

Institut Universitaire des Sciences (IUS)
FACULTÉ DES SCIENCES ET DES TECHNOLOGIES (FST)

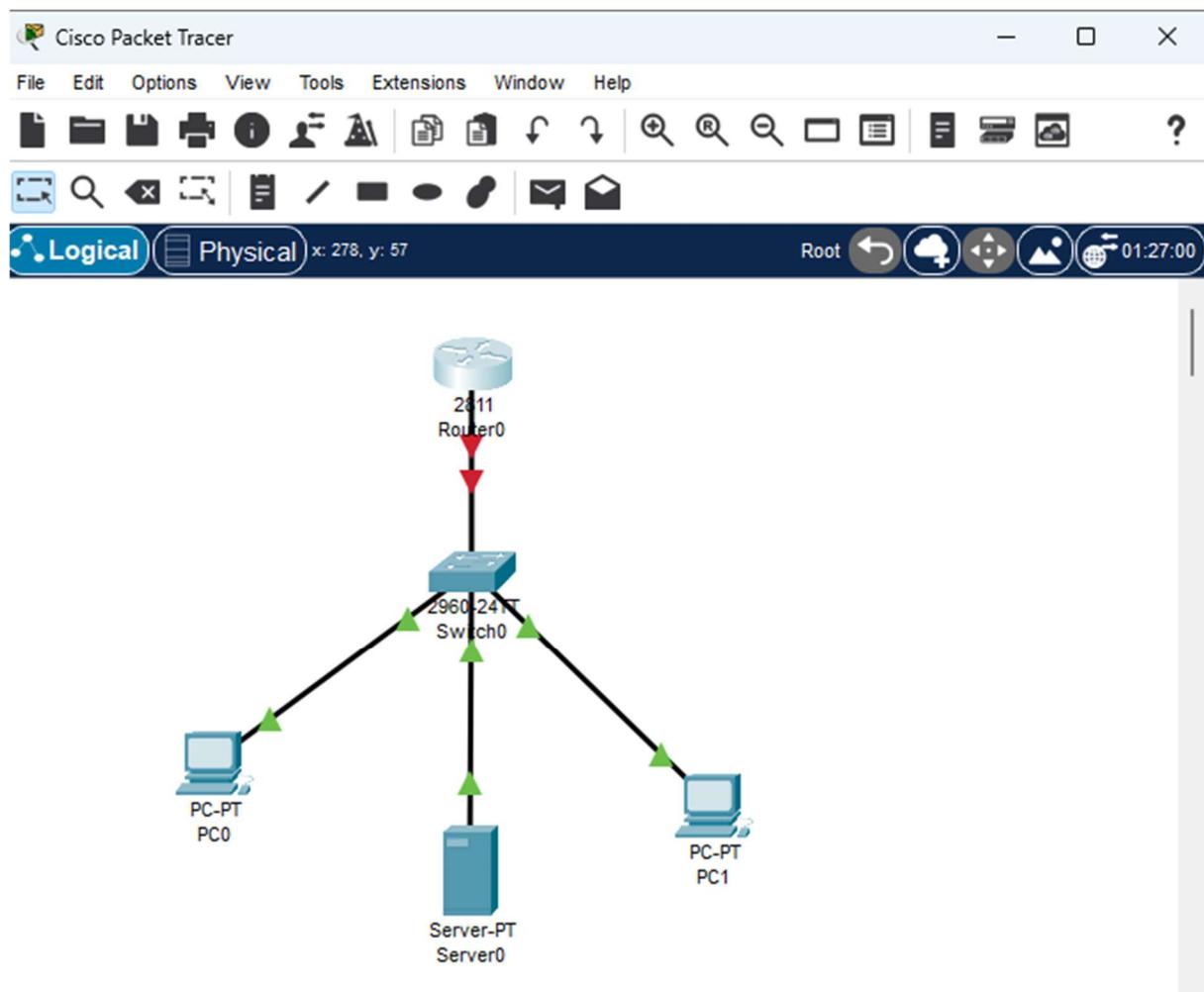
RAPPORT
SUR LE LAB 8

Cours : Réseaux 1

Étudiant : Wendy Colas
Niveau : L3

2025

1. Configuration d'un pare-feu et d'un VPN site-a-site



 Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

```
If you require further assistance please contact us by sending email to
export@cisco.com.

cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID JAD05190MTZ (4292891495)
2 FastEthernet interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface FastEthernet0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown

R1(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
exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
```

Top

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S1
S1(config)#interface vlan 1
S1(config-if)#ip address 192.168.1.2 255.255.255.0
S1(config-if)#no shutdown

S1(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

S1(config-if)#exit
S1(config)#ip default-gateway 192.168.1.1
S1(config)#switchport mode access
^
% Invalid input detected at '^' marker.

S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console

S1#switchport mode access
^
% Invalid input detected at '^' marker.

S1#switchport voice access vlan 1
^
% Invalid input detected at '^' marker.

S1#
```

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PC0

Physical Config Desktop **Programming** Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP Static

IPv4 Address: 192.168.1.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address: /

Link Local Address: FE80::2D0:58FF:FE3E:5DA6

Default Gateway:

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

Top

PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP Static

IPv4 Address: 192.168.1.4

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address: /

Link Local Address: FE80::206:2AFF:FE83:4576

Default Gateway:

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

Top

Server0

Physical Config Services Desktop Programming Attributes

IP Configuration

IP Configuration

DHCP Static

IPv4 Address: 192.168.1.10
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.1.1
DNS Server: 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address: /
Link Local Address: FE80::20D:BDFF:FE36:7724
Default Gateway:
DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:
Password:

Top

PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
Cisco Packet Tracer PC Command Line 1.0
C:>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time=1ms TTL=128
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:>
```

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Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

Press RETURN to get started.

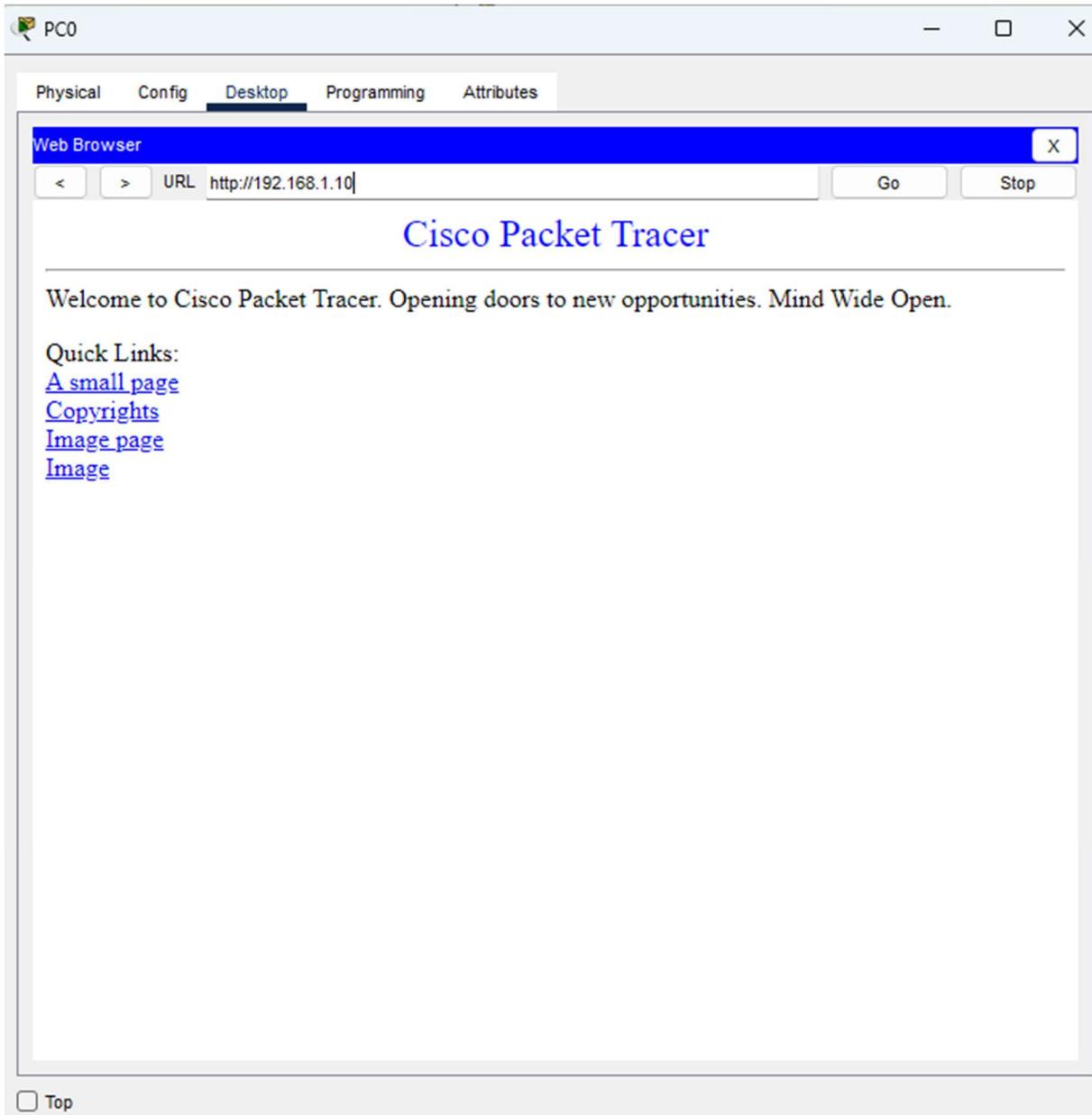
```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#switchport mode access
^
% Invalid input detected at '^' marker.

R1(config)#switchport voice vlan 1
^
% Invalid input detected at '^' marker.

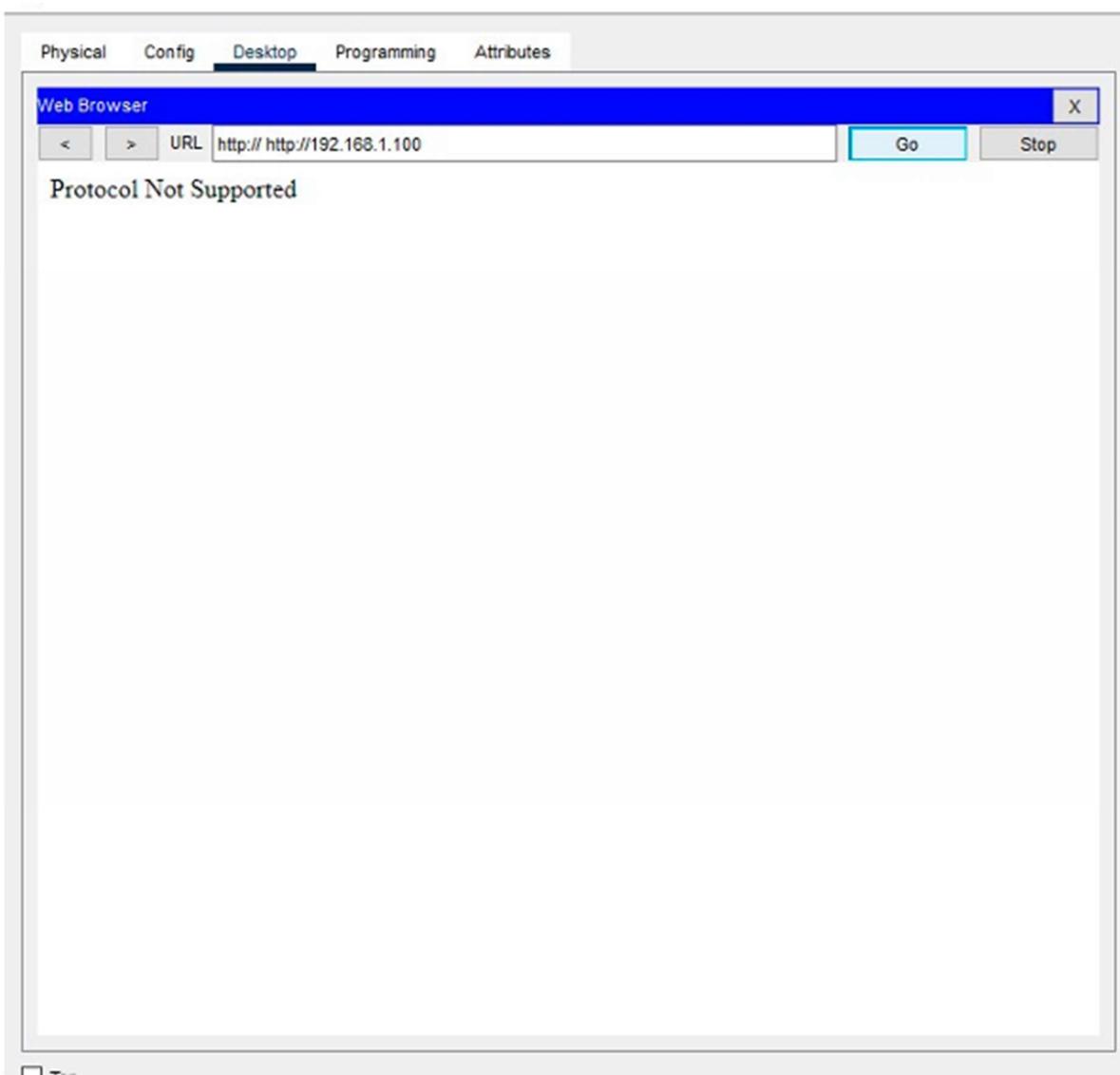
R1(config)#interface vlan 1
R1(config-if)#switchport mode access
^
% Invalid input detected at '^' marker.

R1(config-if)#exit
R1(config)#access-list 100 deny tcp host 192.168.1.3 host 192.168.1.10 eq 80
R1(config)#access-list 100 permit ip any any
R1(config)#interface fastEthernet0/0
R1(config-if)#ip access-group 100 in
R1(config-if)#

```



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Router0

Physical Config **CLI** Attributes

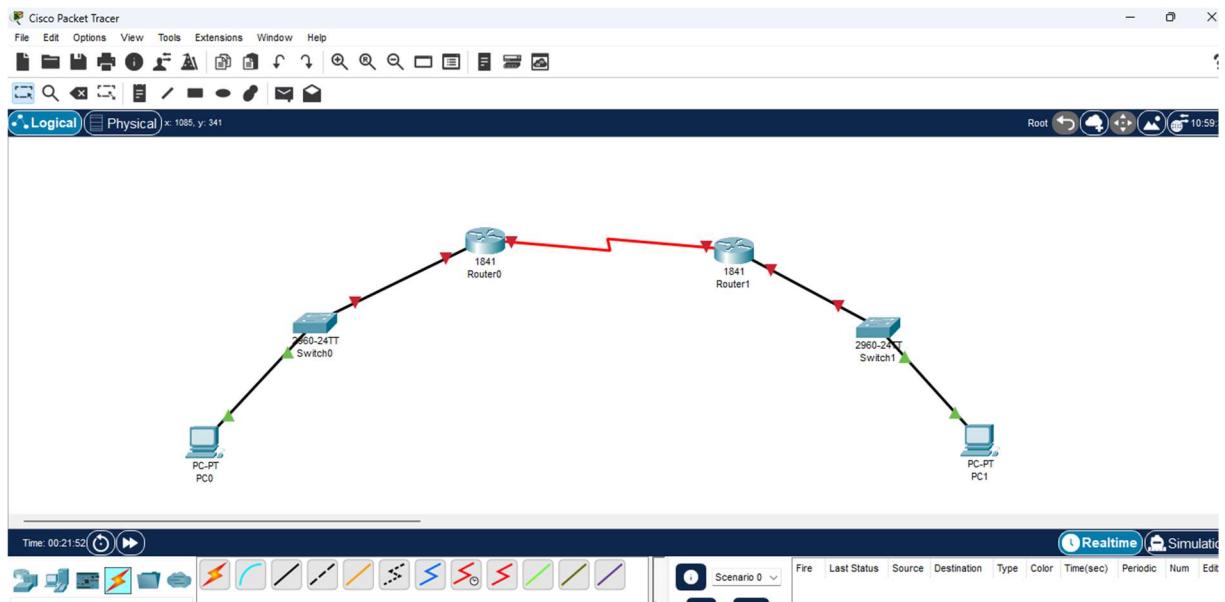
IOS Command Line Interface

```
R1 con0 is now available

Press RETURN to get started.

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#access-list 100 deny tcp any any eq 443
R1(config)#access-list 100 deny icmp any any
R1(config)#interface FastEthernet0/0
R1(config-if)#ip access-group 100 in
R1(config-if)#exit
R1(config)#
```

Top



Router0

Physical Config CLI Attributes

IOS Command Line Interface

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface FastEthernet0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown

R1(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
exit
R1(config)#interface serial0/0/0
R1(config-if)#ip address 10.1.1.1 255.255.255.252
R1(config-if)#clock rate 64000
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#exit
R1(config)#interface FastEthernet0/1
R1(config-if)#ip address 192.168.3.1 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

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Router1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Would you like to enter the initial configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#interface FastEthernet0/0
R2(config-if)#ip address 192.168.2.1 255.255.255.0
R2(config-if)#no shutdown

R2(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
exit
R2(config)#interface serial0/0/0
R2(config-if)#ip address 10.1.1.2 255.255.255.252
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
exit
R2(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
interface FastEthernet0/1
R2(config-if)#ip address 192.168.4.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
exit
R2(config)#

```

Top

Switch0

Physical Config **CLI** Attributes

IOS Command Line Interface

```
* 1 26 WS-C2960-24TT-L 15.0(2)SE4 C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE
SOFTWARE (fcl)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface FastEthernet0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
Switch(config-if)#no shutdown
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#no shutdown
Switch(config-if)#exit
Switch(config)#
```

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PC0

Physical Config Desktop Programming Attributes

IP Configuration

X

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	FE80::230:A3FF:FE04:BA86
Link Local Address	FE80::230:A3FF:FE04:BA86
Default Gateway	
DNS Server	
802.1X	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

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Switch1

Physical Config CLI Attributes

IOS Command Line Interface

```
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE
SOFTWARE (fcl)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S2
S2(config)#interface FastEthernet0/1
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 20
% Access VLAN does not exist. Creating vlan 20
S2(config-if)#no shutdown
S2(config-if)#exit
S2(config)#interface FastEthernet0/2
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 20
S2(config-if)#no shutdown
S2(config-if)#exit
S2(config)#[
```

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PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP Static

IPv4 Address: 192.168.2.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address: /

Link Local Address: FE80::2D0:FFFF:FEAD:8E49

Default Gateway:

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

This screenshot shows a software interface for managing network configurations. The main window title is 'PC1'. Below it are tabs: Physical, Config, Desktop (which is selected), Programming, and Attributes. A secondary tab bar within the main window includes IP Configuration, Desktop, and X. The IP Configuration section is active, showing settings for the 'FastEthernet0' interface. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 Address is set to 192.168.2.2, Subnet Mask to 255.255.255.0, Default Gateway to 192.168.2.1, and DNS Server to 0.0.0.0. The IPv6 Configuration section shows the 'Static' radio button selected, with the IPv6 Address field containing a placeholder '/'. The Link Local Address is listed as FE80::2D0:FFFF:FEAD:8E49. The 802.1X section contains a checkbox for 'Use 802.1X Security' which is unchecked, and dropdown menus for Authentication (set to MD5) and fields for Username and Password.

Physical Config CLI Attributes

IOS Command Line Interface

```
*LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R1>access-list 100 permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
      ^
      * Invalid input detected at '^' marker.

R1>en
R1#access-list 100 permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
      ^
      * Invalid input detected at '^' marker.

R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#access-list permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
      ^
      * Invalid input detected at '^' marker.

R1(config)#access-list 100 permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
R1(config)#crypto isakmp policy 10
R1(config-isakmp)#encr aes
R1(config-isakmp)#hash sha
R1(config-isakmp)#group 2
R1(config-isakmp)#lifetime 86400
R1(config-isakmp)#exit
R1(config)#crypto isakmp key wendy address 10.1.1.2
R1(config)#crypto ipsec transform-set MYSET esp-aes esp-sha-hmac
R1(config)#exit
R1#
*SYS-5-CONFIG_I: Configured from console by console
R1#
```

 Top

Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#access-list permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
^
* Invalid input detected at '^' marker.

R1(config)#access-list 100 permit ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
R1(config)#crypto isakmp policy 10
R1(config-isakmp)#encr aes
R1(config-isakmp)#hash sha
R1(config-isakmp)#group 2
R1(config-isakmp)#lifetime 86400
R1(config-isakmp)#exit
R1(config)#crypto isakmp key wendy address 10.1.1.2
R1(config)#crypto ipsec transform-set MYSET esp-aes esp-sha-hmac
R1(config)#exit
R1#
*SYS-5-CONFIG_I: Configured from console by console

R1#crypto map MYMAP 10 ipsec-isakmp
^
* Invalid input detected at '^' marker.

R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#crypto map MYMAP 10 ipsec-isakmp
* NOTE: This new crypto map will remain disabled until a peer
      and a valid access list have been configured.
R1(config-crypto-map)#set peer 10.1.1.2
R1(config-crypto-map)#set transform-set MYSET
R1(config-crypto-map)#match address 100
R1(config-crypto-map)#exit
R1(config)#interface serial0/0/0
R1(config-if)#crypto map MYMAP
*Jan  3 07:16:26.785: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is ON
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#

```

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Router1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#access-list 100 permit ip 192.168.4.0 0.0.0.255 192.168.3.0 0.0.0.255
R2(config)#crypto isakmp policy 10
R2(config-isakmp)#encr aes
R2(config-isakmp)#hash sha
R2(config-isakmp)#authentication pre-share
R2(config-isakmp)#group 2
R2(config-isakmp)#lifetime 86400
R2(config-isakmp)#exit
R2(config)#crypto isakmp key wendy address 10.1.1.1
R2(config)#crypto ipsec transform-set MYSET esp-aes esp-sha-hmac
R2(config)#crypto map MYMAP 10 ipsec-isakmp
% NOTE: This new crypto map will remain disabled until a peer
       and a valid access list have been configured.
R2(config-crypto-map)#set peer 10.1.1.1
R2(config-crypto-map)#set transform-set MYSET
R2(config-crypto-map)#match address 100
R2(config-crypto-map)#exit
R2(config)#interface serial0/0/0
R2(config-if)#crypto map MYMAP
*Jan 3 07:16:26.785: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is ON
R2(config-if)#exit
R2(config)#

```

Top

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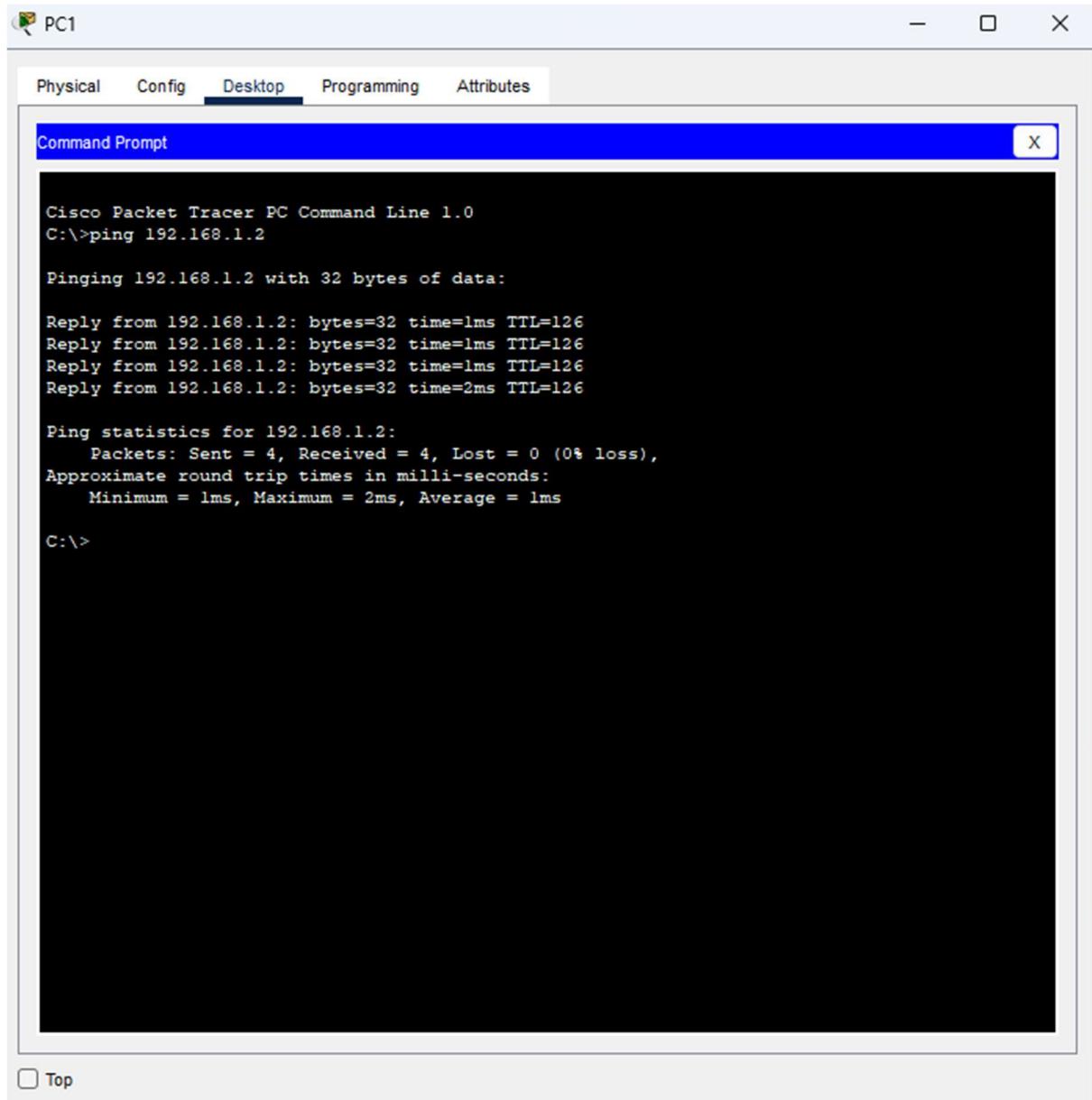
PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
Pinging 192.168.2.2 with 32 bytes of data:  
  
Reply from 192.168.1.1: Destination host unreachable.  
Reply from 192.168.1.1: Destination host unreachable.  
Request timed out.  
Reply from 192.168.1.1: Destination host unreachable.  
  
Ping statistics for 192.168.2.2:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
  
C:\>ping 192.168.1.1  
  
Pinging 192.168.1.1 with 32 bytes of data:  
  
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time=1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time=1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255  
  
Ping statistics for 192.168.1.1:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
C:\>ping 192.168.2.2  
  
Pinging 192.168.2.2 with 32 bytes of data:  
  
Request timed out.  
Reply from 192.168.2.2: bytes=32 time=1ms TTL=126  
Reply from 192.168.2.2: bytes=32 time=2ms TTL=126  
Reply from 192.168.2.2: bytes=32 time=14ms TTL=126  
  
Ping statistics for 192.168.2.2:  
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 1ms, Maximum = 14ms, Average = 5ms  
  
C:\>
```

Top



The screenshot shows a window titled "PC1" with a tab bar at the top. The "Desktop" tab is selected. Below it is a "Command Prompt" window with the following text:

```
Cisco 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=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>
```

Conclusion

Dans ce travail, j'ai d'abord configuré un pare-feu en utilisant les théories du cours. Puis, j'ai configuré un tunnel IPSEC entre deux sites distincts. J'ai pu établir une communication sécurisée entre les routeurs, switches et PC.