

ALI USTUNKOL

COMP 5352 1: Advanced Internetworking Technology

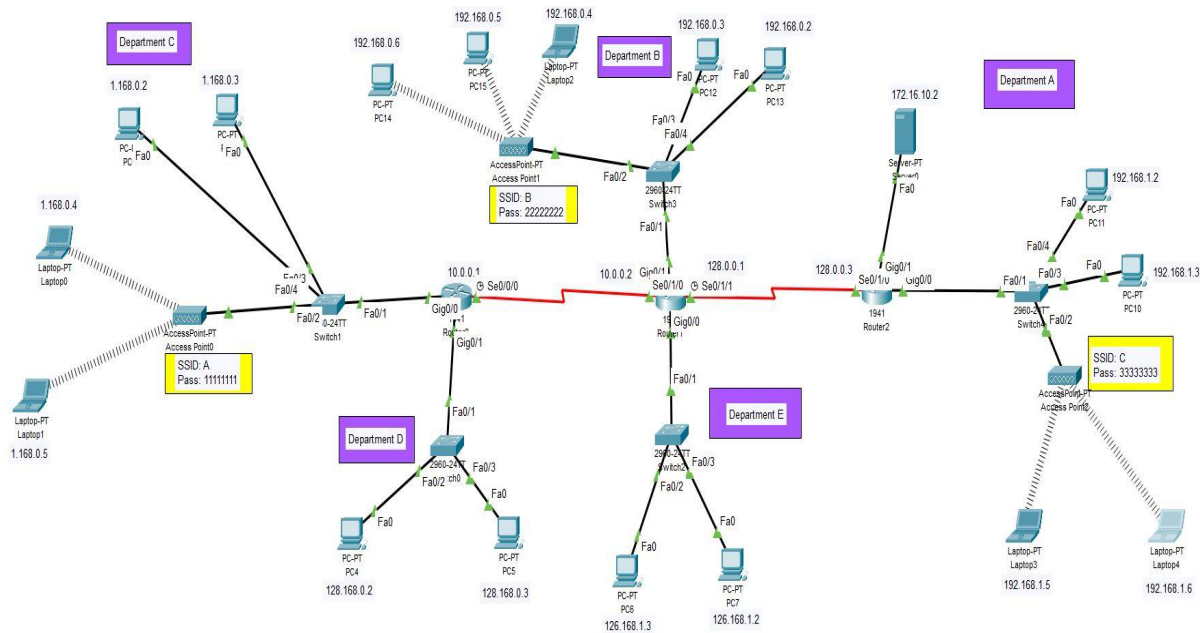
North American University

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Final Project

I attached below the full scheme packet tracer version and I will explain part by part.



Devices list:

- 3 - 1941 routers
- 5 - 2960 switches
- 1 - Server
- 3 - Access points
- 10 wired connected PC
- 6 wireless connected Laptop

Router Configuration:

I used three 1941 routers. I set up an OSPF and IP route for insides and outside communication. I didn't use the DHCP pool, because I manually set each device IP address.

For OSPF:

I used ospf for inside and outside communications.

Router 0

Router ospf 1

Router- id 1.1.1.1

Network 10.0.0.0 255.255.255.0 area 0

Network 1.0.0.0 255.255.255.0 area 1

Network 128.168.0.0 255.255.255.0 area 1

Router 1

Router ospf 1

Router – id 2.2.2.2

Network 10.0.0.0 255.255.255.0 area 0

Network 126.168.1.0 255.255.255.0 area 1

Network 128.0.0.0 255.255.255.0 area 0

Network 192.168.0.0 255.255.255.0 area 1

Router 2

Router ospf 1

Router – id 3.3.3.3

Network 128.0.0.0 255.255.255.0 area 0

Network 172.16.10.0 255.255.255.0 area 1

Network 192.168.1.0 255.255.255.0 area 1

For IP Route:

Router 0:

IP route 0.0.0.0 0.0.0.0 se0/0/0

Router 1:

IP route 0.0.0.0 0.0.0.0 se0/1/0

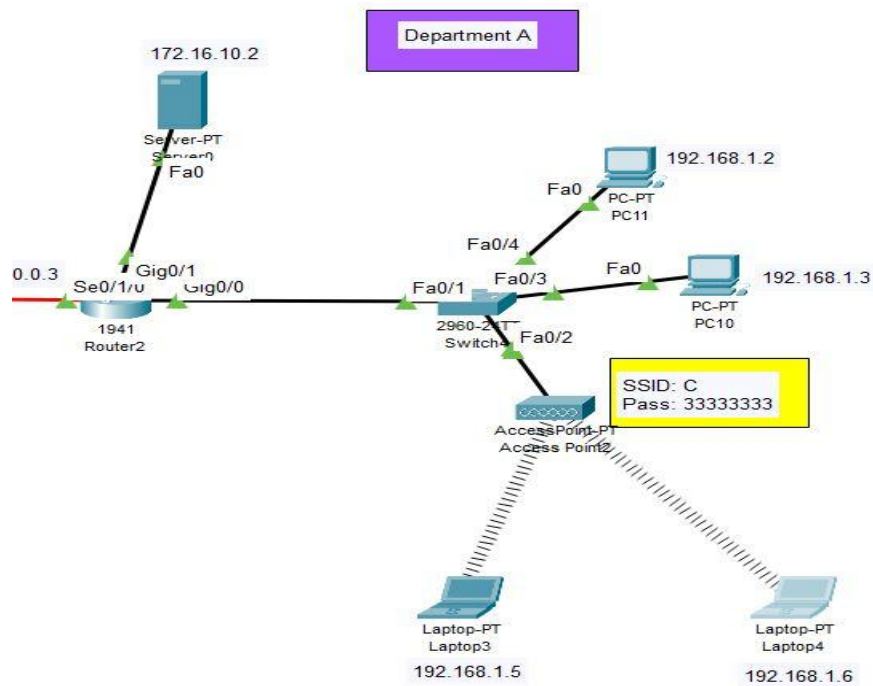
IP route 0.0.0.0 0.0.0.0 se0/1/1

Router 2

IP route 0.0.0.0 0.0.0.0 se0/1/0

Part 1 – Department A

I took screenshots part by part and started to explain. I will explain IP's and which ports connect each other.



As you can see the scheme in department A. We have one server, one router, switch, AP and 4 Pc.

1941 router connected Server PT Gig 0/1 to Fa0/0

IP address: 172.16.10.2

Subnet Mask: 255.255.255.0

Default Gateway: 172.16.10.0

2960 switch connected PC 11 Fa 0/4 to Fa 0/0

IP address 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.0

2960 switch connected PC 11 Fa 0/3 to Fa 0/0

IP address: 192.168.1.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.0

2960 switch connected AP Fa 0/2

AP connected two laptop3 to laptop4

Laptop3

IP address: 192.168.1.5

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.0

Laptop4

IP address: 192.168.1.6

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.0

Ping Tests:

Laptop4 to Server

```
C:\>ping 172.16.10.2

Pinging 172.16.10.2 with 32 bytes of data:

Reply from 172.16.10.2: bytes=32 time=72ms TTL=127
Reply from 172.16.10.2: bytes=32 time=53ms TTL=127
Reply from 172.16.10.2: bytes=32 time=40ms TTL=127
Reply from 172.16.10.2: bytes=32 time=19ms TTL=127

Ping statistics for 172.16.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 19ms, Maximum = 72ms, Average = 46ms
```

Laptop3 to PC11

Laptop3

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

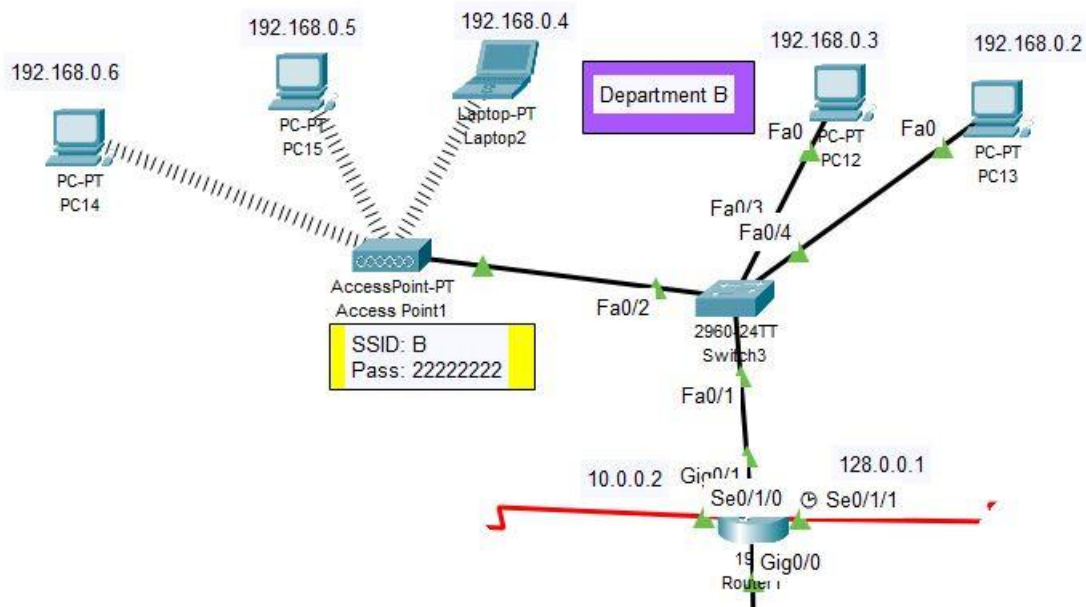
Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=94ms TTL=128
Reply from 192.168.1.2: bytes=32 time=52ms TTL=128
Reply from 192.168.1.2: bytes=32 time=51ms TTL=128
Reply from 192.168.1.2: bytes=32 time=41ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 41ms, Maximum = 94ms, Average = 59ms

C:\>|
```

Part 2 – Department B



Router Configuration:

Router 1

Router ospf 1

Router – id 2.2.2.2

Network 10.0.0.0 255.255.255.0 area 0

Network 126.168.1.0 255.255.255.0 area 1

Network 128.0.0.0 255.255.255.0 area 0

Network 192.168.0.0 255.255.255.0 area 1

IP Route:

Router 1:

IP route 0.0.0.0 0.0.0.0 se0/1/0

IP route 0.0.0.0 0.0.0.0 se0/1/1

1941 router connected 2960 switch Gig0/1 to Fa0/1

2960 switch connected PC13 Fa0/4 to Fa0/0

IP address: 192.168.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

2960 switch connected PC12 Fa0/3 to Fa0/0

IP address: 192.168.0.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

2960 switch connected AP Fa0/2

AP switch to Laptop2

IP address: 192.168.0.4

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

AP switch to PC15

IP address: 192.168.0.5

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

AP switch to PC14

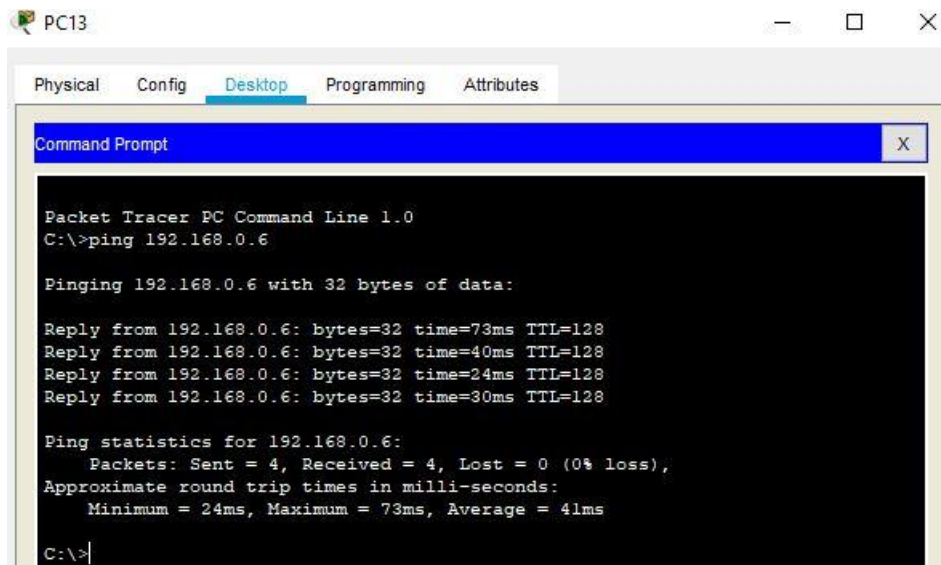
IP address: 192.168.0.6

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

Ping Test:

PC 13 to PC14



PC13

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.6

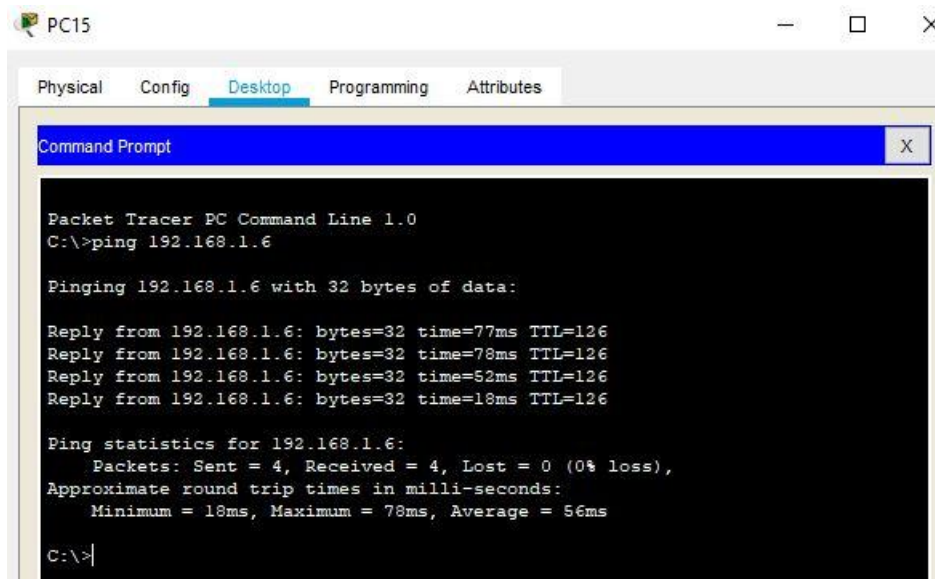
Pinging 192.168.0.6 with 32 bytes of data:

Reply from 192.168.0.6: bytes=32 time=73ms TTL=128
Reply from 192.168.0.6: bytes=32 time=40ms TTL=128
Reply from 192.168.0.6: bytes=32 time=24ms TTL=128
Reply from 192.168.0.6: bytes=32 time=30ms TTL=128

Ping statistics for 192.168.0.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 24ms, Maximum = 73ms, Average = 41ms

C:\>
```

Department A to Department B PC15 to Laptop 4



PC15

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.6

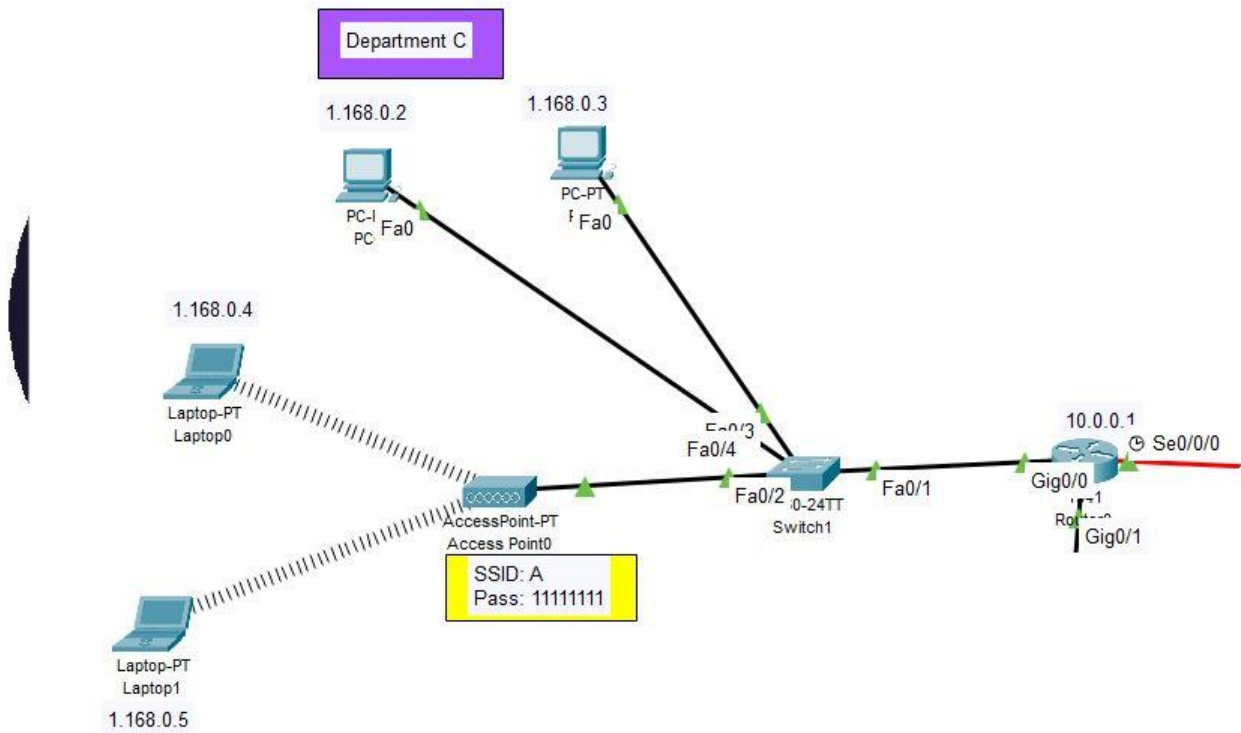
Pinging 192.168.1.6 with 32 bytes of data:

Reply from 192.168.1.6: bytes=32 time=77ms TTL=126
Reply from 192.168.1.6: bytes=32 time=78ms TTL=126
Reply from 192.168.1.6: bytes=32 time=52ms TTL=126
Reply from 192.168.1.6: bytes=32 time=18ms TTL=126

Ping statistics for 192.168.1.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 18ms, Maximum = 78ms, Average = 56ms

C:\>
```

Part 3 – Department C



Router Configuration:

Router 0

Router ospf 1

Router- id 1.1.1.1

Network 10.0.0.0 255.255.255.0 area 0

Network 1.0.0.0 255.255.255.0 area 1

Network 128.168.0.0 255.255.255.0 area 1

For IP Route:

Router 0:

IP route 0.0.0.0 0.0.0.0 se0/0/0

1941 router connected 2960 switch Gig0/0 to Fa0/1

2960 switch connected Pc0 Fa0/3 to Fa0/0

IP address: 1.168.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 1.168.0.1

2960 switch connected Pc0 Fa0/4 to Fa0/0

IP address: 1.168.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 1.168.0.1

2960 switch connected AP

AP connected Laptop0

IP address: 1.168.0.4

Subnet Mask: 255.255.255.0

Default Gateway: 1.168.0.1

AP connected Laptop1

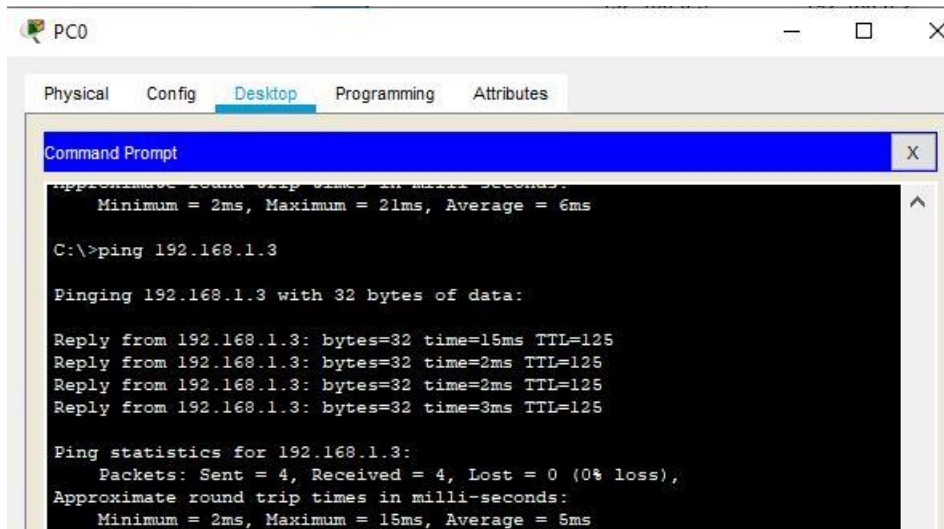
IP address: 1.168.0.5

Subnet Mask: 255.255.255.0

Default Gateway: 1.168.0.1

Ping Tests:

Department C to Department A Pc0 to Pc10



The screenshot shows a window titled "PC0" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Desktop" tab is active, displaying a Command Prompt window. The Command Prompt shows the execution of a ping command to 192.168.1.3. The output indicates that 4 packets were sent and received with 0% loss. The approximate round trip times in milliseconds are: Minimum = 2ms, Maximum = 21ms, Average = 6ms.

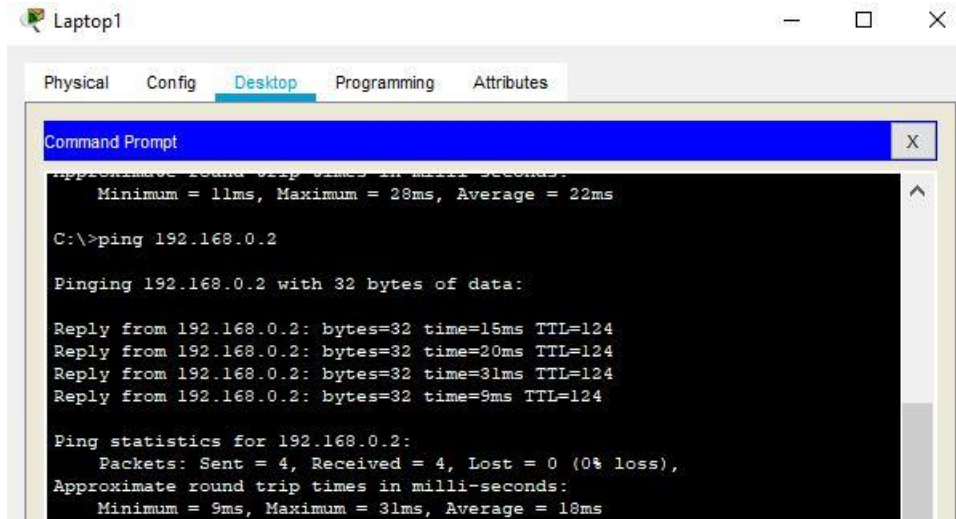
```
Command Prompt
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time=15ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 15ms, Average = 5ms
```

Department C to Department B Laptop1 to Pc13



The screenshot shows a window titled "Laptop1" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Desktop" tab is active, displaying a Command Prompt window. The Command Prompt shows the execution of a ping command to 192.168.0.2. The output indicates that 4 packets were sent and received with 0% loss. The approximate round trip times in milliseconds are: Minimum = 11ms, Maximum = 28ms, Average = 22ms.

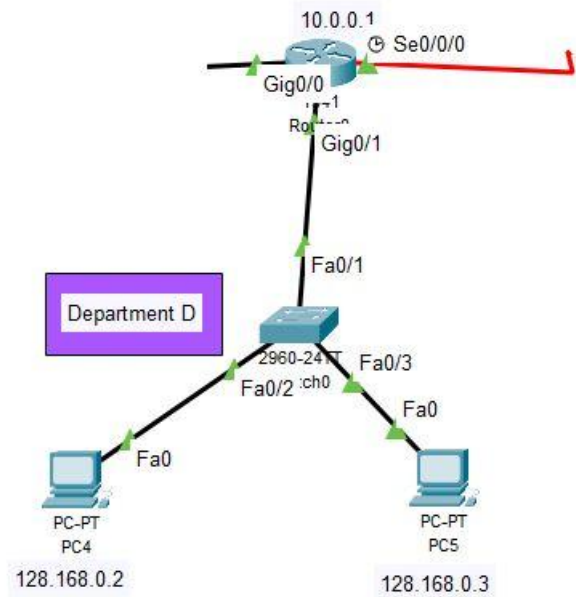
```
Command Prompt
C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=15ms TTL=124
Reply from 192.168.0.2: bytes=32 time=20ms TTL=124
Reply from 192.168.0.2: bytes=32 time=31ms TTL=124
Reply from 192.168.0.2: bytes=32 time=9ms TTL=124

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 9ms, Maximum = 31ms, Average = 18ms
```

Part 4 – Department D



Router configuration:

Router 0

Router ospf 1

Router- id 1.1.1.1

Network 10.0.0.0 255.255.255.0 area 0

Network 1.0.0.0 255.255.255.0 area 1

Network 128.168.0.0 255.255.255.0 area 1

For IP Route:

Router 0:

IP route 0.0.0.0 0.0.0.0 se0/0/0

1941 router connected 2960 switch Gig0/1 to Fa0/1

2960 switch connected PC4 Fa0/2 to Fa0/0

IP address: 128.168.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 128.168.0.0

2960 switch connected PC5 Fa0/3 to Fa0/0

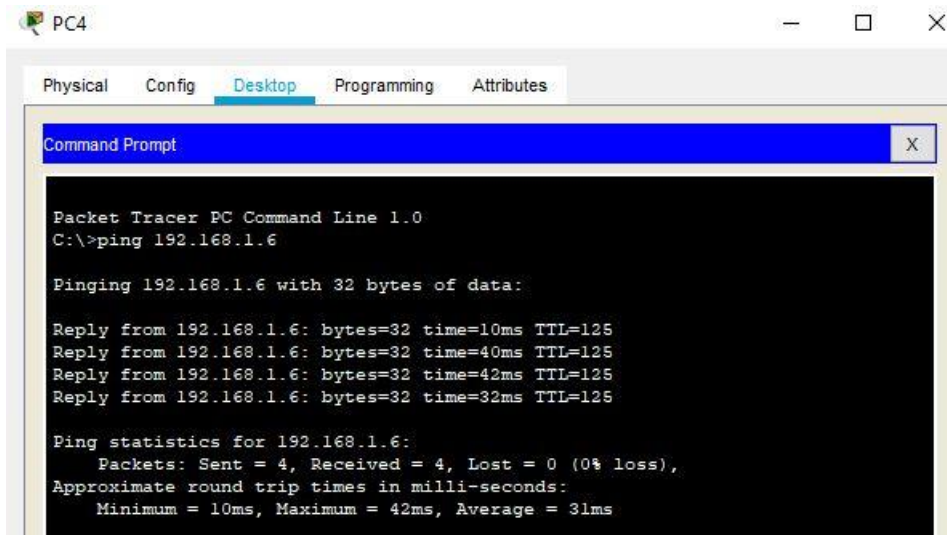
IP address: 128.168.0.3

Subnet Mask: 255.255.255.0

Default Gateway: 128.168.0.0

Ping Tests:

Department D to Department A Pc4 to Laptop 4



The screenshot shows a Packet Tracer PC Command Line window for PC4. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt. The Command Prompt shows the execution of the command 'ping 192.168.1.6'. The output indicates that the ping was successful, with 4 packets sent and received, 0% loss, and round trip times ranging from 10ms to 42ms.

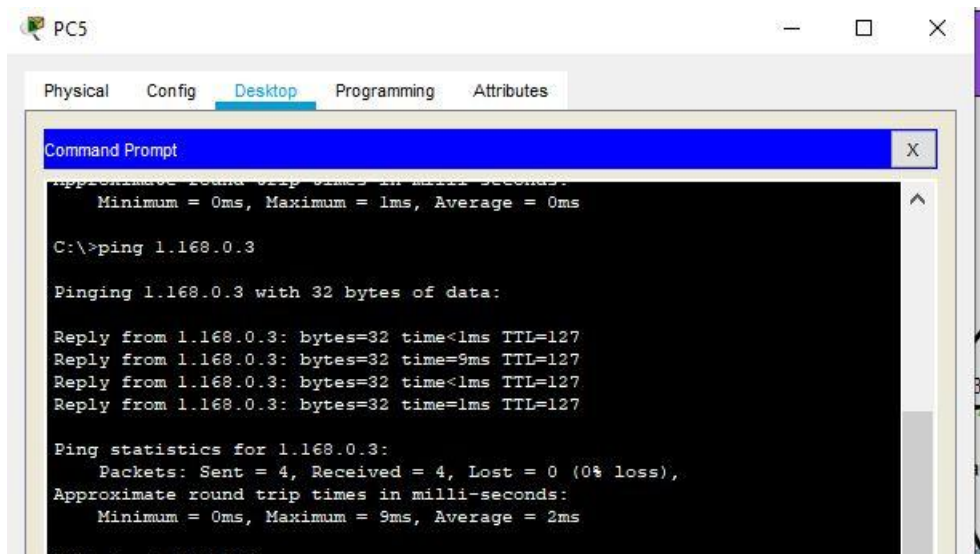
```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.6

Pinging 192.168.1.6 with 32 bytes of data:

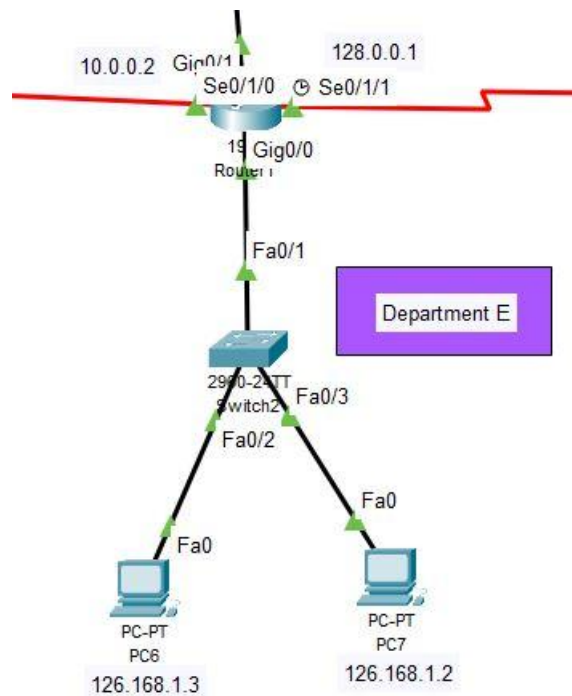
Reply from 192.168.1.6: bytes=32 time=10ms TTL=125
Reply from 192.168.1.6: bytes=32 time=40ms TTL=125
Reply from 192.168.1.6: bytes=32 time=42ms TTL=125
Reply from 192.168.1.6: bytes=32 time=32ms TTL=125

Ping statistics for 192.168.1.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 42ms, Average = 31ms
```

Department D to Department C Pc5 to Pc1



Part 5 – Department E



Router Configuration:

Router 1

Router ospf 1

Router – id 2.2.2.2

Network 10.0.0.0 255.255.255.0 area 0

Network 126.168.1.0 255.255.255.0 area 1

Network 128.0.0.0 255.255.255.0 area 0

Network 192.168.0.0 255.255.255.0 area 1

IP Route:

Router 1:

IP route 0.0.0.0 0.0.0.0 se0/1/0

IP route 0.0.0.0 0.0.0.0 se0/1/1

1941 router 2960 switch Gig0/0 to Fa0/1

2960 switch PC6 Fa0/2 to Fa0/0

IP address: 126.168.1.3

Subnet Mask: 255.255.255.0

Default Gateway: 126.168.1.1

2960 switch PC6 Fa0/3 to Fa0/0

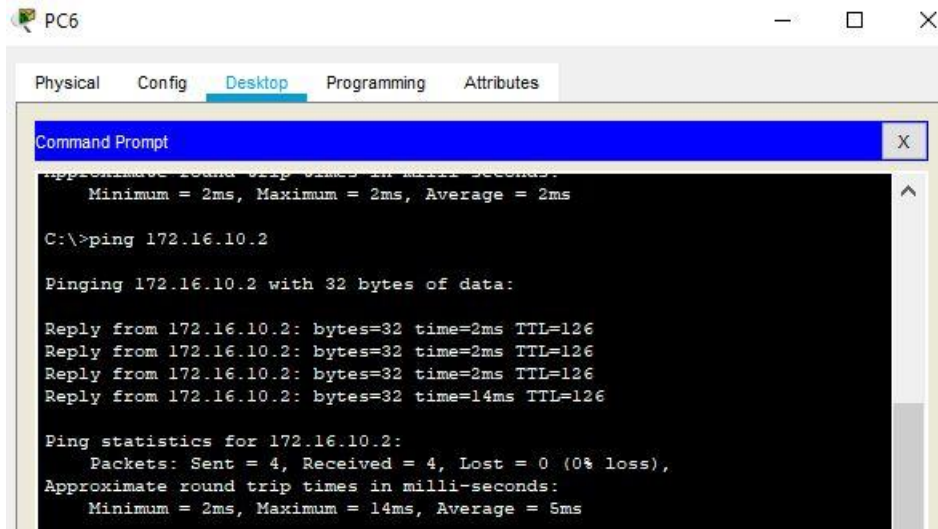
IP address: 126.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 126.168.1.1

Ping Tests:

Department E to Server Pc6 to Server



PC6

Physical Config Desktop Programming Attributes

Command Prompt

```
Approximate round trip times in milli-seconds:
  Minimum = 2ms, Maximum = 2ms, Average = 2ms

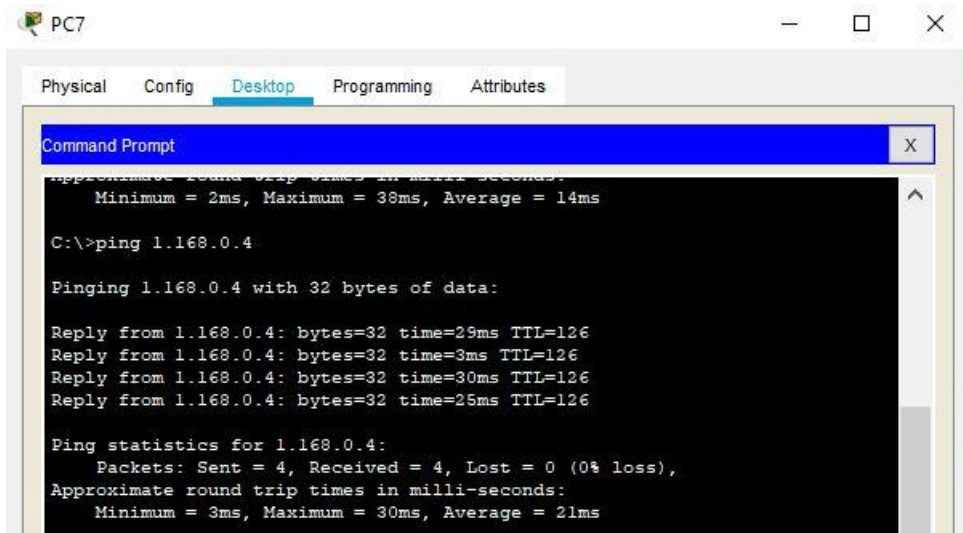
C:\>ping 172.16.10.2

Pinging 172.16.10.2 with 32 bytes of data:

Reply from 172.16.10.2: bytes=32 time=2ms TTL=126
Reply from 172.16.10.2: bytes=32 time=2ms TTL=126
Reply from 172.16.10.2: bytes=32 time=2ms TTL=126
Reply from 172.16.10.2: bytes=32 time=14ms TTL=126

Ping statistics for 172.16.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 14ms, Average = 5ms
```

Department E to Department C Pc7 to Laptop0



PC7

Physical Config Desktop Programming Attributes

Command Prompt

```
Approximate round trip times in milli-seconds:
  Minimum = 2ms, Maximum = 38ms, Average = 14ms

C:\>ping 1.168.0.4

Pinging 1.168.0.4 with 32 bytes of data:

Reply from 1.168.0.4: bytes=32 time=29ms TTL=126
Reply from 1.168.0.4: bytes=32 time=3ms TTL=126
Reply from 1.168.0.4: bytes=32 time=30ms TTL=126
Reply from 1.168.0.4: bytes=32 time=25ms TTL=126

Ping statistics for 1.168.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 30ms, Average = 21ms
```

