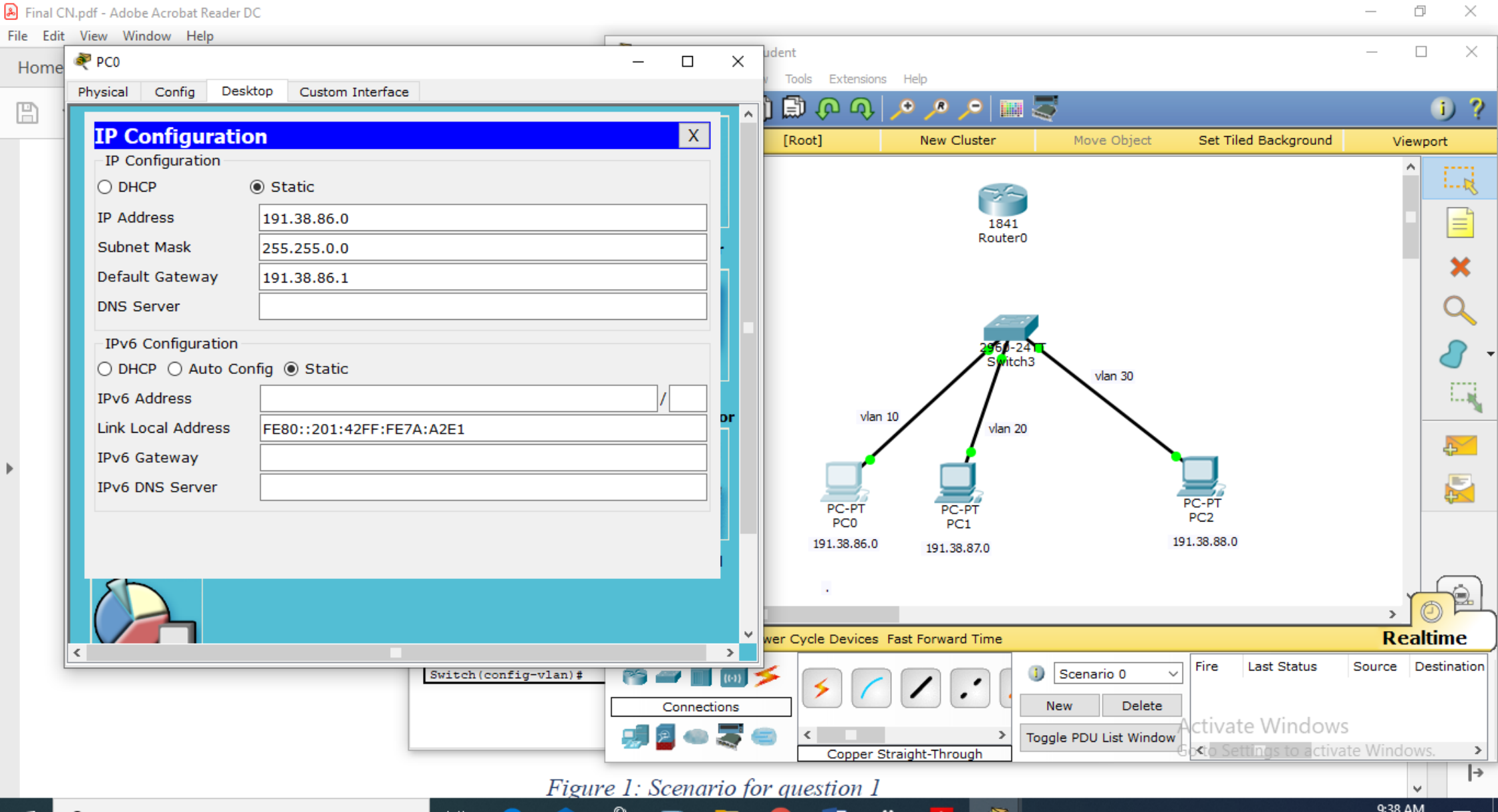


Figure 1: Scenario for question 1

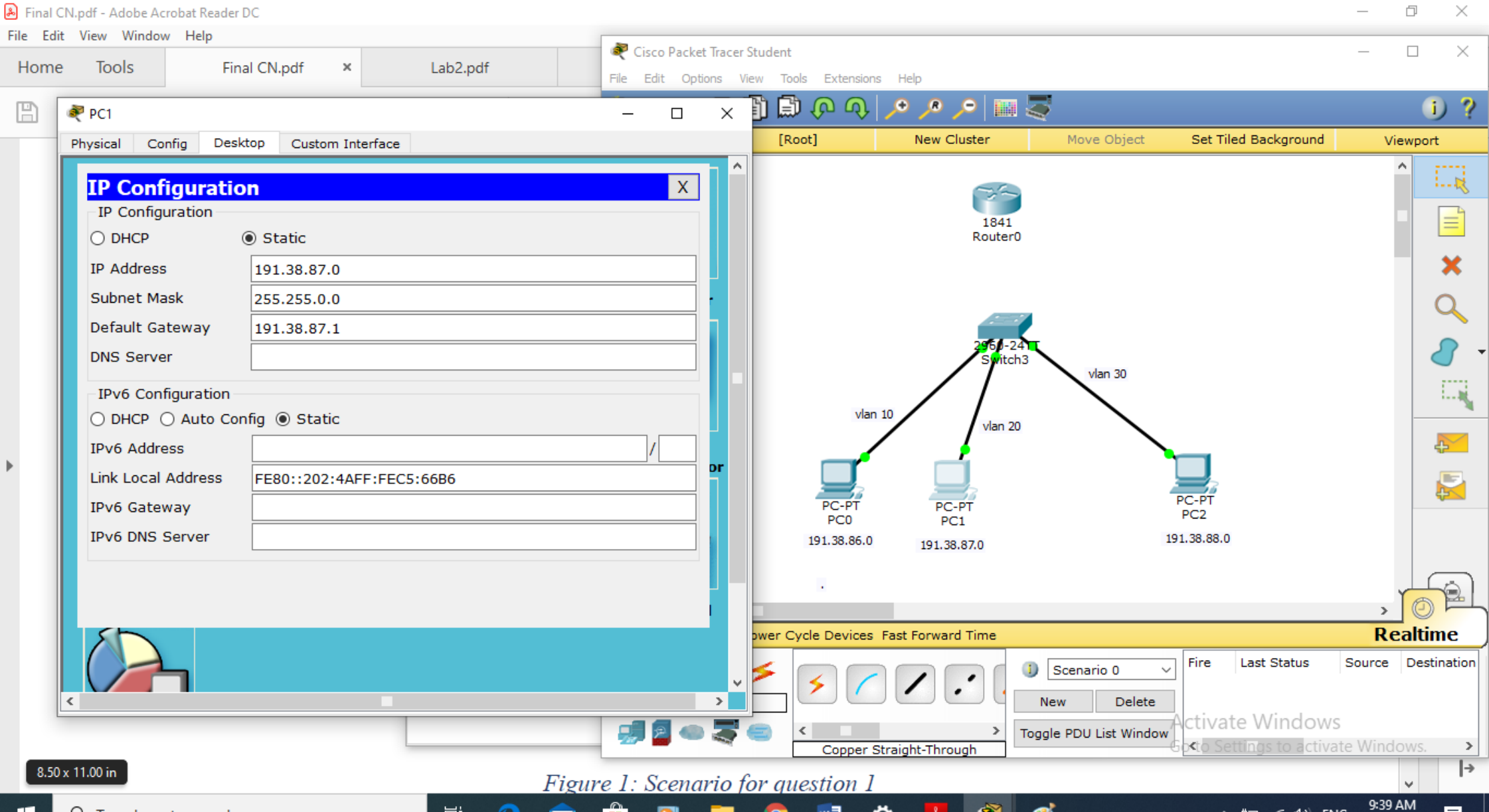


Figure 1: Scenario for question 1

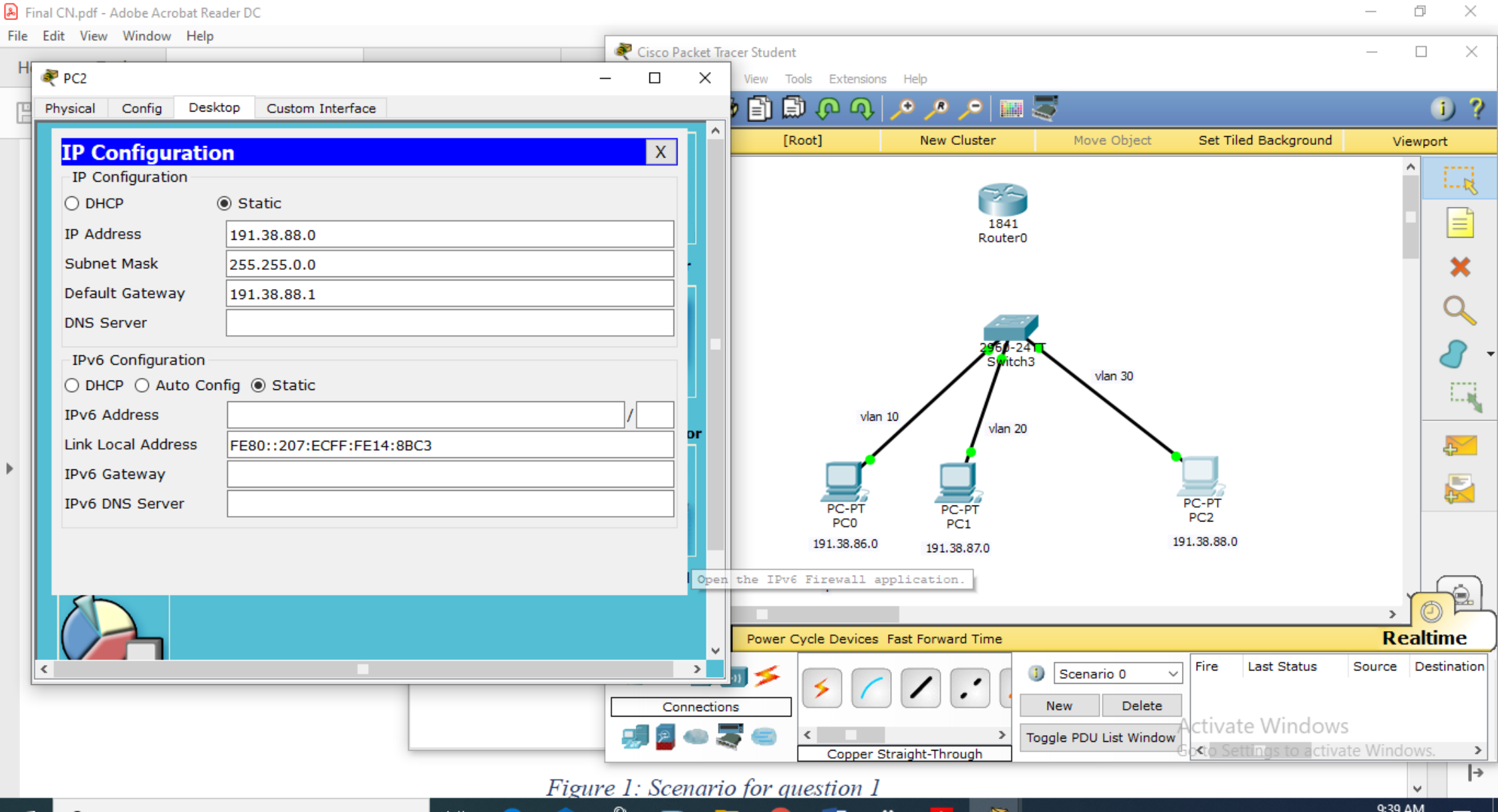


Figure 1: Scenario for question 1

Switch4

Physical | Config | CLI

IOS Command Line Interface

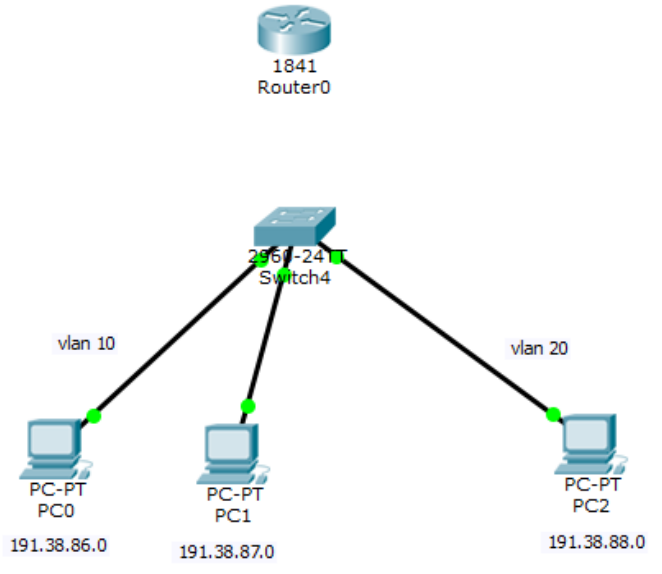
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to
up


Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name ee
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name cs
Switch(config-vlan)#exit
Switch(config)#show vlan
                 ^
% Invalid input detected at '^' marker.

Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
```

Copy | Paste

Cisco Packet Tracer Student

View Tools Extensions Help

[Root] | New Cluster | Move Object | Set Tiled Background | Viewport



Power Cycle Devices Fast Forward Time

Realtime

Connections

Copper Straight-Through

Scenario 0

New | Delete

Toggle PDU List Window

Fire | Last Status | Source | Destination

Activate Windows
Go to Settings to activate Windows.

µTorrent

1

Type here to search

ENG 10:07 AM 30/06/2020

Switch4

Physical | Config | CLI

IOS Command Line Interface

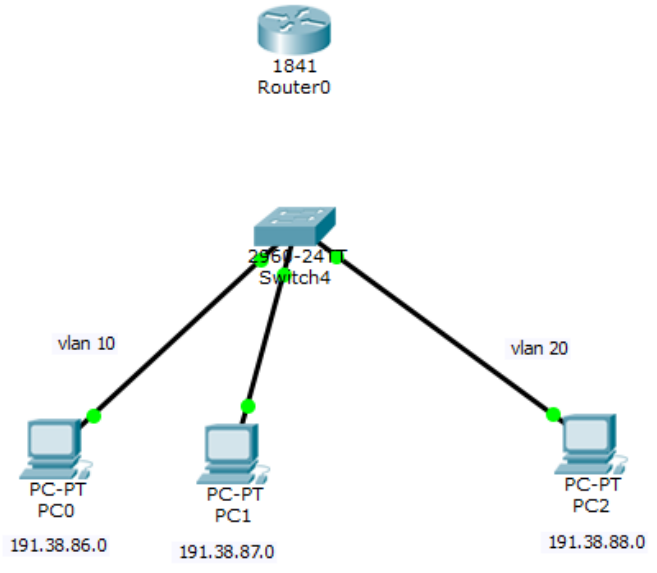
```
Switch#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
10   ee                                active
20   cs                                active
1002 fddi-default                      act/unsup
1003 token-ring-default                act/unsup
1004 fddinet-default                   act/unsup
1005 trnet-default                     act/unsup

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
1003 tr    101003     1500  -      -      -        -    -        0      0

Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
```

Copy | Paste

Cisco Packet Tracer Student

View Tools Extensions Help

[Root] | New Cluster | Move Object | Set Tiled Background | Viewport



Power Cycle Devices Fast Forward Time

Realtime

Connections

Copper Straight-Through

Scenario 0

New | Delete

Toggle PDU List Window

Fire	Last Status	Source	Destination

Activate Windows
Go to Settings to activate Windows.

µTorrent

1

Type here to search

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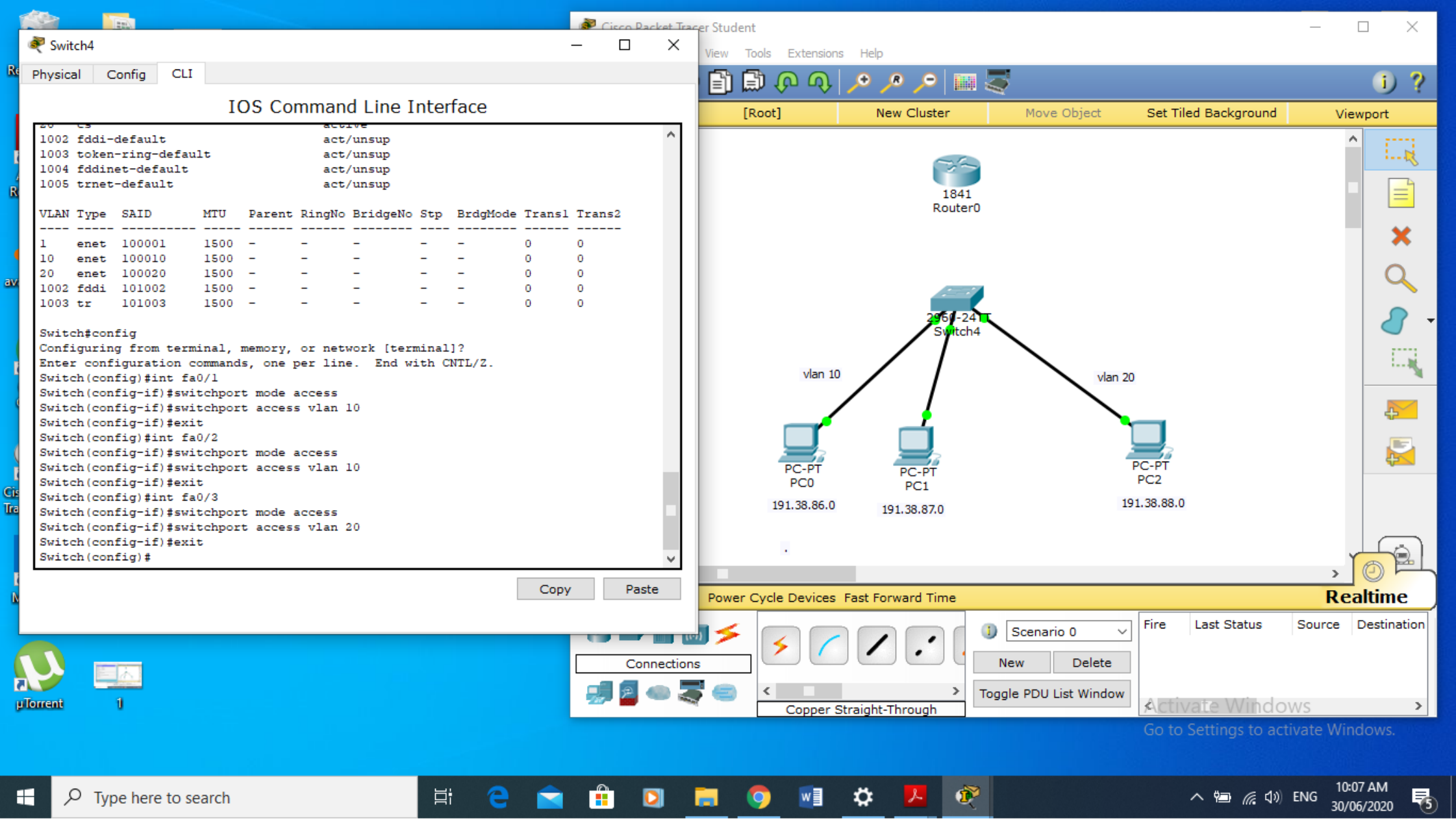
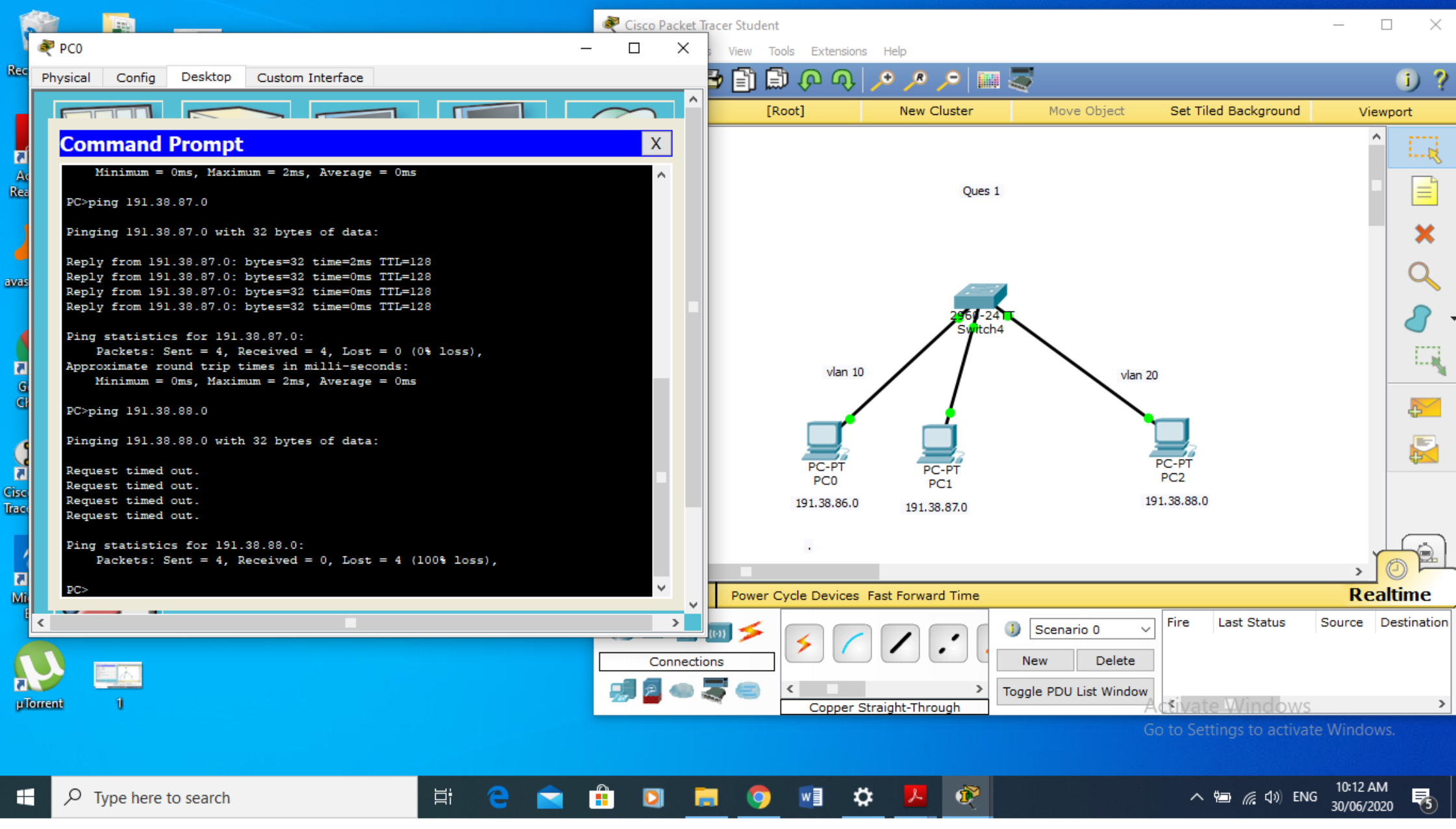

Switch4
Physical
Config
CLI
IOS Command Line Interface
1002 fddi-default act/unsup
1003 token-ring-default act/unsup
1004 fddinet-default act/unsup
1005 trnet-default act/unsup
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
1 enet 100001 1500 - - - - - 0 0
10 enet 100010 1500 - - - - - 0 0
20 enet 100020 1500 - - - - - 0 0
1002 fddi 101002 1500 - - - - - 0 0
1003 tr 101003 1500 - - - - - 0 0
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#
Copy
Paste
Cisco Packet Tracer Student
View Tools Extensions Help
[Root] New Cluster Move Object Set Tiled Background Viewport
1841
Router0
2960-24TT
Switch4
vlan 10
vlan 20
PC-PT
PC0
191.38.86.0
PC-PT
PC1
191.38.87.0
PC-PT
PC2
191.38.88.0
Power Cycle Devices Fast Forward Time
Realtime
Connections
Copper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Activate Windows
Go to Settings to activate Windows.
µTorrent
1
Type here to search
ENG
10:07 AM
30/06/2020


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Minimum = 0ms, Maximum = 2ms, Average = 0ms
PC>ping 191.38.87.0
Pinging 191.38.87.0 with 32 bytes of data:
Reply from 191.38.87.0: bytes=32 time=2ms TTL=128
Reply from 191.38.87.0: bytes=32 time=0ms TTL=128
Reply from 191.38.87.0: bytes=32 time=0ms TTL=128
Reply from 191.38.87.0: bytes=32 time=0ms TTL=128
Ping statistics for 191.38.87.0:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 2ms, Average = 0ms
PC>ping 191.38.88.0
Pinging 191.38.88.0 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 191.38.88.0:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>
Cisco Packet Tracer Student
File
Edit
View
Tools
Extensions
Help
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Ques 1
2960-24TT
Switch4
vlan 10
vlan 20
PC-PT
PC0
191.38.86.0
PC-PT
PC1
191.38.87.0
PC-PT
PC2
191.38.88.0
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Copper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
10:12 AM
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QUESTION 2

To ensure dynamic routing, I used rip & ospf. It also provided shortest network path which is extendable if dynamic.

QUESTION 3

To provide encryption, used ssh. It also ensured security by providing a login & password.

PC0

Physical | Config | Desktop | Custom Interfa

IP Configuration

IP Configuration

- DHCP
- Static

IP Address	
Subnet Mask	
Default Gateway	192.38.67.0
DNS Server	0.0.0.0

IPv6 Configuration

- DHCP
- Auto Config
- Static

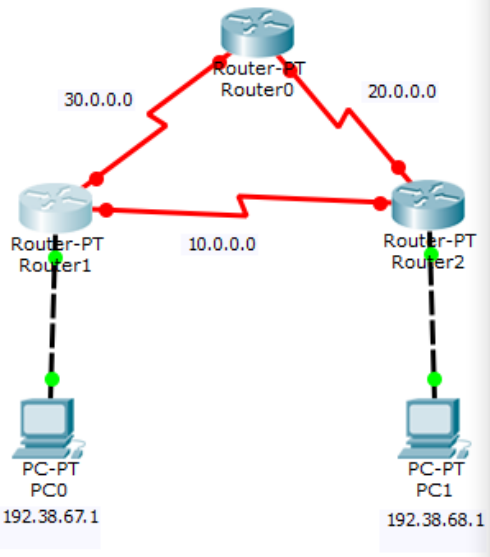
IPv6 Address	
Link Local Address	FE80::201:C7FF:F
IPv6 Gateway	
IPv6 DNS Server	

Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move

Ques 2



Time: 00:17:27 Power Cycle Devices Fast Forward Time

Router1

Physical | Config | CLI

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0

FastEthernet0/0

Port Status	On
Bandwidth	100 Mbps / 10 Mbps / Auto
Duplex	Half Duplex / Full Duplex / Auto
MAC Address	0090.2B0A.08C9

IP Configuration

IP Address	192.38.67.1
Subnet Mask	255.255.255.0
Tx Ring Limit	10

Equivalent IOS Commands

```
%IP-4-DUPADDR: Duplicate address 192.38.67.1 on FastEthernet0/0, sourced by
0001.C7C4.BC82

Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

Connections

tomatically Choose Connection Ty

Scenario 0 | New | Delete | Toggle PDU List Window

Fire	Last Status	Source	Destination

Edge

µTorrent 1 Ques 1

Activate Windows
Go to Settings to activate Windows.

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ENG 10:39 AM 30/06/2020

PC1

Physical | Config | Desktop | Custom Interfac

IP Configuration

IP Configuration

DHCP Static

IP Address

Subnet Mask

Default Gateway 192.38.68.0

DNS Server 0.0.0.0

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address

Link Local Address FE80::230:F2FF:FE

IPv6 Gateway

IPv6 DNS Server

Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Mov

Ques 2

Router-PT Router0

30.0.0.0

20.0.0.0

Router-PT Router1

10.0.0.0

Router-PT Router2

PC-PT PC0

192.38.67.1

PC-PT PC1

192.38.68.1

Time: 00:19:12 Power Cycle Devices Fast Forward Time

Connections

tomatically Choose Connection Ty

Scenario 0

New Delete

Toggle PDU List Window

Router2

Physical Config CLI

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet0/0

FastEthernet1/0

Serial2/0

Serial3/0

FastEthernet4/0

FastEthernet5/0

FastEthernet0/0

Port Status On

Bandwidth 100 Mbps 10 Mbps Auto

Duplex Half Duplex Full Duplex Auto

MAC Address 0000.0C58.0166

IP Configuration

IP Address 192.38.68.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

µTorrent 1 Ques 1

Activate Windows
Go to Settings to activate Windows.

Type here to search

ENG 10:41 AM 30/06/2020

Router1

Physical | Config | CLI

IOS Command Line Interface

```
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%IP-4-DUPADDR: Duplicate address 192.38.67.1 on FastEthernet0/0, sourced by 0001.C7C4.BC82

Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#exit
Router(config)#hostname R1-3867
R1-3867(config)#router rip
R1-3867(config-router)#network 10.0.0.0
R1-3867(config-router)#network 192.%IP-4-DUPADDR: Duplicate address 192.38.67.1 on FastEthernet0/0, sourced by 0001.C7C4.BC82

                                ^
% Invalid input detected at '^' marker.

R1-3867(config-router)#network 192.38.67.1
R1-3867(config-router)#network 30.0.0.0
R1-3867(config-router)#exit
R1-3867(config)#interface FastEthernet0/0
R1-3867(config-if)#no shutdown
R1-3867(config-if)#ip adddress 192.38.67.0 255.255.255.0
                            ^
% Invalid input detected at '^' marker.

R1-3867(config-if)#ip address 192.38.67.1 255.255.255.0
R1-3867(config-if)#exit
R1-3867(config)#interface FastEthernet1/0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial 2/0
R1-3867(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
R1-3867(config-if)#ip address 30.0.0.1 255.0.0.0
R1-3867(config-if)#clock rate 6400
Unknown clock rate
R1-3867(config-if)#clock rate 64000
R1-3867(config-if)#exit
```

Activate Windows
Go to Settings to activate Windows.

Copy | Paste

Type here to search

ENG 11:00 AM 30/06/2020

Router1

Physical | Config | CLI

IOS Command Line Interface

```
R1-3867(config-if)#ip address 192.38.67.1 255.255.255.0
R1-3867(config-if)#exit
R1-3867(config)#interface FastEthernet1/0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial 2/0
R1-3867(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
R1-3867(config-if)#ip address 30.0.0.1 255.0.0.0
R1-3867(config-if)#clock rate 6400
Unknown clock rate
R1-3867(config-if)#clock rate 64000
R1-3867(config-if)#exit
R1-3867(config)#interface FastEthernet 0/0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial3/0
R1-3867(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
R1-3867(config-if)#clock rate 4800
R1-3867(config-if)#ip address 10.0.0.1 255.0.0.0
R1-3867(config-if)#ip address 20.0.0.2 255.0.0.0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial2/0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial 3/0
R1-3867(config-if)#exit
R1-3867(config)#router rip
R1-3867(config-router)#network 30.0.0.0
R1-3867(config-router)#network 20.0.0.0
R1-3867(config-router)#exit
R1-3867(config)#interface Serial2/0
R1-3867(config-if)#exit
R1-3867(config)#interface Serial3/0
R1-3867(config-if)#exit
R1-3867(config)#router ospf
% Incomplete command.
R1-3867(config)#router ospf 1
R1-3867(config-router)#network 30.0.0.0 0.255.255.255 area 0
R1-3867(config-router)#network 20.0.0.0 0.255.255.255 area 0
R1-3867(config-router)#
```

Activate Windows
Go to Settings to activate Windows.

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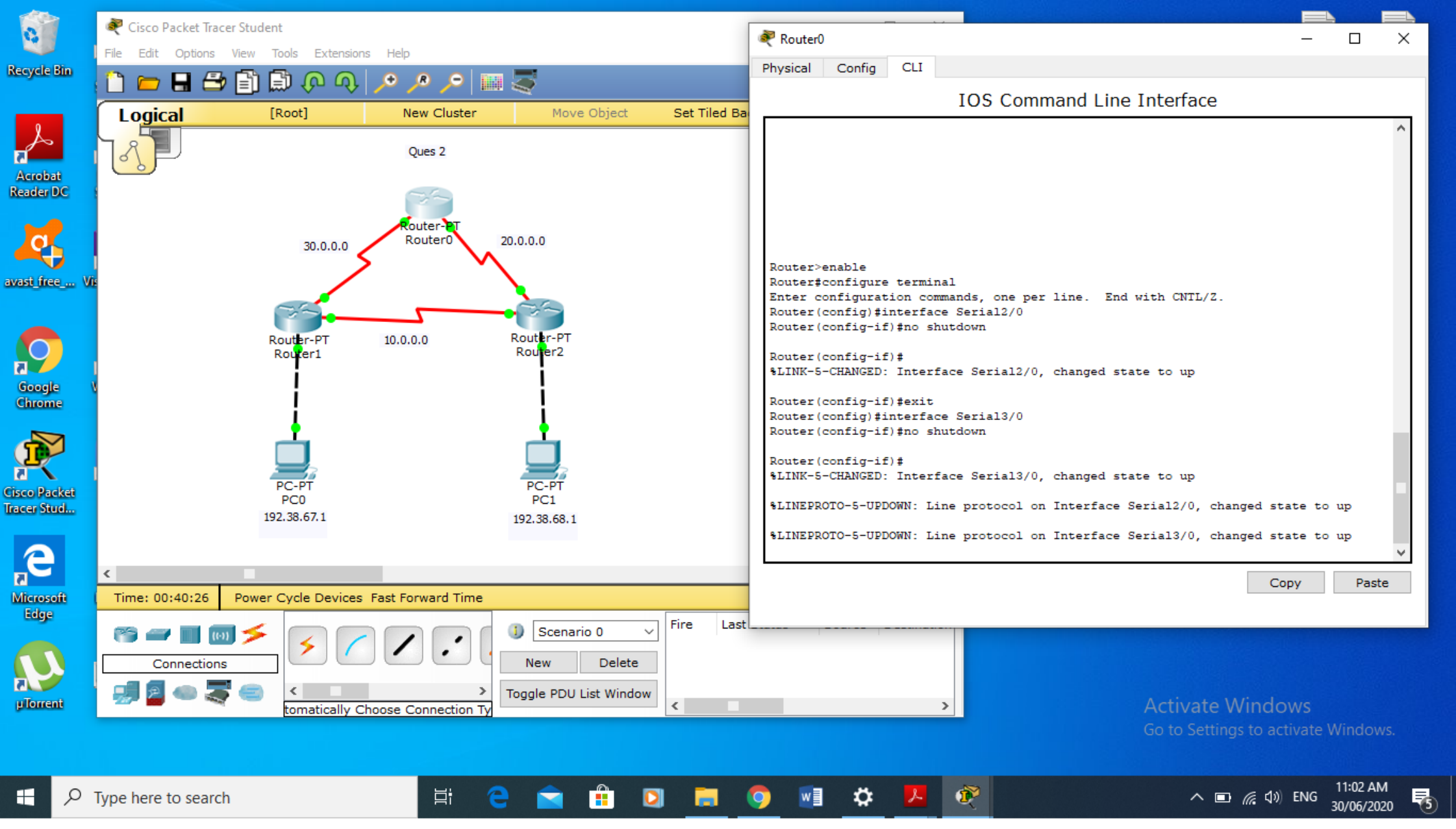
Type here to search

ENG 11:00 AM 30/06/2020


Recycle Bin
Acrobat Reader DC
avast_free_...
Google Chrome
Cisco Packet Tracer Stud...
Microsoft Edge
µTorrent
Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Ba
Ques 2
Router-PT
Router0
30.0.0.0
20.0.0.0
Router-PT
Router1
10.0.0.0
Router-PT
Router2
PC-PT
PC0
192.38.67.1
PC-PT
PC1
192.38.68.1
Time: 00:40:26
Power Cycle Devices Fast Forward Time
Connections
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last
Router0
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
Copy
Paste
Activate Windows
Go to Settings to activate Windows.
Type here to search
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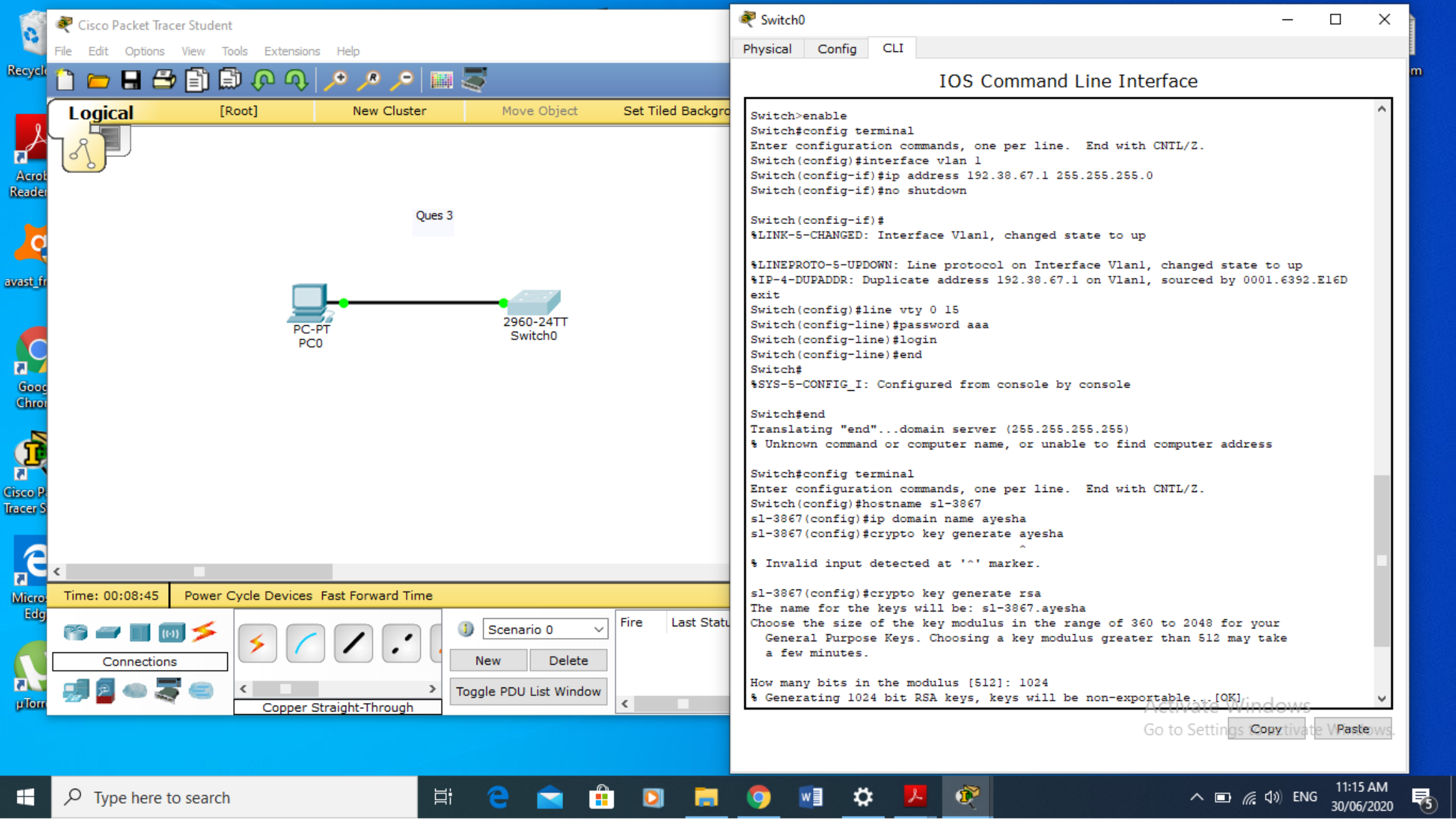
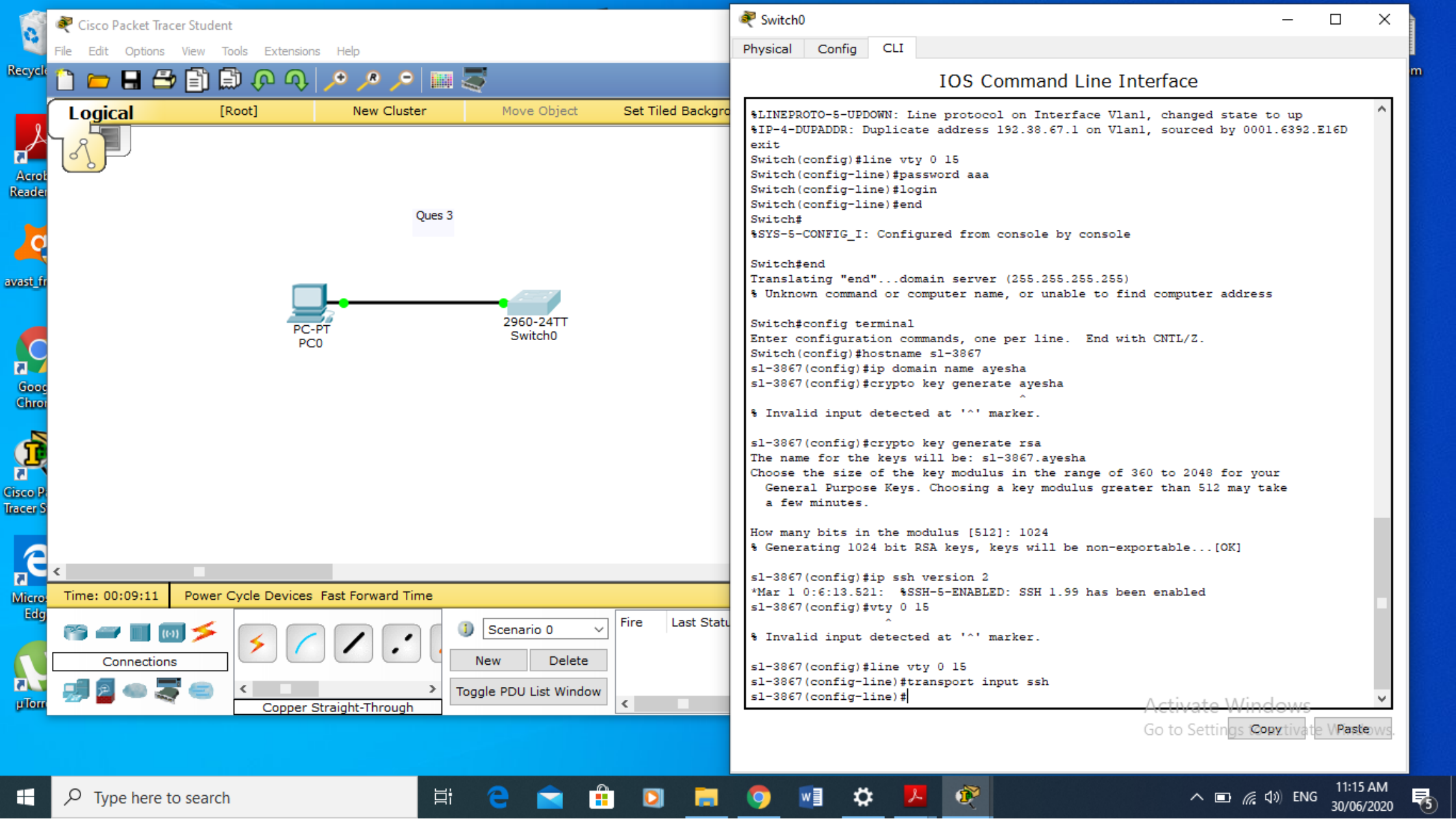
30/06/2020


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Backgro
Ques 3
PC-PT
PC0
2960-24TT
Switch0
Time: 00:08:45
Power Cycle Devices Fast Forward Time
Connections
Copper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Statu
Switch0
Physical
Config
CLI
IOS Command Line Interface
Switch>enable
Switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.38.67.1 255.255.255.0
Switch(config-if)#no shutdown
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
%IP-4-DUPADDR: Duplicate address 192.38.67.1 on Vlan1, sourced by 0001.6392.E16D
exit
Switch(config)#line vty 0 15
Switch(config-line)#password aaa
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#end
Translating "end"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address
Switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname sl-3867
sl-3867(config)#ip domain name ayesha
sl-3867(config)#crypto key generate ayesha
% Invalid input detected at '^' marker.
sl-3867(config)#crypto key generate rsa
The name for the keys will be: sl-3867.ayesha
Choose the size of the key modulus in the range of 360 to 2048 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.
How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]
Copy
Paste
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
11:15 AM
30/06/2020


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical [Root] New Cluster Move Object Set Tiled Backgro
Ques 3
PC-PT
PC0
2960-24TT
Switch0
Time: 00:09:11 Power Cycle Devices Fast Forward Time
Connections
Copper Straight-Through
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Statu
Switch0
Physical Config CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
%IP-4-DUPADDR: Duplicate address 192.38.67.1 on Vlan1, sourced by 0001.6392.E16D
exit
Switch(config)#line vty 0 15
Switch(config-line)#password aaa
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#end
Translating "end"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address
Switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname sl-3867
sl-3867(config)#ip domain name ayesha
sl-3867(config)#crypto key generate ayesha
% Invalid input detected at '^' marker.
sl-3867(config)#crypto key generate rsa
The name for the keys will be: sl-3867.ayesha
Choose the size of the key modulus in the range of 360 to 2048 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.
How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]
sl-3867(config)#ip ssh version 2
*Mar 1 0:6:13.521: %SSH-5-ENABLED: SSH 1.99 has been enabled
sl-3867(config)#vty 0 15
% Invalid input detected at '^' marker.
sl-3867(config)#line vty 0 15
sl-3867(config-line)#transport input ssh
sl-3867(config-line)#
Copy
Paste
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
11:15 AM
30/06/2020

QUESTION 7

(a) 175.38.67.0/16 has 65534 hosts.
And subnet needs 0 host.

(b) 199.38.67.0/24 has ~~24~~ 254 host.
The subnet needs 67 hosts.

QUESTION 8

Acl stands for Access control list. It is used to permit or deny access of a host from sending to another host. It is used to block or filter incoming or outgoing traffic.

Few of the rules are:

→ Should have a permit statement in our access list.

→ For PC 4, we should restrict connection.

QUESTION 9

① for 30 subnets ⟶ $2^5 = 32$

adding 8 in last octet, 30 subnets are achieved

203.10.93.1 — 203.10.93.254

∴ 203.10.93.30 is a valid ip as host.

② A simple static router can be used. It provides simplicity & ensures proper working. ~~alone~~ Routing protocols are needed to send packets quickly to their destination without any loss by shortest path & also ensures that next hop is correct.

③ Rip with ospf is best technique as it's dynamic. It can easily be expanded as networks grow. It is better than default & static routing. It uses the concept of dijsktra's algo & considers bandwidth while routing.

④ check if router & switch are turned on. If necessary, so reset. Ensure that correct interface is connected with correct configurations.

⑤ Subnet = 25

Broadcast Id — 172.16.10.12/25

Network address — 172.16.10.0/25

valid host range — 172.16.10.1 — 172.16.127.126.

(6) It occurs in the ~~network~~ network layer.

(7) Application layer is highest OSI layer because ftp is implemented on it.

(8) The most suitable protocol is BGP (border gateway protocol) as it makes communication independent b/w networks & provides shortest routes.

(10) The route is configured incorrectly.