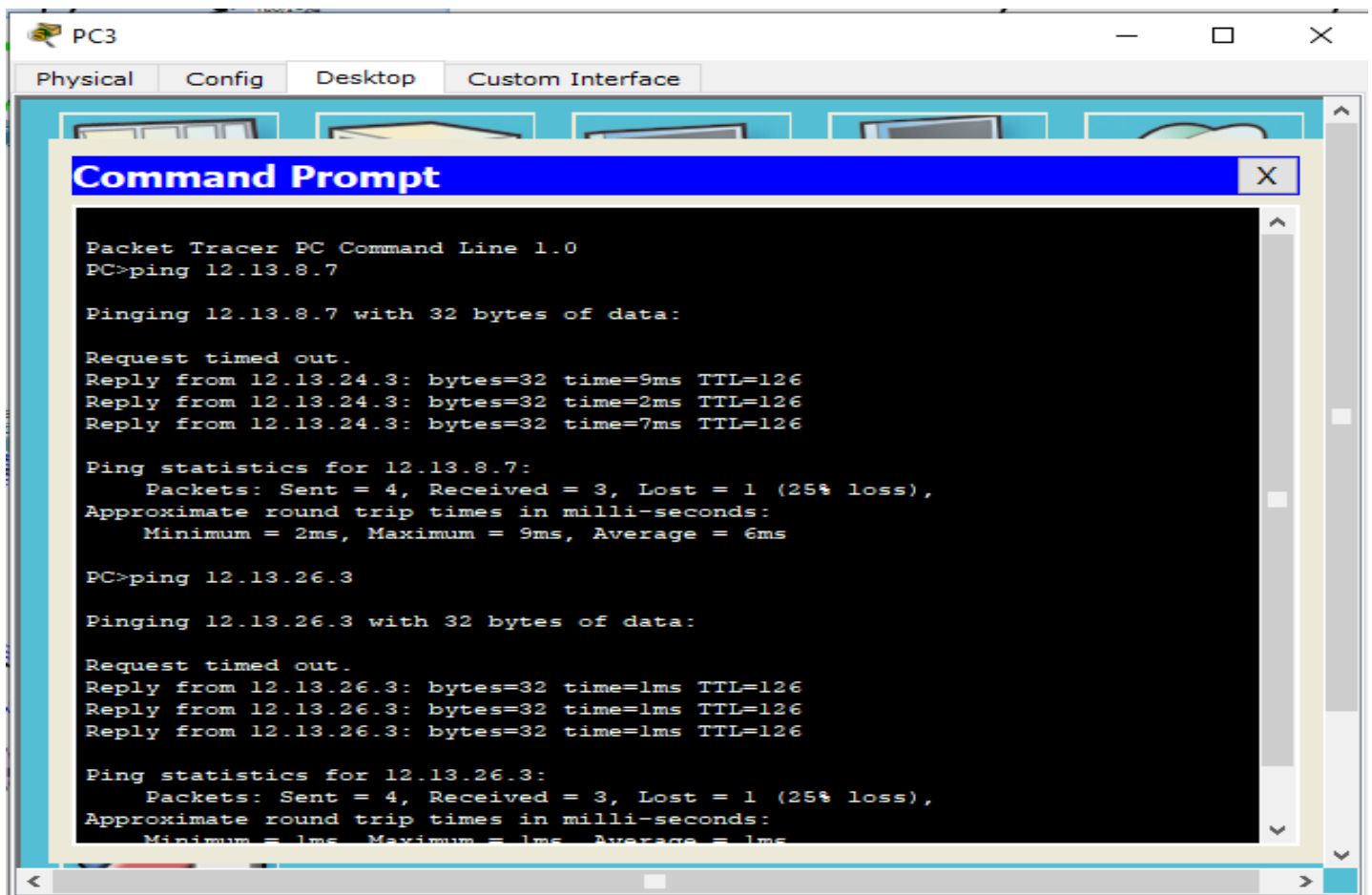
PC>ping 12.13.22.6

Pinging 12.13.22.6 with 32 bytes of data:

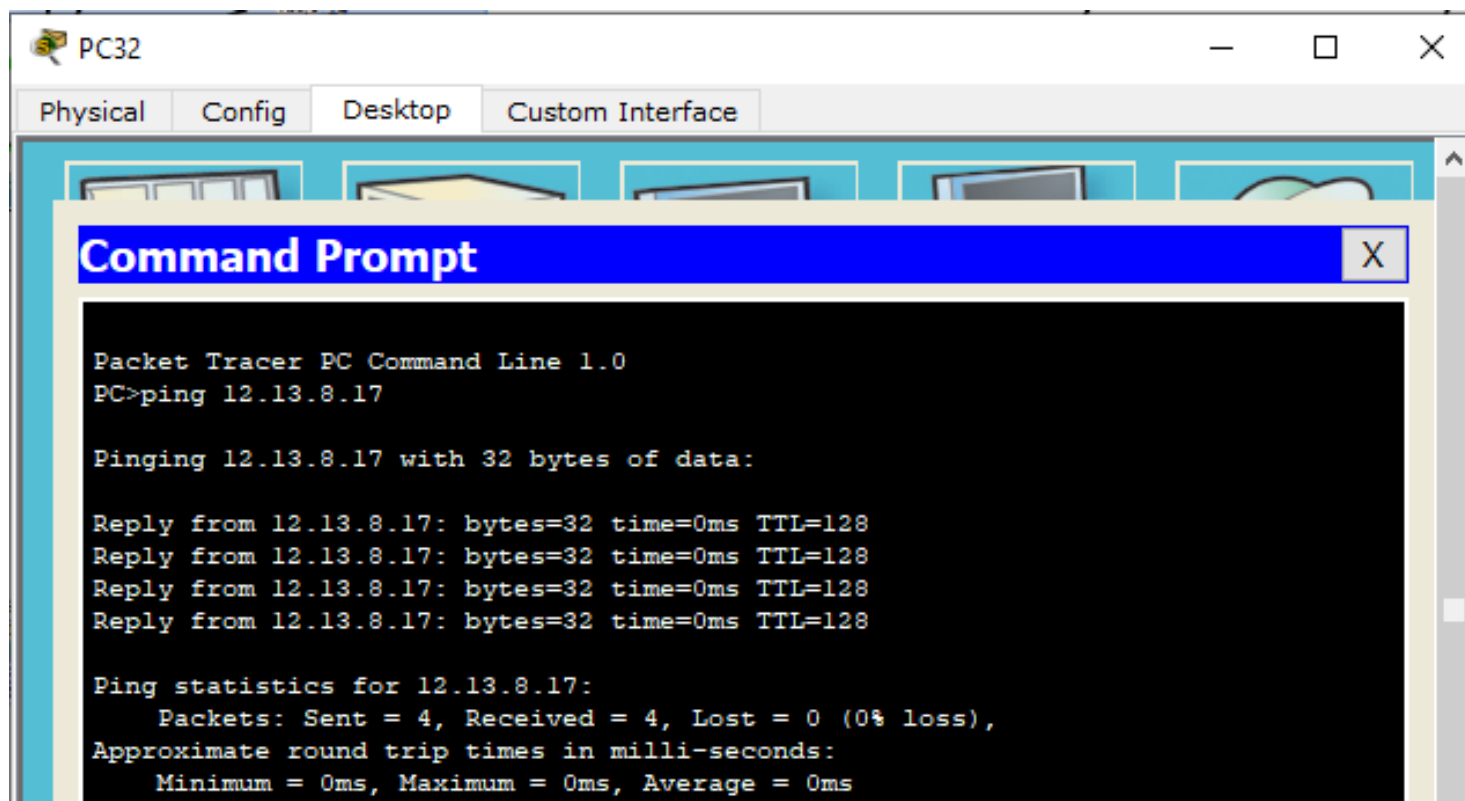
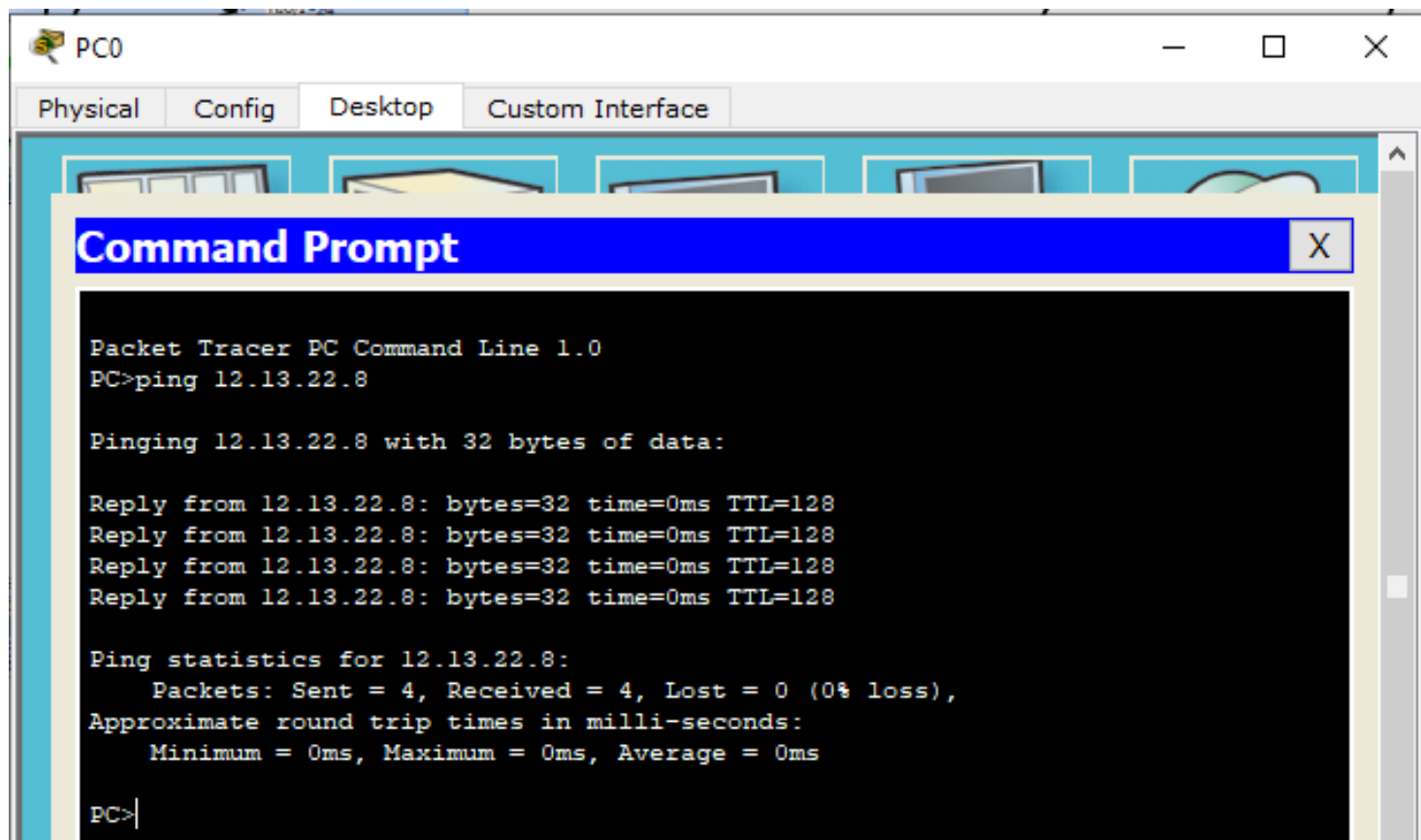
Request timed out.
Reply from 12.13.22.6: bytes=32 time=1ms TTL=126
Reply from 12.13.22.6: bytes=32 time=1ms TTL=126
Reply from 12.13.22.6: bytes=32 time=2ms TTL=126

Ping statistics for 12.13.22.6:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

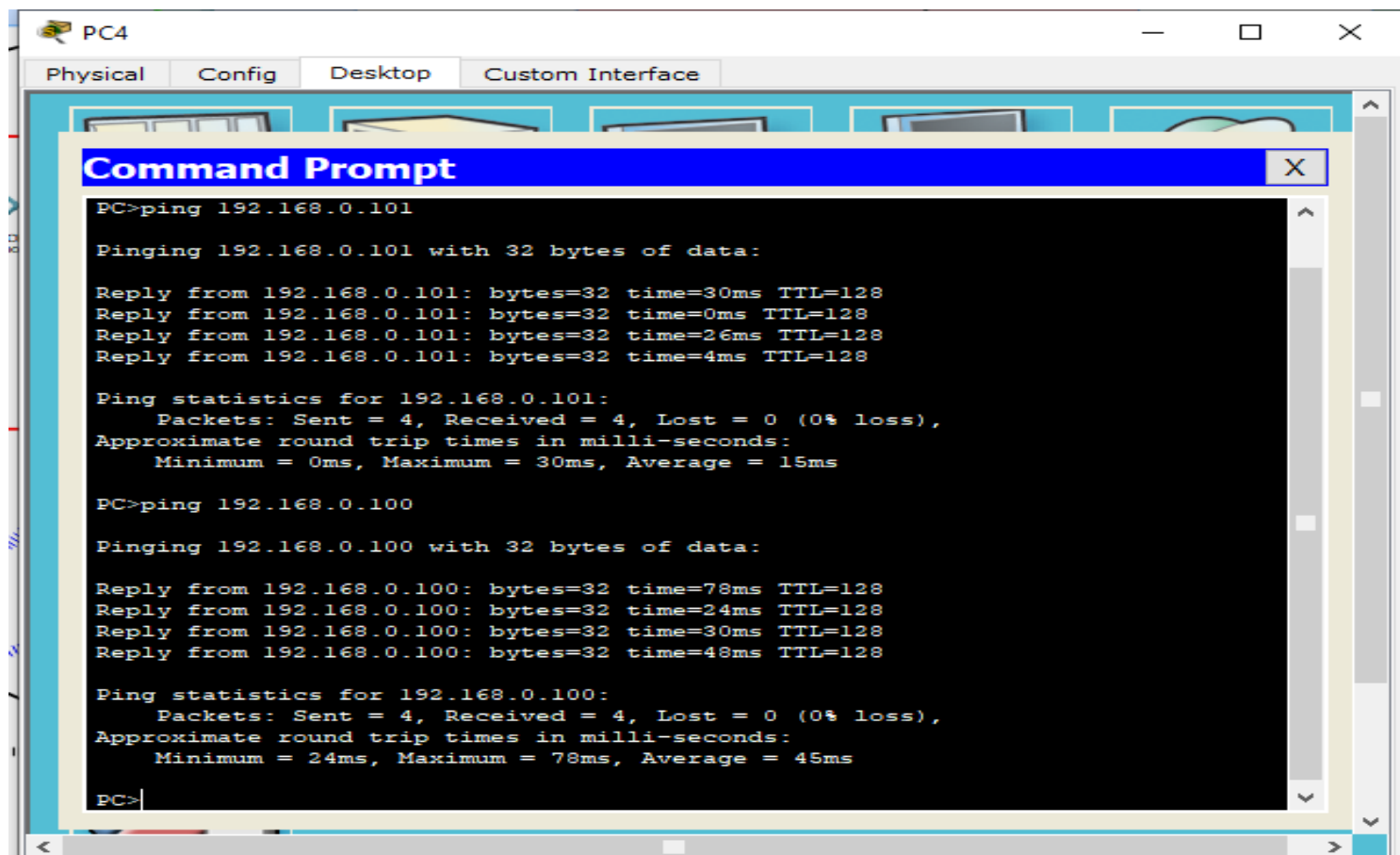
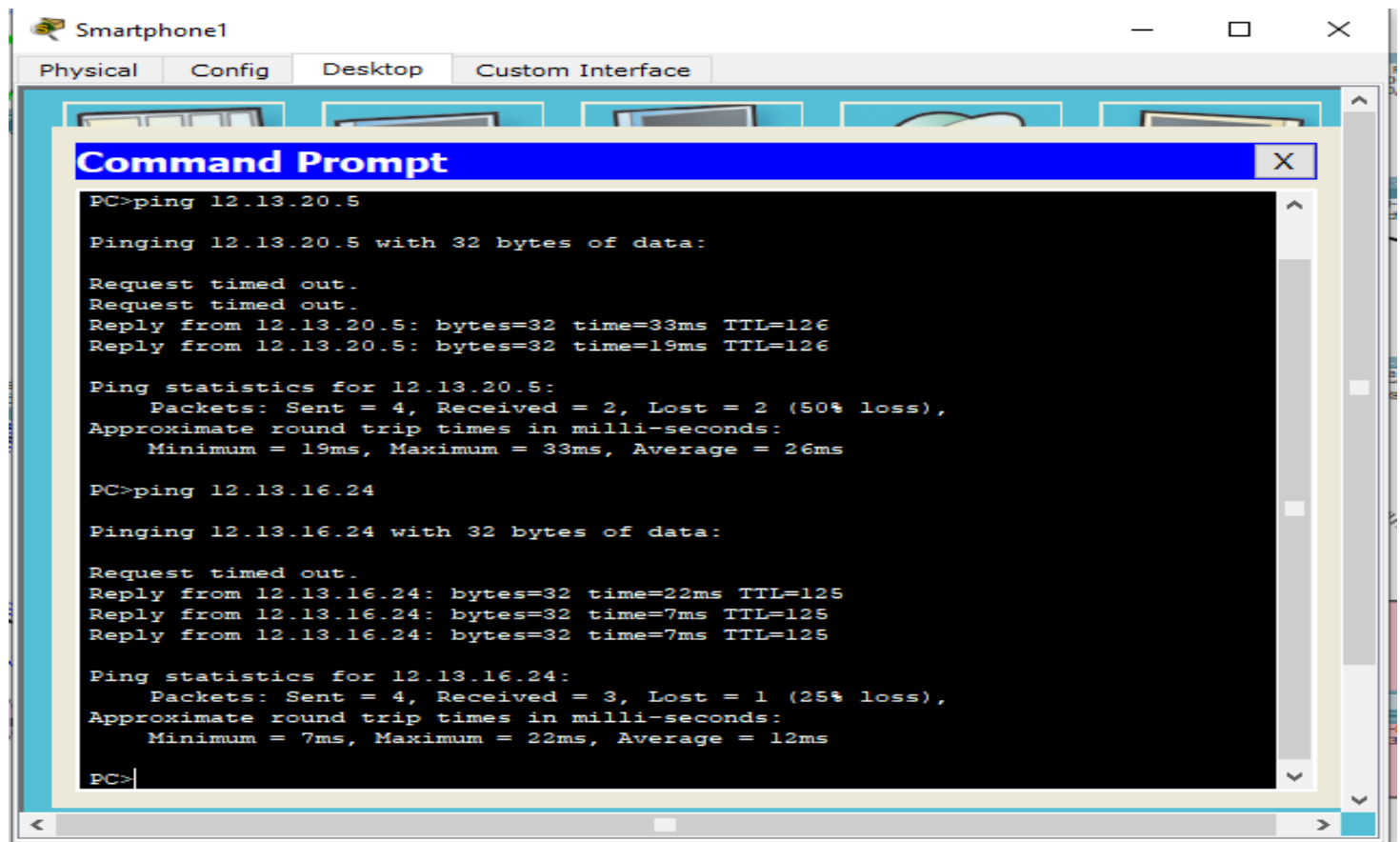
PC>
```



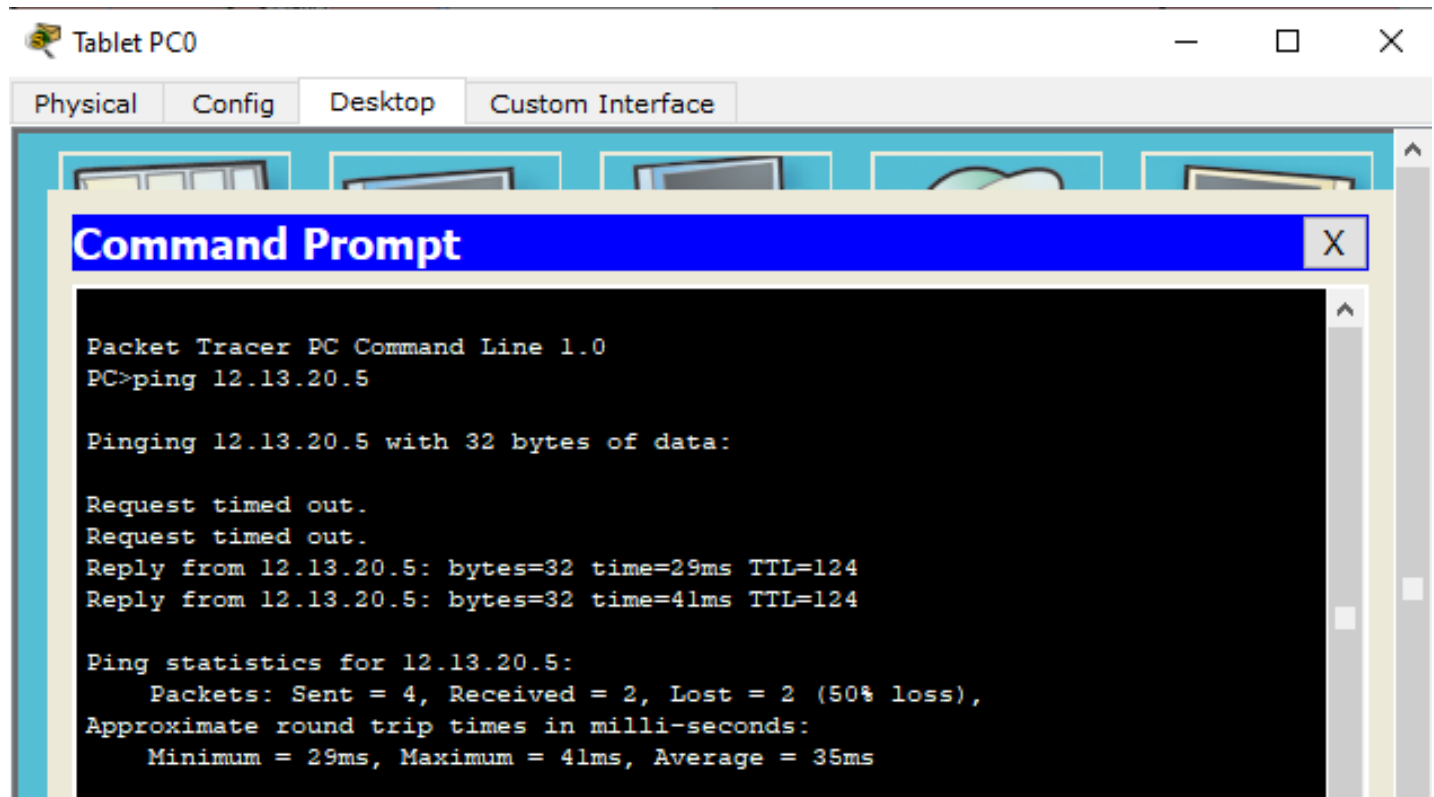
Ping one PC to Printer:



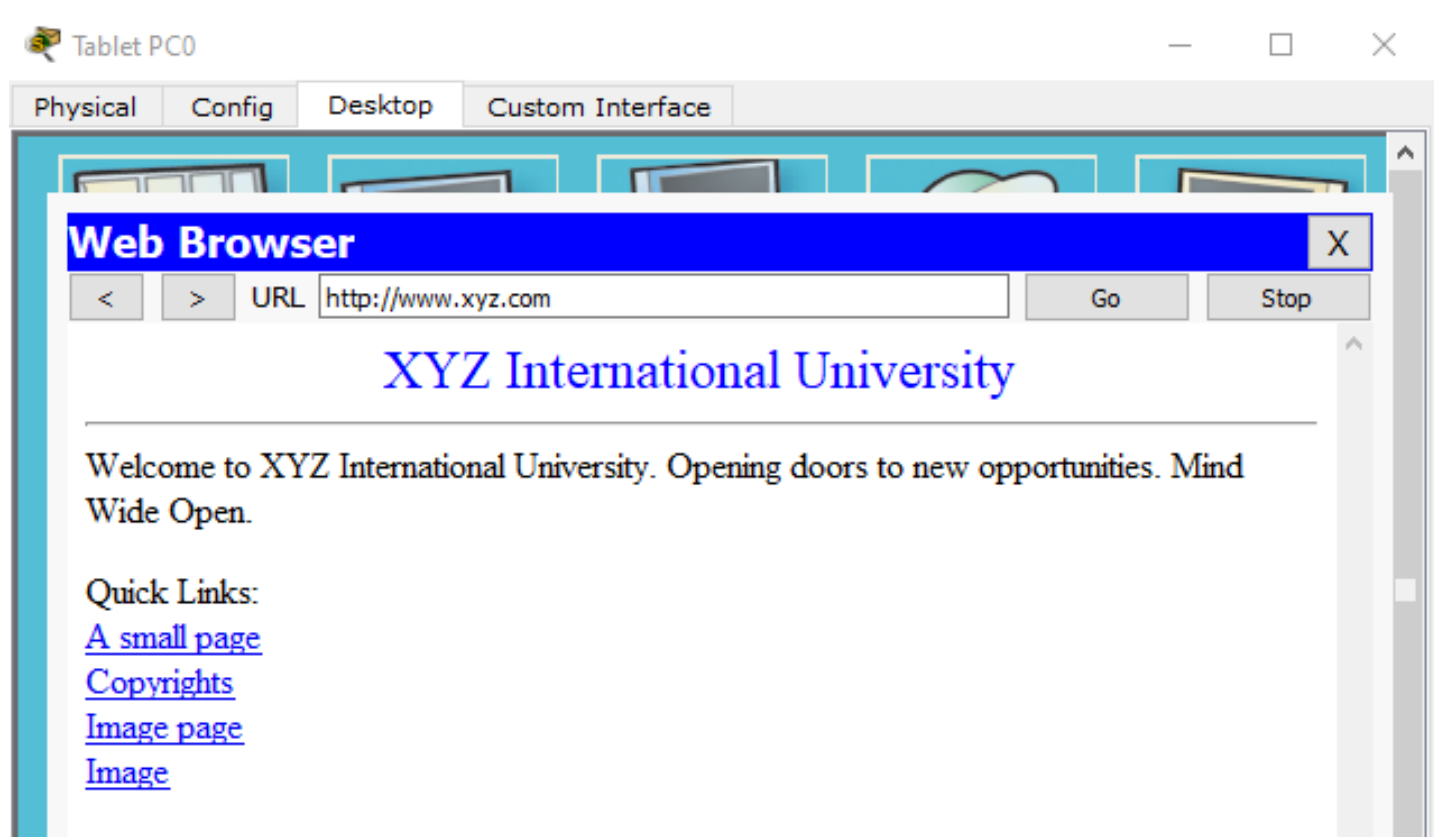
Ping Wireless Device to another Device:

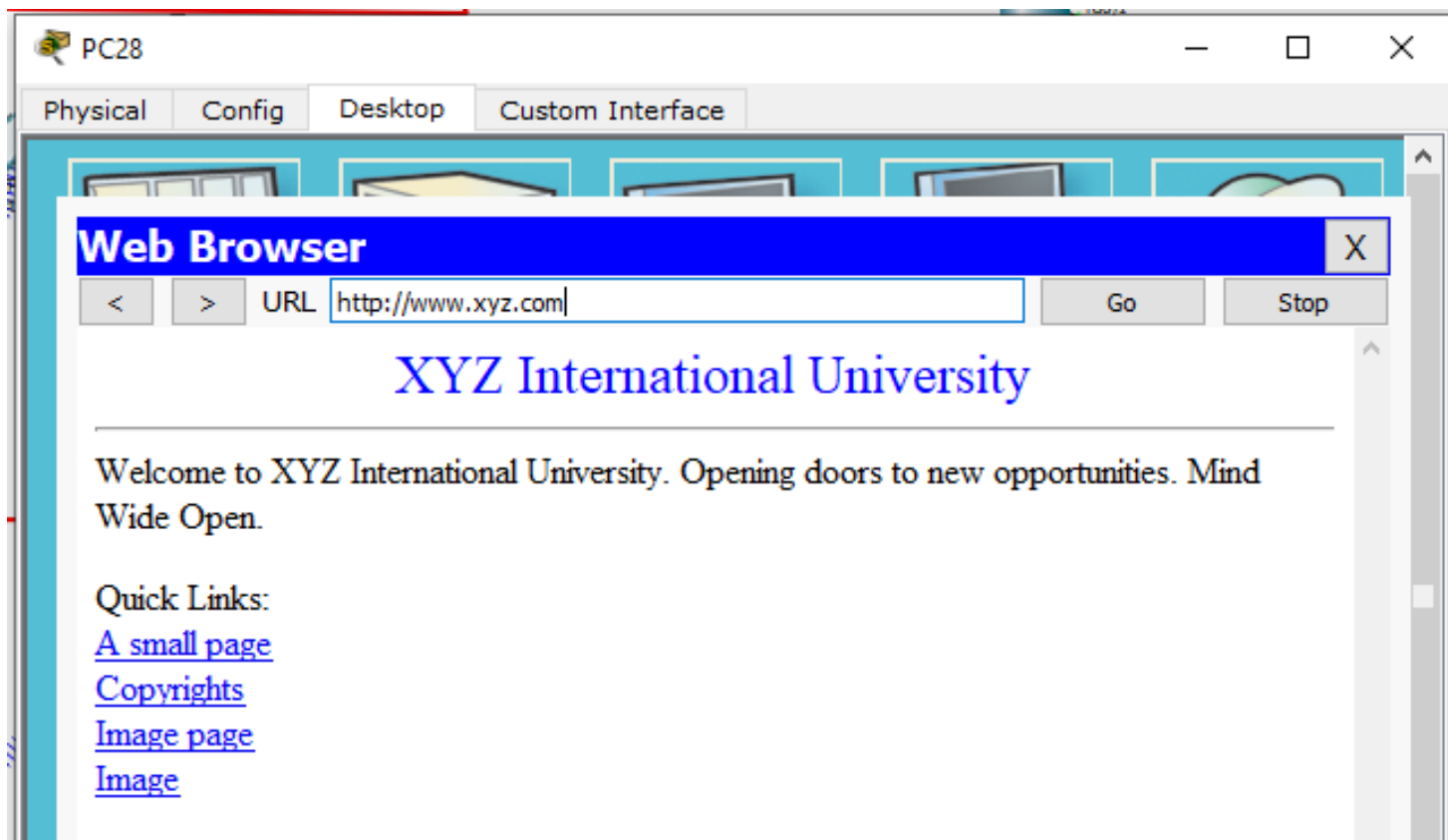


Ping Cell Phone To another cell phone:

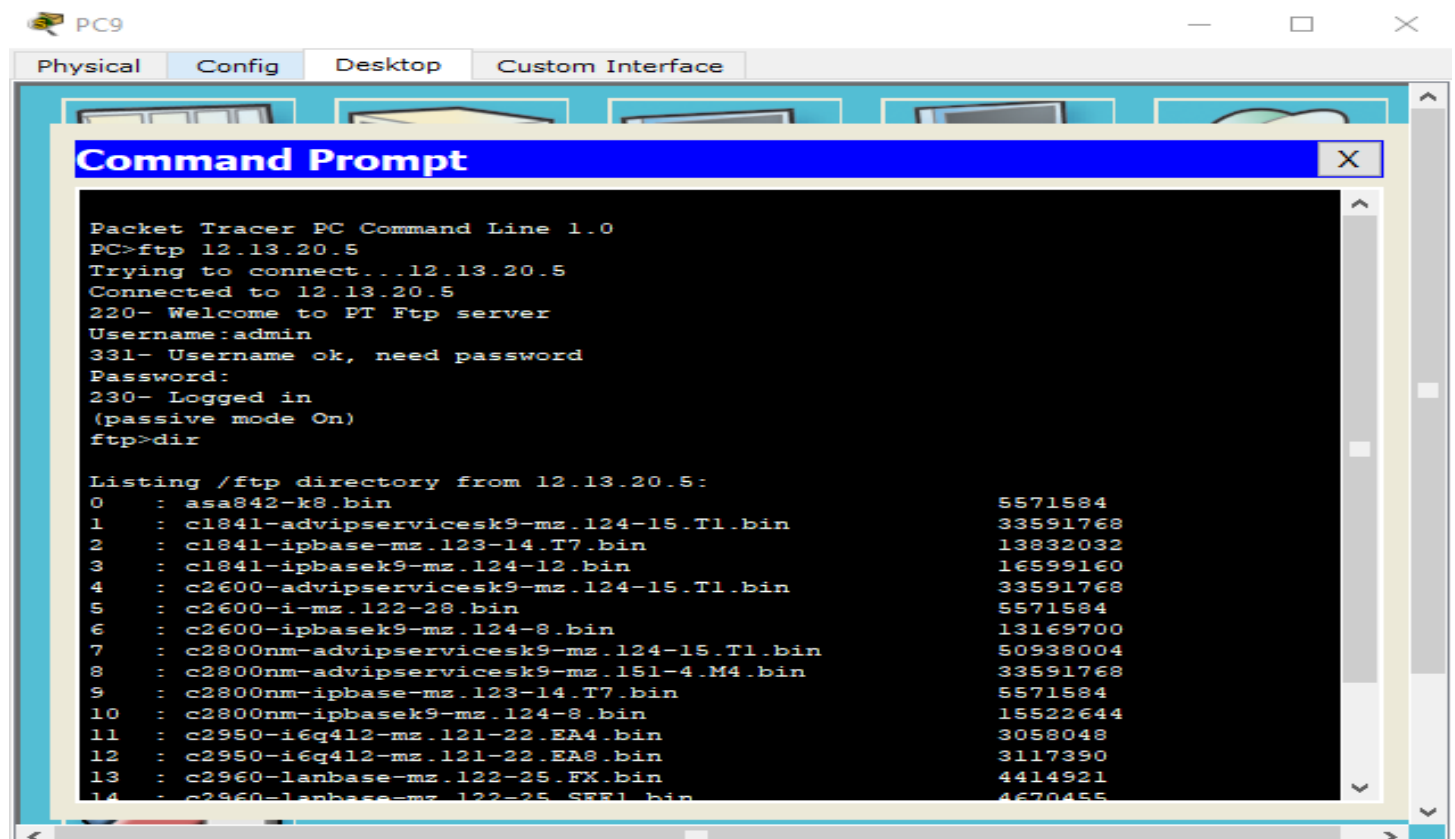


DNS & HTTP server:





FTP Server:



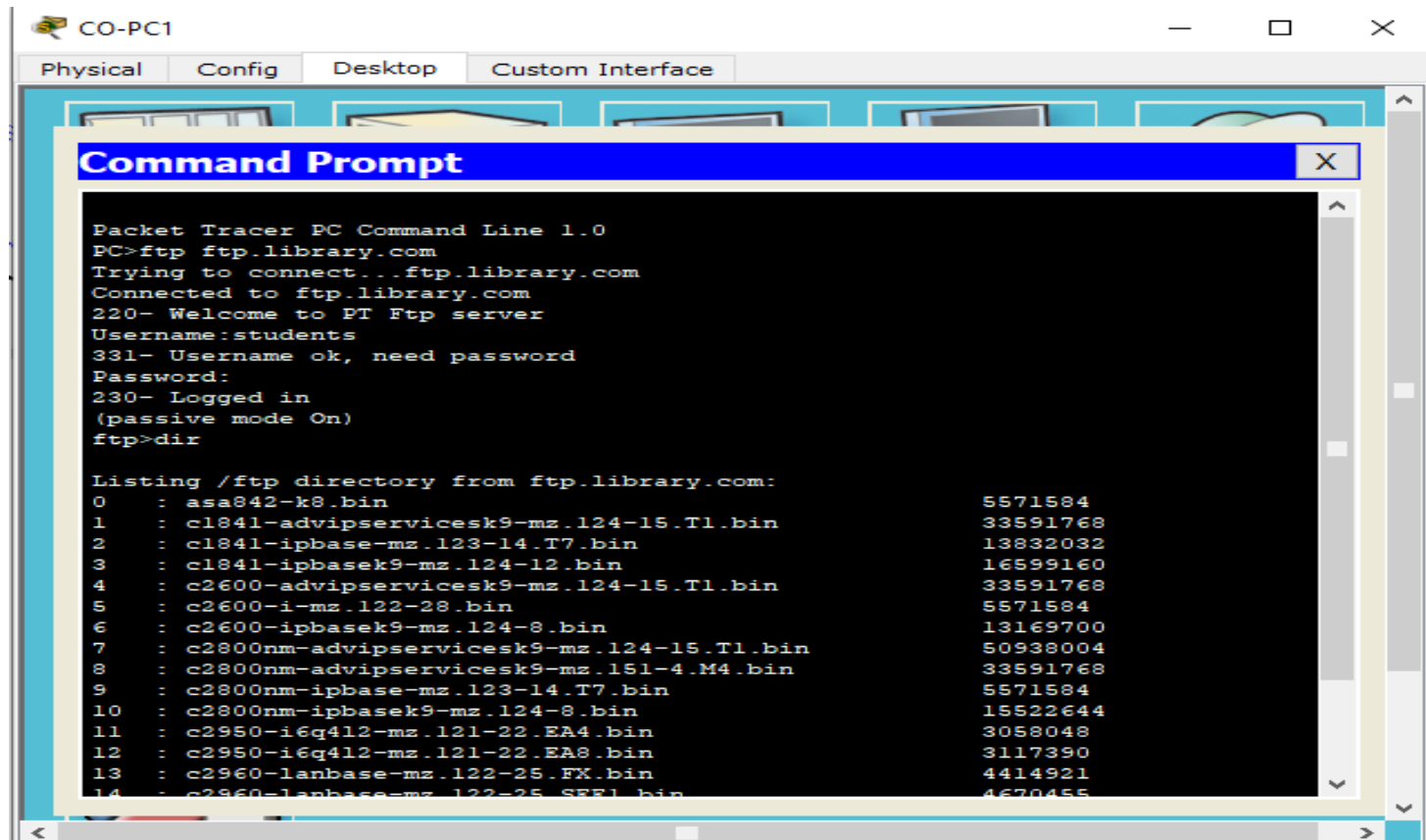
PC9

Physical Config Desktop Custom Interface

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ftp 12.13.20.5
Trying to connect...12.13.20.5
Connected to 12.13.20.5
220- Welcome to PT Ftp server
Username:admin
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>dir

Listing /ftp directory from 12.13.20.5:
0 : asa842-k8.bin 5571584
1 : c1841-advipservicesk9-mz.124-15.T1.bin 33591768
2 : c1841-ipbase-mz.123-14.T7.bin 13832032
3 : c1841-ipbasek9-mz.124-12.bin 16599160
4 : c2600-advipservicesk9-mz.124-15.T1.bin 33591768
5 : c2600-i-mz.122-28.bin 5571584
6 : c2600-ipbasek9-mz.124-8.bin 13169700
7 : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
8 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
9 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
10 : c2800nm-ipbasek9-mz.124-8.bin 15522644
11 : c2950-i6q412-mz.121-22.EA4.bin 3058048
12 : c2950-i6q412-mz.121-22.EA8.bin 3117390
13 : c2960-lanbase-mz.122-25.FX.bin 4414921
14 : c2960-lanbase-mz.122-25.SFE1.bin 4670455
```



CO-PC1

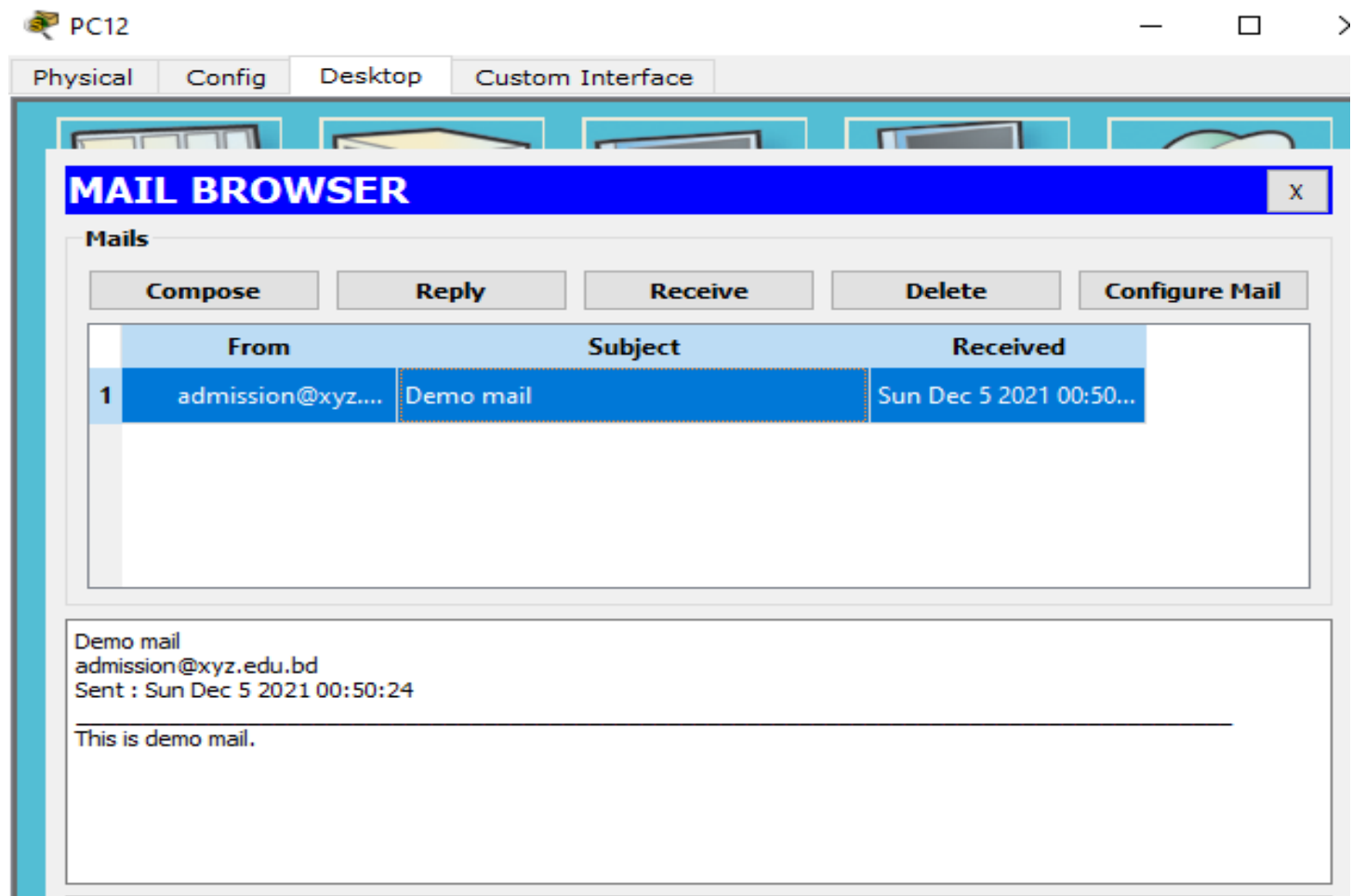
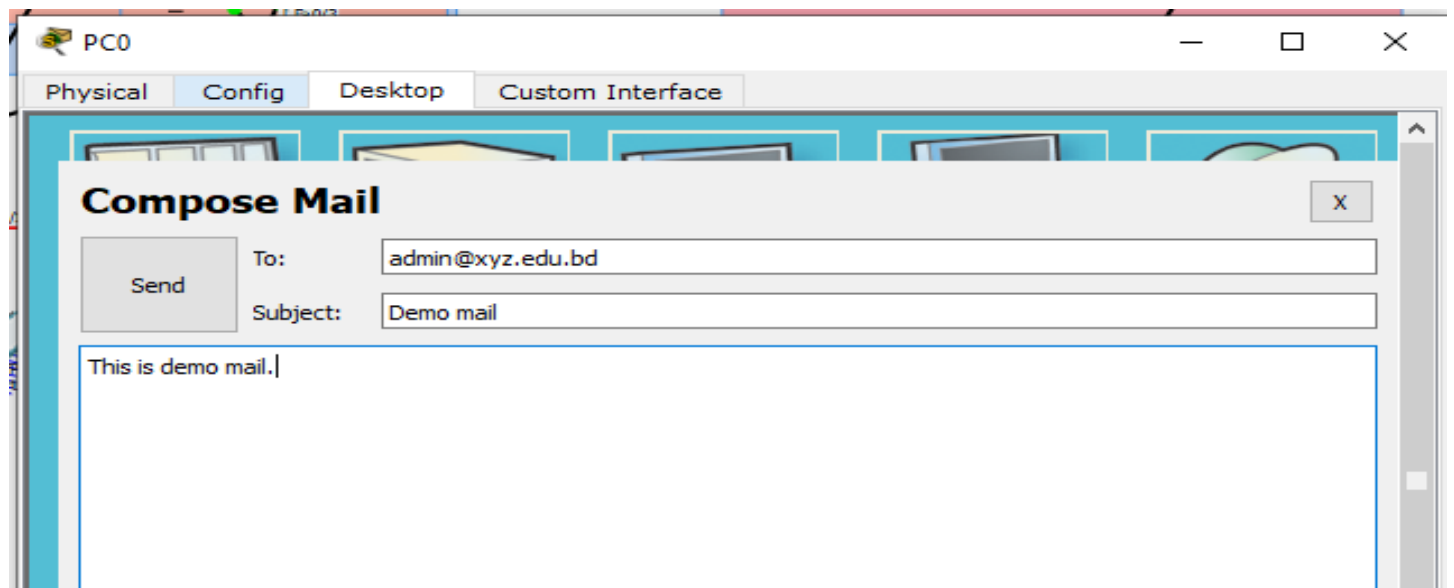
Physical Config Desktop Custom Interface

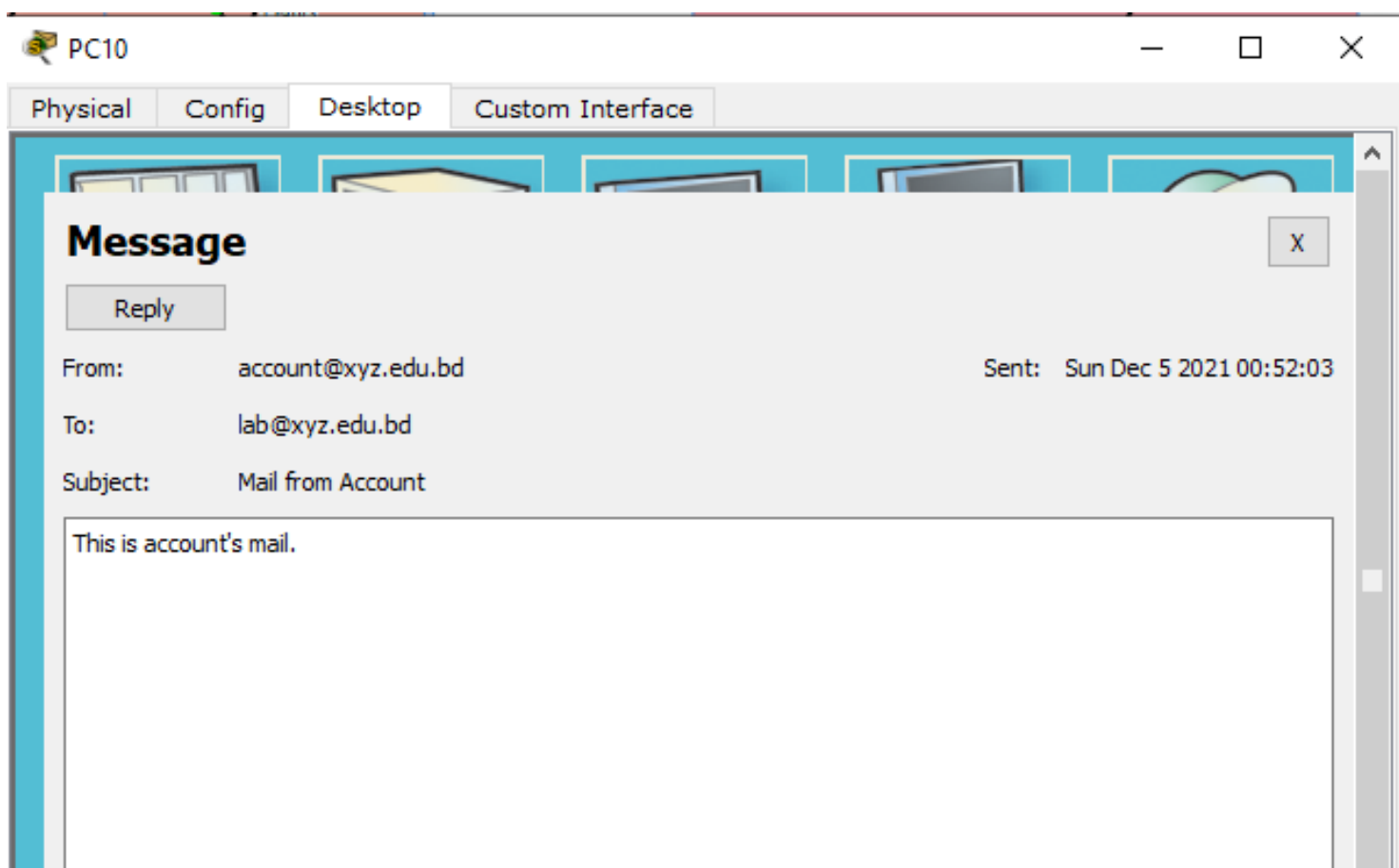
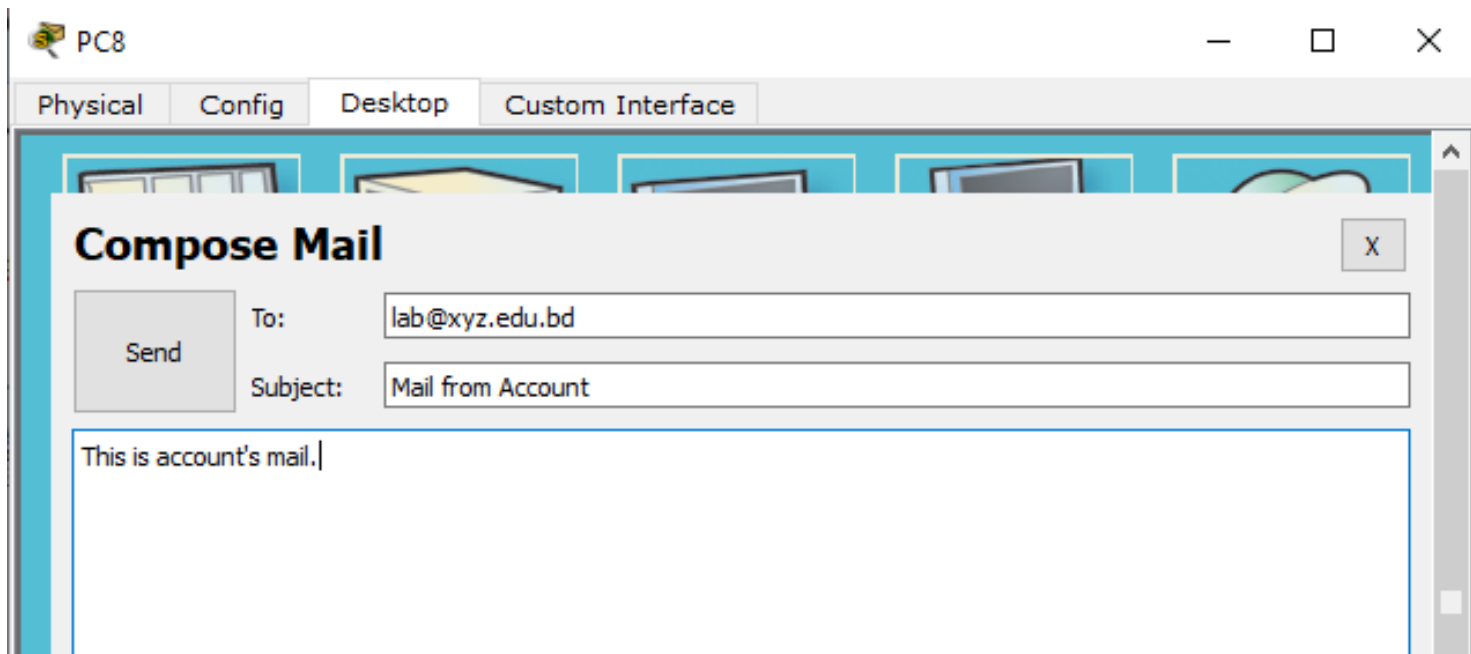
Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ftp ftp.library.com
Trying to connect...ftp.library.com
Connected to ftp.library.com
220- Welcome to PT Ftp server
Username:students
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>dir

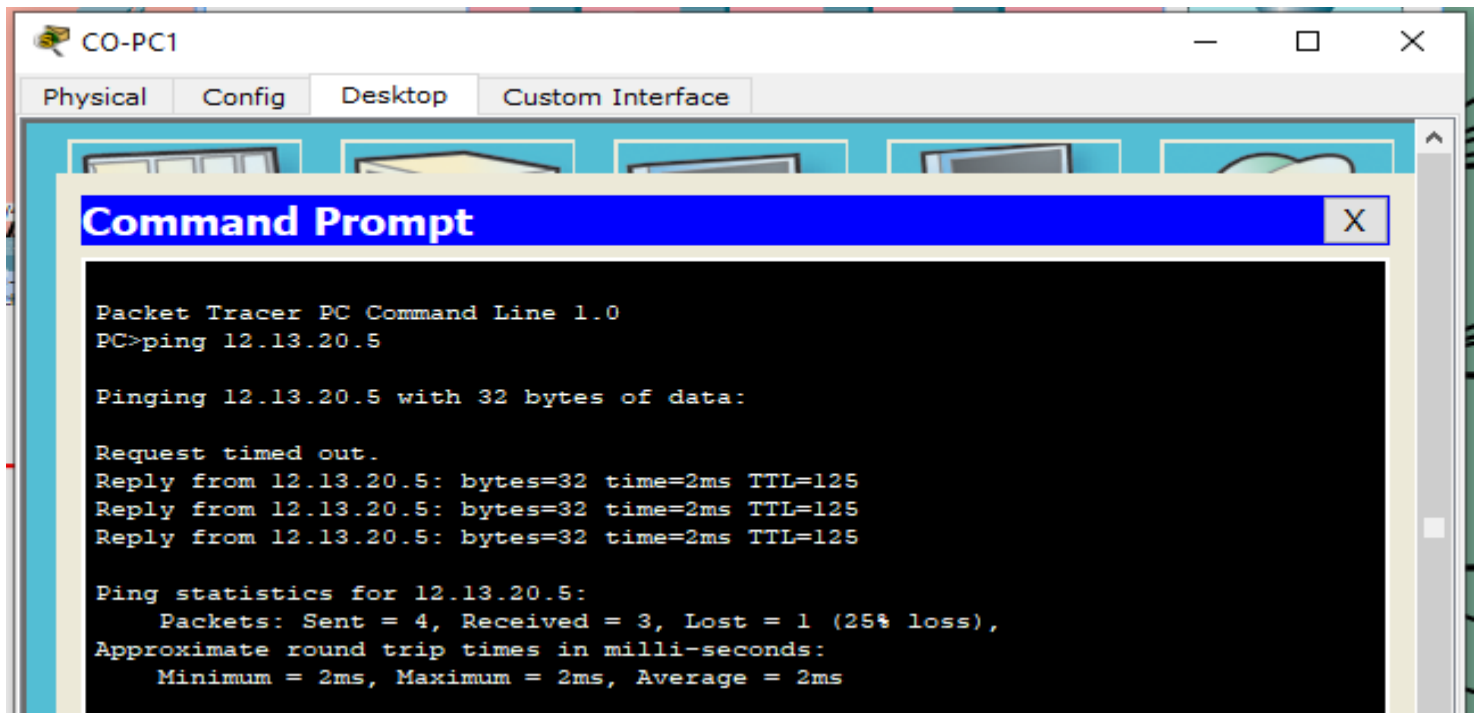
Listing /ftp directory from ftp.library.com:
0 : asa842-k8.bin 5571584
1 : c1841-advipservicesk9-mz.124-15.T1.bin 33591768
2 : c1841-ipbase-mz.123-14.T7.bin 13832032
3 : c1841-ipbasek9-mz.124-12.bin 16599160
4 : c2600-advipservicesk9-mz.124-15.T1.bin 33591768
5 : c2600-i-mz.122-28.bin 5571584
6 : c2600-ipbasek9-mz.124-8.bin 13169700
7 : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
8 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
9 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
10 : c2800nm-ipbasek9-mz.124-8.bin 15522644
11 : c2950-i6q412-mz.121-22.EA4.bin 3058048
12 : c2950-i6q412-mz.121-22.EA8.bin 3117390
13 : c2960-lanbase-mz.122-25.FX.bin 4414921
14 : c2960-lanbase-mz.122-25.SFE1.bin 4670455
```


EMAIL One Device to another:





Before ACL (Extended):



The screenshot shows a Packet Tracer window titled "CO-PC1" with tabs for "Physical", "Config", "Desktop", and "Custom Interface". The "Desktop" tab is active, displaying a "Command Prompt" window. The command prompt shows the execution of the command "ping 12.13.20.5". The output indicates that the ping was successful, with 3 packets received out of 4 sent, resulting in a 25% loss. The round trip times are all 2ms.

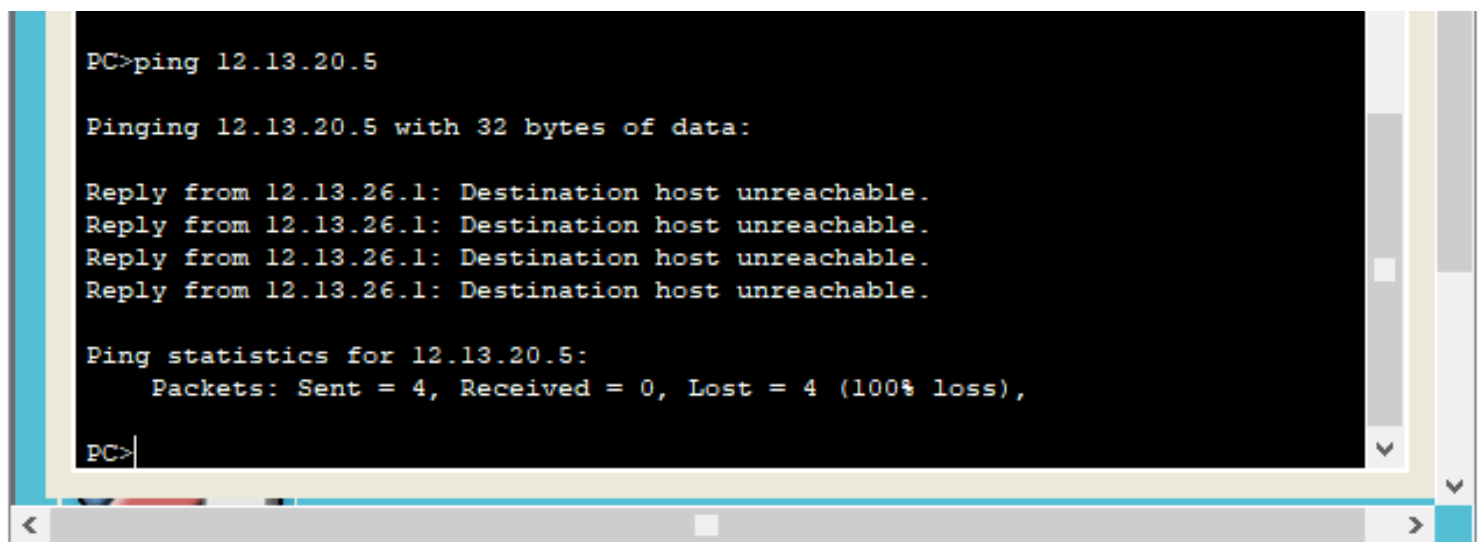
```
Packet Tracer PC Command Line 1.0
PC>ping 12.13.20.5

Pinging 12.13.20.5 with 32 bytes of data:

Request timed out.
Reply from 12.13.20.5: bytes=32 time=2ms TTL=125
Reply from 12.13.20.5: bytes=32 time=2ms TTL=125
Reply from 12.13.20.5: bytes=32 time=2ms TTL=125

Ping statistics for 12.13.20.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 2ms, Average = 2ms
```

After ACL (Extended):



The screenshot shows the same Packet Tracer window as before, but the output of the "ping 12.13.20.5" command is different. It shows that the ping failed, with 0 packets received out of 4 sent, resulting in a 100% loss. The reason for the failure is "Destination host unreachable".

```
PC>ping 12.13.20.5

Pinging 12.13.20.5 with 32 bytes of data:

Reply from 12.13.26.1: Destination host unreachable.
Reply from 12.13.26.1: Destination host unreachable.
Reply from 12.13.26.1: Destination host unreachable.
Reply from 12.13.26.1: Destination host unreachable.

Ping statistics for 12.13.20.5:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>
```

5th section: References

1. Mr. Arif Mahmud[[Link](#),[Link](#),[Link](#),[Link](#)]
2. EDWIN BARRIENTOS AVENDAÑO [[Link](#)]
3. Network Engineer Stuff[[Link](#)]
4. Albert Subir Mondal[[Link](#),[link](#),[link](#),[link](#),[link](#)]