

# Project 3

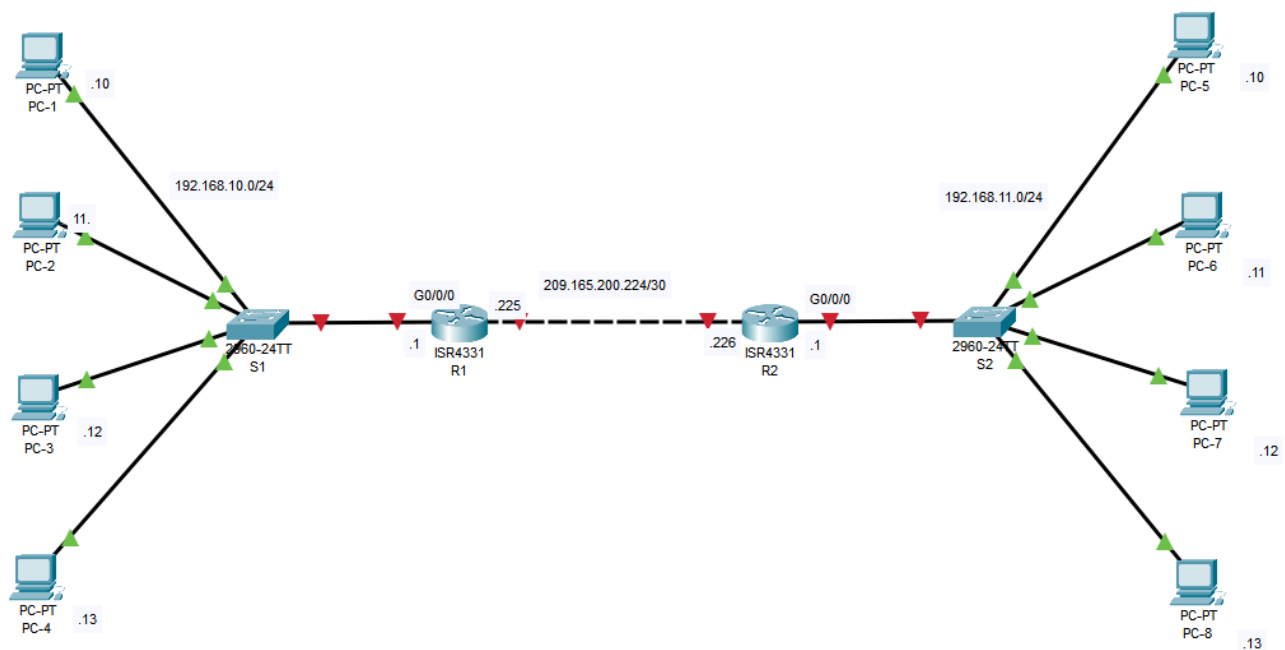
## Static routing of two networks

### Project description:

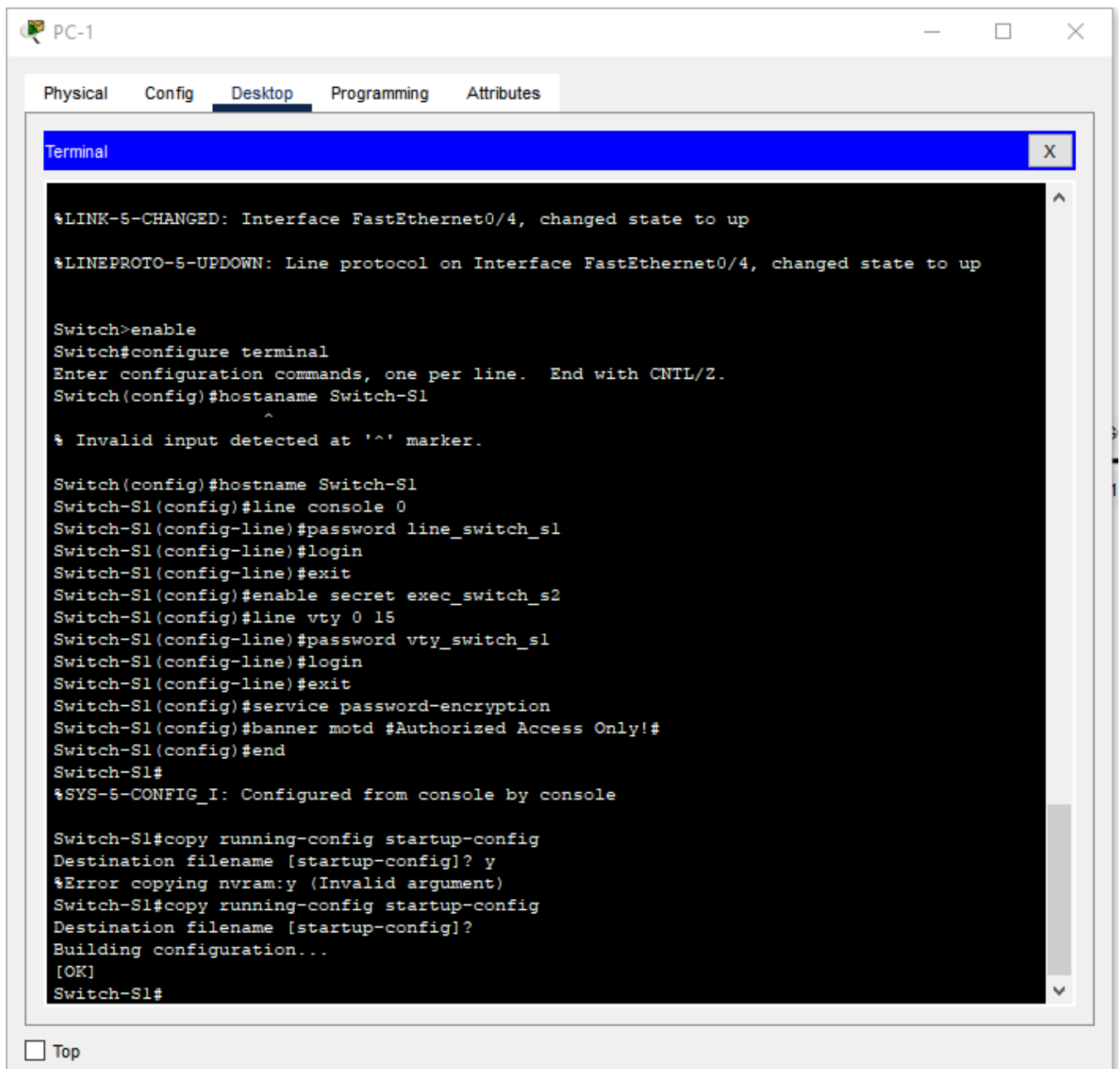
Create 2 local networks (LAN) and perform basic configuration of switch, basic configuration of router. Configure static routing.

### Steps:

- Create a topology of two local networks:



- Assign addresses to PC hosts. Configure the basic configuration of the switches:
  1. Assign a device name.
  2. Secure user EXEC mode access.
  3. Secure privileged EXEC mode access.
  4. Secure VTY access.
  5. Encrypt all plaintext passwords.
  6. Display a login banner.
  7. Save Configurations



The screenshot shows a terminal window titled "PC-1" with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a terminal window with the following text:

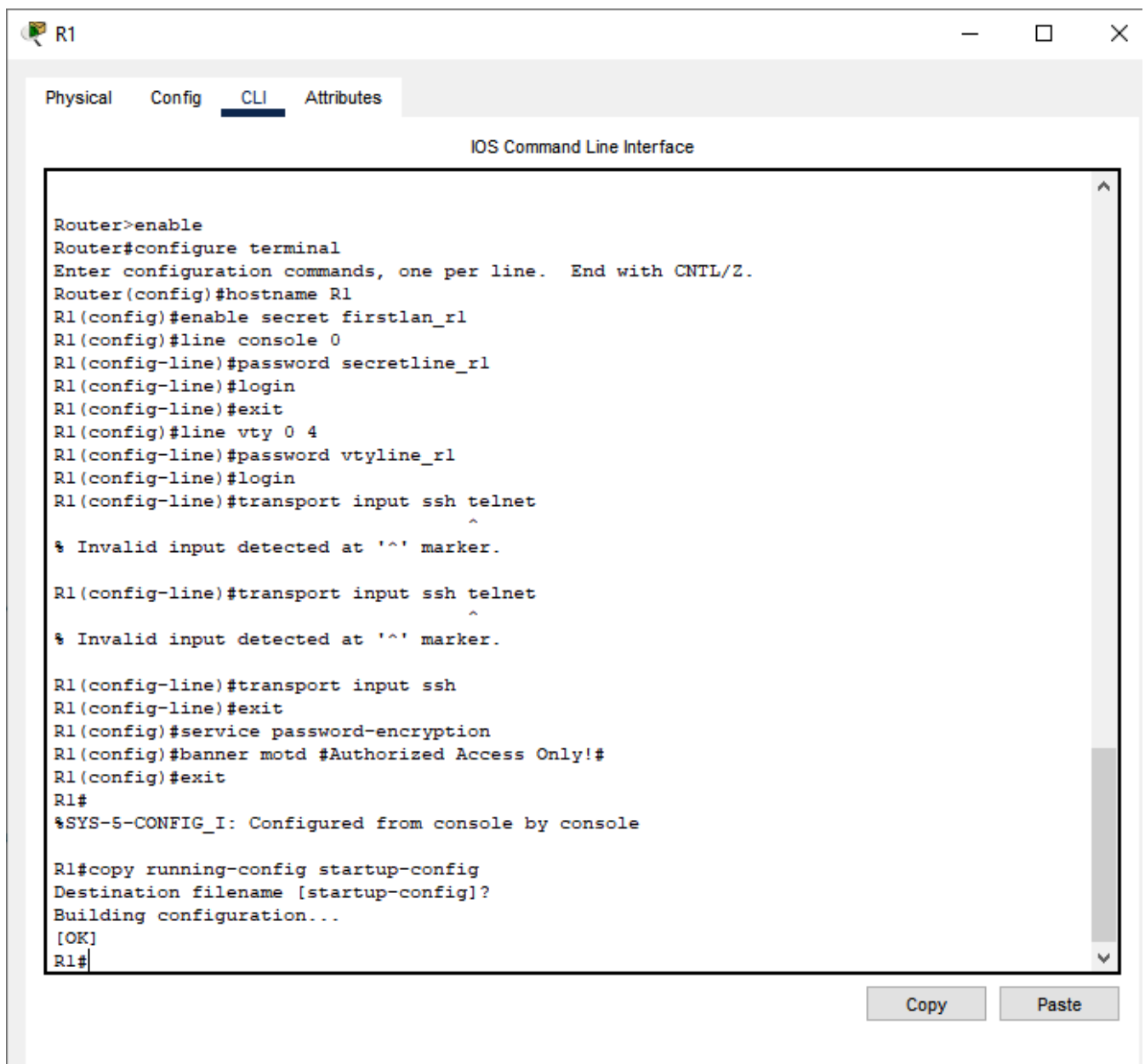
```
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname Switch-S1
Switch-S1(config)#line console 0
Switch-S1(config-line)#password line_switch_s1
Switch-S1(config-line)#login
Switch-S1(config-line)#exit
Switch-S1(config)#enable secret exec_switch_s2
Switch-S1(config)#line vty 0 15
Switch-S1(config-line)#password vty_switch_s1
Switch-S1(config-line)#login
Switch-S1(config-line)#exit
Switch-S1(config)#service password-encryption
Switch-S1(config)#banner motd #Authorized Access Only!#
Switch-S1(config)#end
Switch-S1#
%SYS-5-CONFIG_I: Configured from console by console

Switch-S1#copy running-config startup-config
Destination filename [startup-config]? y
%Error copying nvram:y (Invalid argument)
Switch-S1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch-S1#
```

At the bottom left of the window, there is a checkbox labeled "Top".

- Configure the basic configuration of routers:
  1. Configure the device name.
  2. Secure the privileged EXEC mode.
  3. Secure and enable remote SSH and Telnet access.
  4. Secure all plaintext passwords.
  5. Provide legal notification.



```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#enable secret firstlan_r1
R1(config)#line console 0
R1(config-line)#password secretline_r1
R1(config-line)#login
R1(config-line)#exit
R1(config)#line vty 0 4
R1(config-line)#password vtyline_r1
R1(config-line)#login
R1(config-line)#transport input ssh telnet
^
% Invalid input detected at '^' marker.

R1(config-line)#transport input ssh telnet
^
% Invalid input detected at '^' marker.

R1(config-line)#transport input ssh
R1(config-line)#exit
R1(config)#service password-encryption
R1(config)#banner motd #Authorized Access Only!#
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

Copy Paste

- Configuring the incoming interface of the routers (in the LAN network) and the outgoing interfaces (communication line between routers). Check the configuration of interfaces:

R1

— □

Physical
Config
**CLI**
Attributes

IOS Command Line Interface

Authorized Access Only!  
User Access Verification  
Password:  
R1>enable  
Password:  
R1#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
R1(config)#interface gigabitEthernet 0/0/0  
R1(config-if)#ip address 192.168.10.1 255.255.255.0  
R1(config-if)#ipv6 address 2001:db8:acad:10::1/64  
R1(config-if)#no shutdown  
R1(config-if)#exit  
R1(config)#  
R1(config)#interface gigabitEthernet 0/0/1  
R1(config-if)#description Link to R2  
R1(config-if)#ip address 209.165.200.225 255.255.255.252  
R1(config-if)#ipv6 address 2001:db8:feed:224::1/64  
R1(config-if)#no shutdown  
R1(config-if)#  
%LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to up

R1#show ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0/0	192.168.10.1	YES	manual	up	up
GigabitEthernet0/0/1	209.165.200.225	YES	manual	up	down
GigabitEthernet0/0/2	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

R1#e

Physical Config CLI Attributes

## IOS Command Line Interface

User Access Verification

Password:

R2&gt;enable

Password:

R2#configure terminal

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

R2(config)#interface gigabitEthernet 0/0/0

R2(config-if)#ip address 192.168.11.1 255.255.255.0

R2(config-if)#ipv6 address 2001:6d8:acad:11::1/64

R2(config-if)#no shutdown

R2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

R2(config-if)#exit

R2(config)#interface gigabitEthernet 0/0/1

R2(config-if)#description Link to R1

R2(config-if)#ip address 209.165.200.226 255.255.255.252

R2(config-if)#no shutdown

R2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1, changed state to up

R2(config-if)#exit

R2(config)#exit

R2#

%SYS-5-CONFIG\_I: Configured from console by console

R2#copy running-config startup-config

Destination filename [startup-config]?

Building configuration...

[OK]

R2#

Copy

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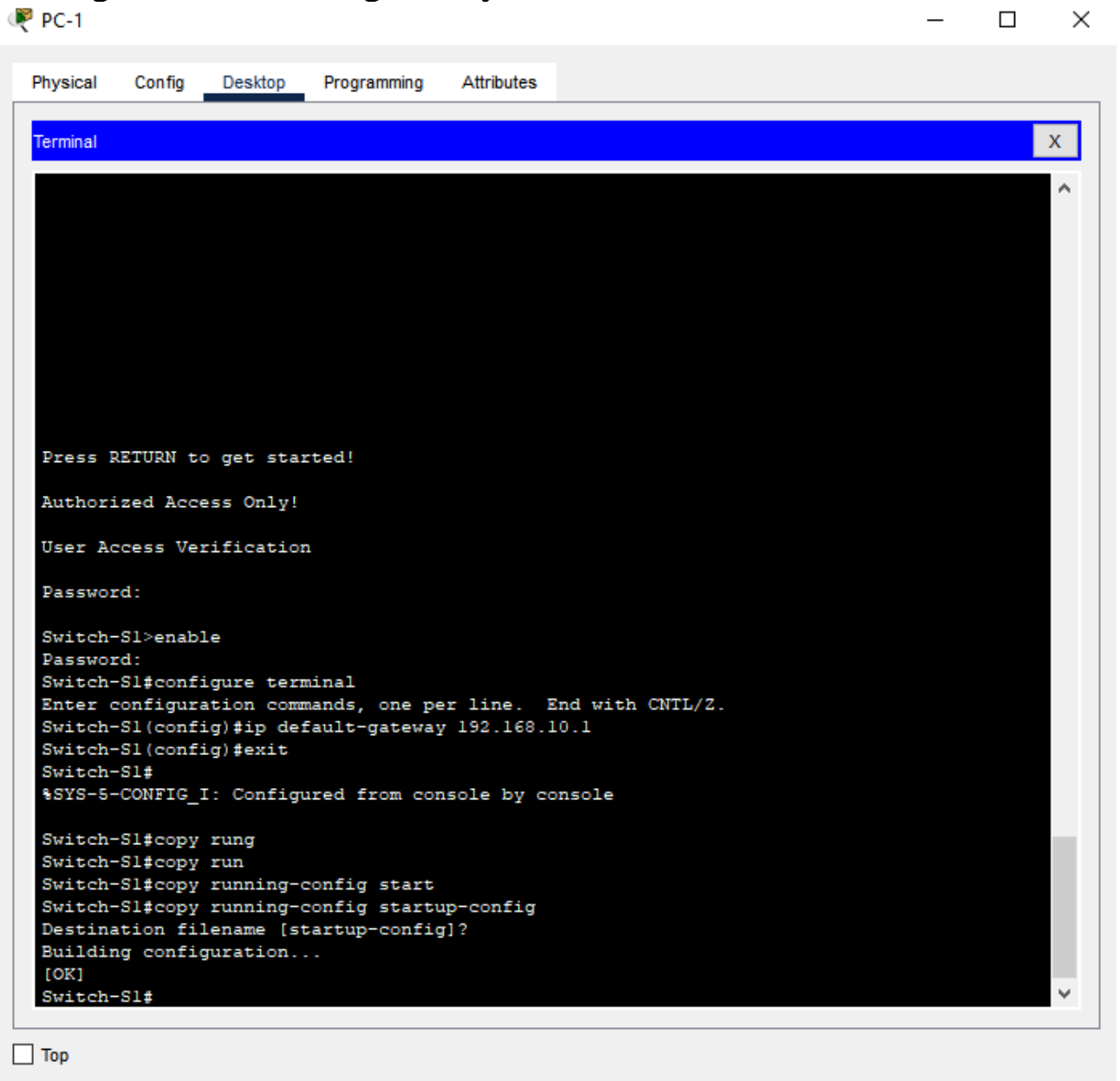
☐ Top

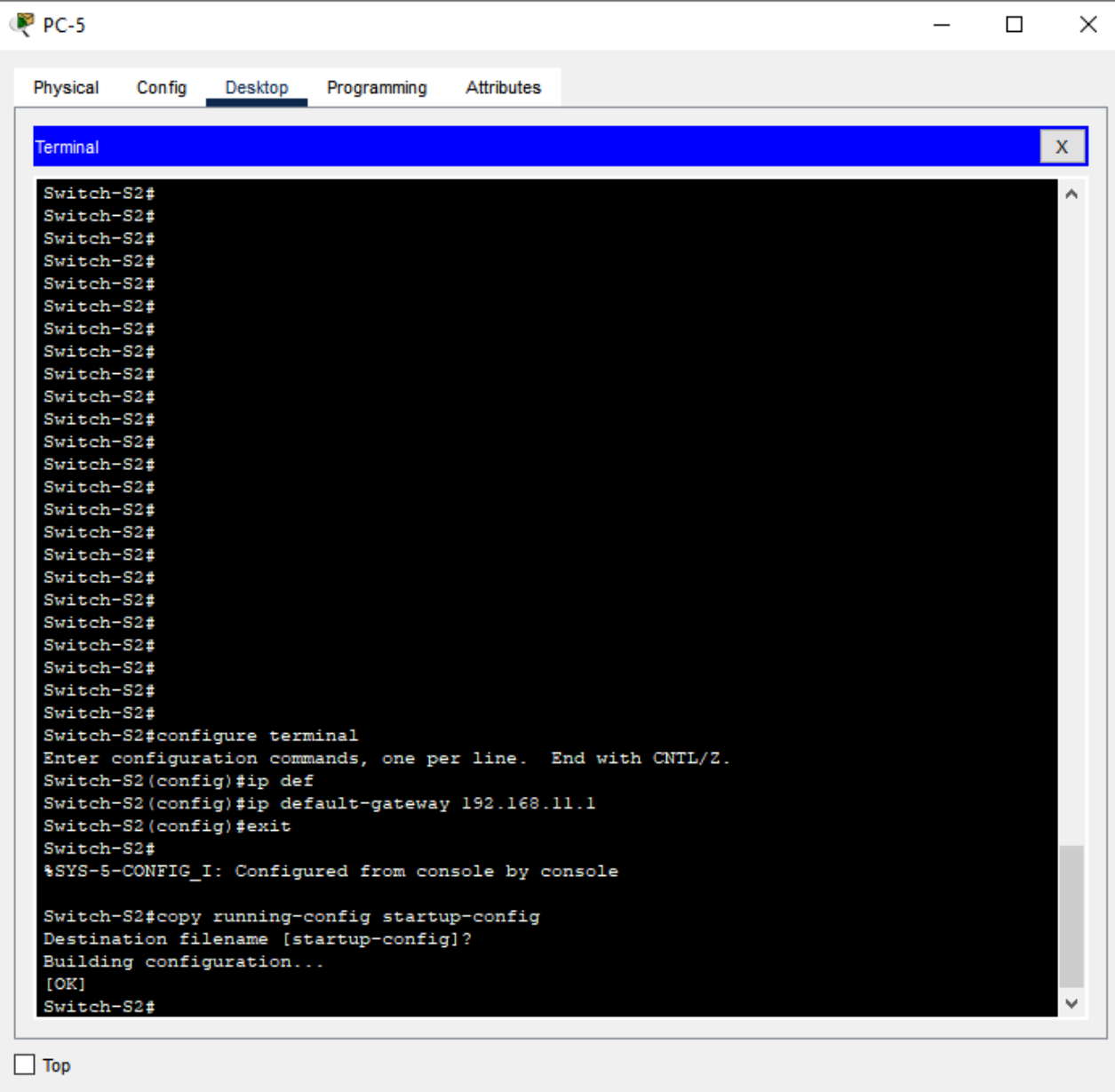
R2#show ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0/0	192.168.11.1	YES	manual	up	up
GigabitEthernet0/0/1	209.165.200.226	YES	manual	up	up
GigabitEthernet0/0/2	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

R2#

- Configure the default gateway address in the LAN switch:





- Configure static routing:

```
R1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip route 192.168.11.0 255.255.255.0 209.165.200.226
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#cop running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

```
R2>enable
Password:
R2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ip route 192.168.10.0 255.255.255.0 209.165.200.225
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#cop running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R2#
```



- Configure addresses on hosts:
  1. IPv4 host
  2. Default IPv4 gateway(LAN router)

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	<input type="text" value="192.168.10.10"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.10.1"/>
DNS Server	<input type="text" value="0.0.0.0"/>

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	<input type="text" value="192.168.11.10"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.11.1"/>
DNS Server	<input type="text" value="0.0.0.0"/>

- Check network operation using ping:

```
C:\>ping 192.168.11.1

Pinging 192.168.11.1 with 32 bytes of data:

Reply from 192.168.11.1: bytes=32 time<1ms TTL=254
Reply from 192.168.11.1: bytes=32 time<1ms TTL=254
Reply from 192.168.11.1: bytes=32 time<1ms TTL=254
Reply from 192.168.11.1: bytes=32 time<1ms TTL=254

Ping statistics for 192.168.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.11.10

Pinging 192.168.11.10 with 32 bytes of data:

Reply from 192.168.11.10: bytes=32 time<1ms TTL=126
Reply from 192.168.11.10: bytes=32 time<1ms TTL=126
Reply from 192.168.11.10: bytes=32 time<1ms TTL=126
Reply from 192.168.11.10: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.11.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

## Summary:

The network is built, the configuration of switches and routers is configured. Static routing is configured. Packets are successfully sent to another network.