

UNIVERSIDAD RAFAEL LANDÍVAR

FACULTAD DE INGENIERÍA

REDES II

SECCIÓN 1 VESPERTINA

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LABORATORIO NO. 7

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GUATEMALA DE LA ASUNCIÓN, SEPTIEMBRE 6 DE 2024

Configuración de las vlans en switch HQ:

Cisco Packet Tracer - C:\Users\julio\Downloads\LAB7-JULIORUIZ.pkt

Edit Options View Tools Extensions Window Help

Logical Physical x: 604, y: 180

www.server
vlan 101
10.10.101.1
ip publica 208.225.224.2

FTP server
vlan 101
10.10.101.2
ip publica 208.225.224.1

DNS server
vlan 101
10.10.101.3
ip publica 208.225.224.3

Server-PT Server1

Server-PT Server2

PC-PT PC0

Switch5

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>
Switch>en
Switch#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	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
11 VLAN0011	active	Gig0/2
101 VLAN0101	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Copy Paste

Top

Show ip route del router de HQ:

gical Physical x: 562, y: 180

www.server
vlan 101
10.10.101.1
ip publica 208.225.224.2

FTP server
vlan 101
10.10.101.2
ip publica 208.225.224.1

DNS server
vlan 101
10.10.101.3
ip publica 208.225.224.3

Server-PT Server1

Server-PT Server2

PC-PT PC0

Router3

Physical Config CLI Attributes

IOS Command Line Interface

```
Router3>
Router3>show ip route
```

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

10.0.0.0/8 is variably subnetted, 4 subnets, 3 masks
C 10.10.1.0/24 is directly connected,
GigabitEthernet0/1.1
L 10.10.1.254/32 is directly connected,
GigabitEthernet0/1.1
C 10.10.101.0/29 is directly connected,
GigabitEthernet0/1.101
L 10.10.101.5/32 is directly connected,
GigabitEthernet0/1.101
172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C 172.16.255.0/24 is directly connected,
GigabitEthernet0/0
L 172.16.255.1/32 is directly connected,
GigabitEthernet0/0
208.225.224.0/29 is subnetted, 1 subnets
S 208.225.224.0/29 is directly connected, Null0

Router#

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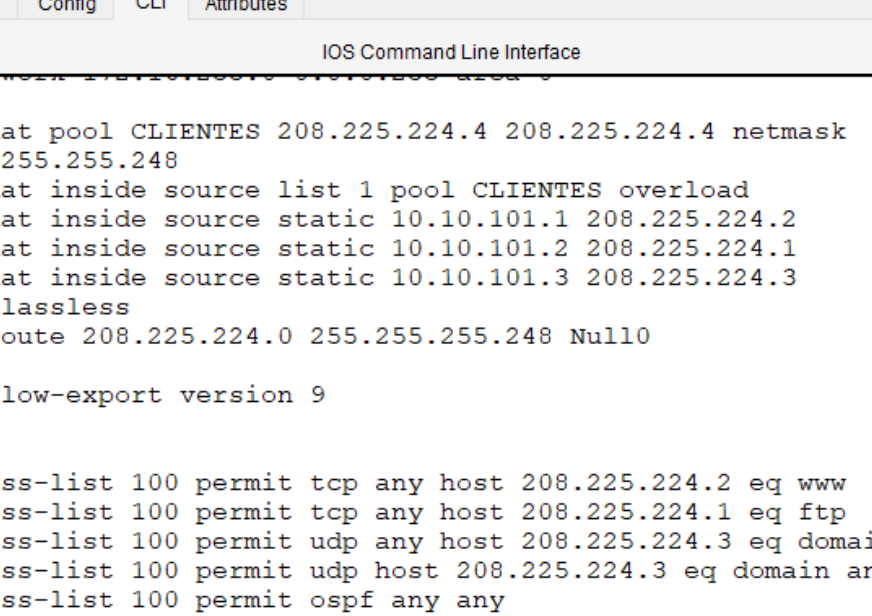
Top

The diagram illustrates a network topology where a central HQ (yellow background) is connected to Router3 (grey background) via a WAN link. The HQ contains several servers and a PC:

- www.server**: vlan 101, IP 10.10.101.1, public IP 208.225.224.2. Connected to Server-PT1 Serv1 Fa0.
- FTP server**: vlan 101, IP 10.10.101.2, public IP 208.225.224.1. Connected to Server-PT1 Server1 Fa0.
- DNS server**: vlan 101, IP 10.10.101.3, public IP 208.225.224.3. Connected to Server-PT2 Server2 Fa0.
- PC-PT PC0**: Connected to Fa0.
- VLANs at HQ**:
 - vlan 101: IP 10.10.101.5/29
 - vlan 11: IP 10.10.1.254/24
 - vlan 11: IP 10.10.1.10/24

Router3 is configured with the following commands in its CLI interface:

```
shutdn
!
interface Vlan1
no ip address
shutdn
!
router ospf 1
router-id 1.1.1.1
log-adjacency-changes
redistribute static metric 1 subnets
network 10.0.0.0 0.255.255.255 area 0
network 172.16.255.0 0.0.0.255 area 0
!
ip nat pool CLIENTES 208.225.224.4 208.225.224.4 netmask
255.255.255.248
ip nat inside source list 1 pool CLIENTES overload
ip nat inside source static 10.10.101.1 208.225.224.2
ip nat inside source static 10.10.101.2 208.225.224.1
ip nat inside source static 10.10.101.3 208.225.224.3
ip classless
ip route 208.225.224.0 255.255.255.248 Null0
!
ip flow-export version 9
!
```



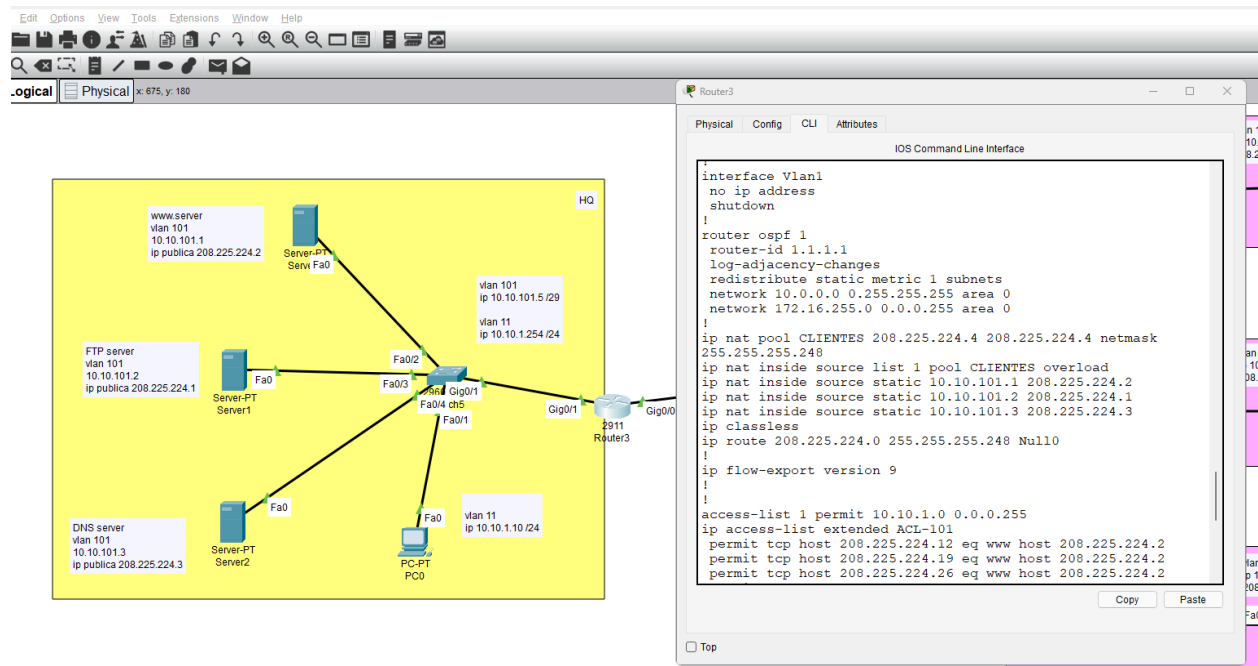
The screenshot shows a window titled "Router3" with a tabbed interface. The "Config" tab is selected, displaying the "IOS Command Line Interface". The configuration commands entered are as follows:

```

!
ip nat pool CLIENTES 208.225.224.4 208.225.224.4 netmask
255.255.255.248
ip nat inside source list 1 pool CLIENTES overload
ip nat inside source static 10.10.101.1 208.225.224.2
ip nat inside source static 10.10.101.2 208.225.224.1
ip nat inside source static 10.10.101.3 208.225.224.3
ip classless
ip route 208.225.224.0 255.255.255.248 Null0
!
ip flow-export version 9
!
!
access-list 100 permit tcp any host 208.225.224.2 eq www
access-list 100 permit tcp any host 208.225.224.1 eq ftp
access-list 100 permit udp any host 208.225.224.3 eq domain
access-list 100 permit udp host 208.225.224.3 eq domain any
access-list 100 permit ospf any any
access-list 100 deny ip any any
!
!

```

Ip route del router de la branch 1:



The image shows a network diagram on the left and the CLI configuration for Router3 on the right.

Network Diagram: A central router (HQ) is connected to three servers (FTP, DNS, and a generic Server) and a PC. The HQ is also connected to a branch router (Router3) via a GigabitEthernet interface. The branch router is connected to a 2911 router, which is in turn connected to a 2960-24TT switch and a PC.

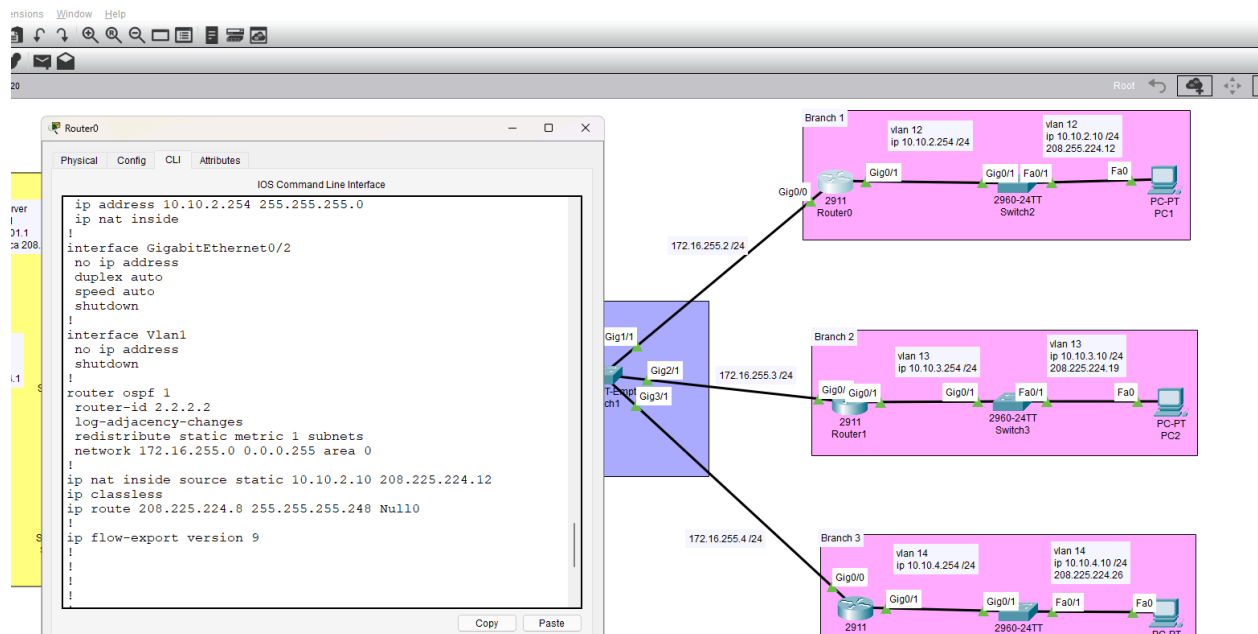
CLI Configuration for Router3:

```

interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 1.1.1.1
log-adjacency-changes
redistribute static metric 1 subnets
network 10.0.0.0 0.255.255.255 area 0
network 172.16.255.0 0.0.0.255 area 0
!
ip nat pool CLIENTES 208.225.224.4 208.225.224.4 netmask
255.255.255.248
ip nat inside source list 1 pool CLIENTES overload
ip nat inside source static 10.10.101.1 208.225.224.2
ip nat inside source static 10.10.101.2 208.225.224.1
ip nat inside source static 10.10.101.3 208.225.224.3
ip classless
ip route 208.225.224.0 255.255.255.248 Null0
!
ip flow-export version 9
!
!
access-list 1 permit 10.10.1.0 0.0.0.255
ip access-list extended ACL-101
permit tcp host 208.225.224.12 eq www host 208.225.224.2
permit tcp host 208.225.224.19 eq www host 208.225.224.2
permit tcp host 208.225.224.26 eq www host 208.225.224.2

```

nat, ospf, habilitación del router ID configurado en router de la branch 1:



The image shows a network diagram on the right and the CLI configuration for Router0 on the left.

Network Diagram: A central router (HQ) is connected to three branches (Branch 1, Branch 2, and Branch 3) via GigabitEthernet interfaces. Each branch contains a 2911 router, a 2960-24TT switch, and a PC. The HQ is also connected to a 2911 router, which is in turn connected to a 2960-24TT switch and a PC.

CLI Configuration for Router0:

```

ip address 10.10.2.254 255.255.255.0
!
ip nat inside
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 2.2.2.2
log-adjacency-changes
redistribute static metric 1 subnets
network 172.16.255.0 0.0.0.255 area 0
!
ip nat inside source static 10.10.2.10 208.225.224.12
ip classless
ip route 208.225.224.0 255.255.255.248 Null0
!
ip flow-export version 9
!
!
!

```

The screenshot displays a network configuration lab environment. On the left, a window titled 'Router1' shows the 'CLI' tab with the 'IOS Command Line Interface'. The configuration includes OSPF settings for external type 1, internal type 1, and inter-area routing, along with static routes for various subnets. The configuration is as follows:

```
Router1#
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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 10.10.3.0/24 is directly connected,
GigabitEthernet0/1.1
L 10.10.3.254/32 is directly connected,
GigabitEthernet0/1.1
C 172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
GigabitEthernet0/0
L 172.16.255.0/24 is directly connected,
GigabitEthernet0/0
L 172.16.255.3/32 is directly connected,
GigabitEthernet0/0
O E2 208.225.224.0/29 is subnetted, 3 subnets
GigabitEthernet0/0
S 208.225.224.16/29 is directly connected, Null0
O E2 208.225.224.24/29 [110/1] via 172.16.255.4, 00:45:11,
GigabitEthernet0/0
Router1#
```

On the right, three network diagrams are shown, each representing a branch of the network:

- Branch 1:** A diagram showing a router (2911 Router0) connected to a switch (2960-24TT Switch2) via GigabitEthernet0/1. The switch is connected to a PC (PC-PT PC1) via Fa0/1. The router has a GigabitEthernet0/0 interface connected to the main network. The switch has two VLANs: VLAN 12 (10.10.2.254/24) and VLAN 12 (10.10.2.10/24, 208.225.224.12).
- Branch 2:** A diagram showing a router (2911 Router1) connected to a switch (2960-24TT Switch3) via GigabitEthernet0/1. The switch is connected to a PC (PC-PT PC2) via Fa0/1. The router has a GigabitEthernet0/0 interface connected to the main network. The switch has two VLANs: VLAN 13 (10.10.3.254/24) and VLAN 13 (10.10.3.10/24, 208.225.224.19).
- Branch 3:** A diagram showing a router (2911 Router2) connected to a switch (2960-24TT Switch4) via GigabitEthernet0/1. The switch is connected to a PC (PC-PT PC3) via Fa0/1. The router has a GigabitEthernet0/0 interface connected to the main network. The switch has two VLANs: VLAN 14 (10.10.4.254/24) and VLAN 14 (10.10.4.10/24, 208.225.224.26).

[illegible]

The screenshot displays a network configuration lab environment. On the left, a terminal window titled 'Router2' shows the 'show ip route' command output. The output lists various routes, including OSPF external routes, directly connected interfaces, and OSPF internal routes. The routes are as follows:

- 10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
 - 10.10.4.0/24 is directly connected, GigabitEthernet0/1.1
 - 10.10.4.254/32 is directly connected, GigabitEthernet0/1.1
- 172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
 - 172.16.255.0/24 is directly connected, GigabitEthernet0/0
 - 172.16.255.4/32 is directly connected, GigabitEthernet0/0
- 208.225.224.0/29 is subnetted, 3 subnets
 - O E2 208.225.224.8/29 [110/1] via 172.16.255.2, 00:16:54, GigabitEthernet0/0
 - O E2 208.225.224.16/29 [110/1] via 172.16.255.3, 00:16:54, GigabitEthernet0/0
 - S 208.225.224.24/29 is directly connected, Null0

On the right, three network diagrams illustrate the topology for Branch 1, Branch 2, and Branch 3. Each branch consists of a 2911 Router connected to a 2960-24TT Switch, which is then connected to a PC-PT. The diagrams show the following configurations:

- Branch 1:** Router0 (Gig0/0) is connected to Switch2 (Gig0/1). Switch2 has two VLANs: VLAN 12 (10.10.2.254/24) and VLAN 12 (10.10.2.10/24, 208.225.224.12). The PC-PT is connected to Switch2 (Fa0/1).
- Branch 2:** Router1 (Gig0/0) is connected to Switch3 (Gig0/1). Switch3 has two VLANs: VLAN 13 (10.10.3.254/24) and VLAN 13 (10.10.3.10/24, 208.225.224.19). The PC-PT is connected to Switch3 (Fa0/1).
- Branch 3:** Router2 (Gig0/0) is connected to Switch4 (Gig0/1). Switch4 has two VLANs: VLAN 14 (10.10.4.254/24) and VLAN 14 (10.10.4.10/24, 208.225.224.26). The PC-PT is connected to Switch4 (Fa0/1).

The screenshot displays a network configuration lab environment. On the left, a window titled 'Router2' shows the IOS Command Line Interface with the following configuration:

```

speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 4.4.4.4
log-adjacency-changes
redistribute static metric 1 subnets
network 172.16.255.0 0.0.0.255 area 0
!
ip nat inside source static 10.10.4.10 208.225.224.26
ip classless
ip route 208.225.224.24 255.255.255.248 Null0
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!

```

On the right, a network diagram illustrates the topology. It shows three branches (Branch 1, Branch 2, Branch 3) connected to a central router (Router2). Each branch contains a 2911 router, a 2960-24TT switch, and a PC-PT. The diagram includes IP addresses for each device and interface.

Branch 1:

- 2911 Router0: Gig0/0 (connected to central router), Gig0/1 (connected to Switch2), Fa0/1 (connected to Switch2), Fa0 (connected to PC-PT PC1)
- 2960-24TT Switch2: Gig0/1 (connected to Router0), Fa0/1 (connected to Router0), Fa0 (connected to PC1)
- PC-PT PC1: IP 10.10.2.254/24

Branch 2:

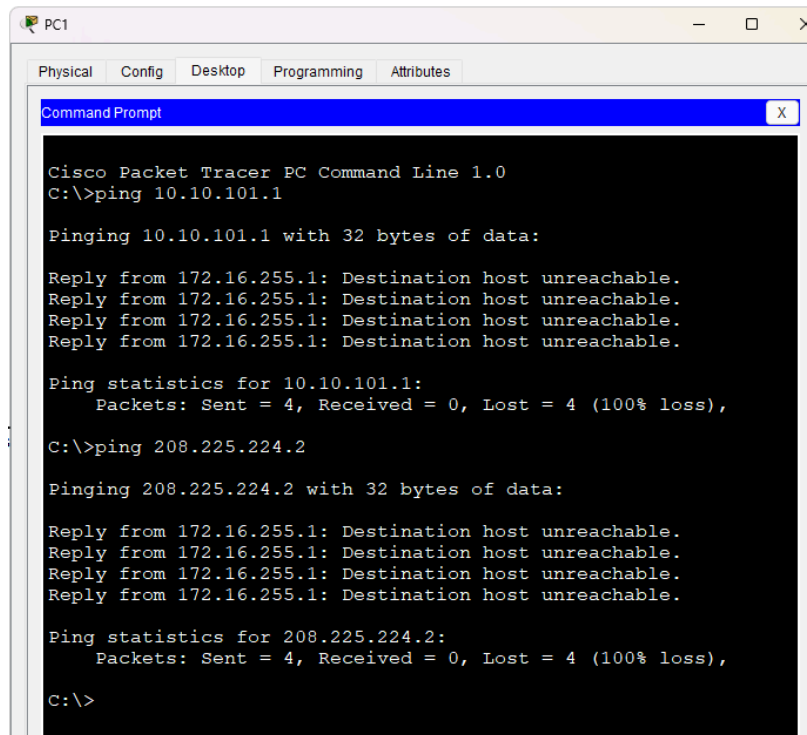
- 2911 Router1: Gig0/0 (connected to central router), Gig0/1 (connected to Switch3), Fa0/1 (connected to Switch3), Fa0 (connected to PC-PT PC2)
- 2960-24TT Switch3: Gig0/1 (connected to Router1), Fa0/1 (connected to Router1), Fa0 (connected to PC2)
- PC-PT PC2: IP 10.10.3.254/24

Branch 3:

- 2911 Router2: Gig0/0 (connected to central router), Gig0/1 (connected to Switch4), Fa0/1 (connected to Switch4), Fa0 (connected to PC-PT PC3)
- 2960-24TT Switch4: Gig0/1 (connected to Router2), Fa0/1 (connected to Router2), Fa0 (connected to PC3)
- PC-PT PC3: IP 10.10.4.254/24

The central router (Router2) has interfaces Gig0/0, Gig0/1, and Gig0/2 connected to the branches. The IP address 255.3/24 is shown near the central router's Gig0/1 interface.

Prueba de ping de PC de branch1 a Server:



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC1. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Command Prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.10.101.1

Pinging 10.10.101.1 with 32 bytes of data:

Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.

Ping statistics for 10.10.101.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 208.225.224.2

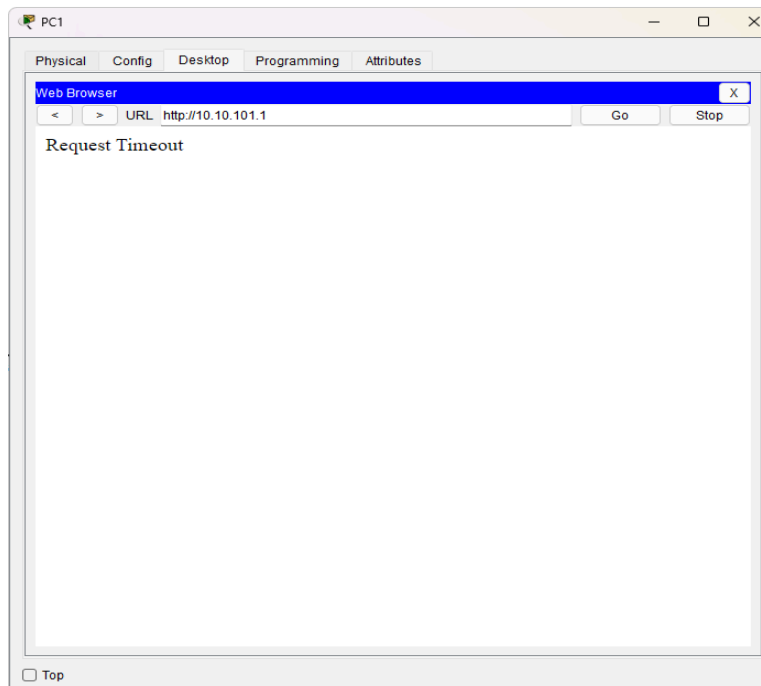
Pinging 208.225.224.2 with 32 bytes of data:

Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.
Reply from 172.16.255.1: Destination host unreachable.

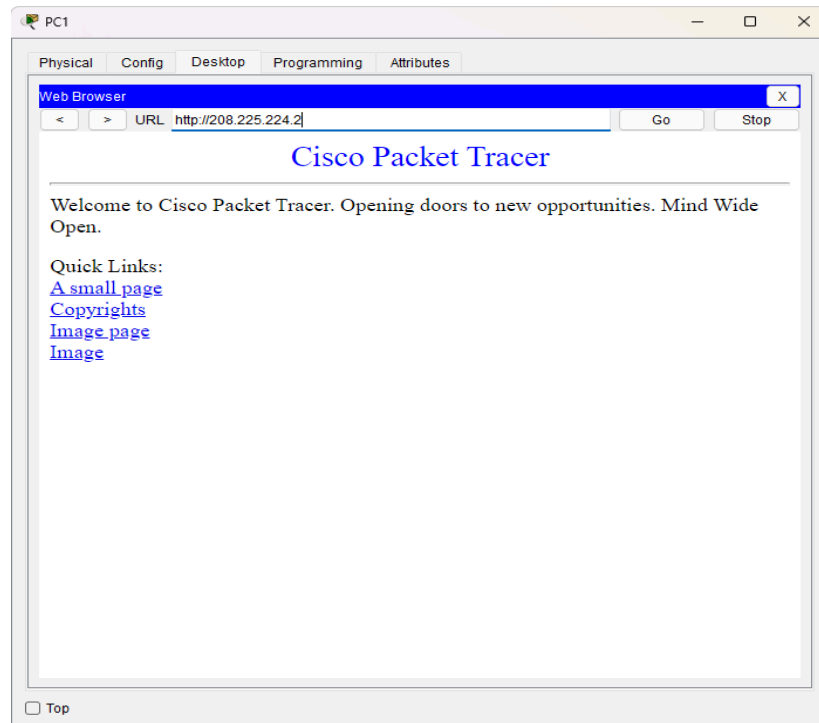
Ping statistics for 208.225.224.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

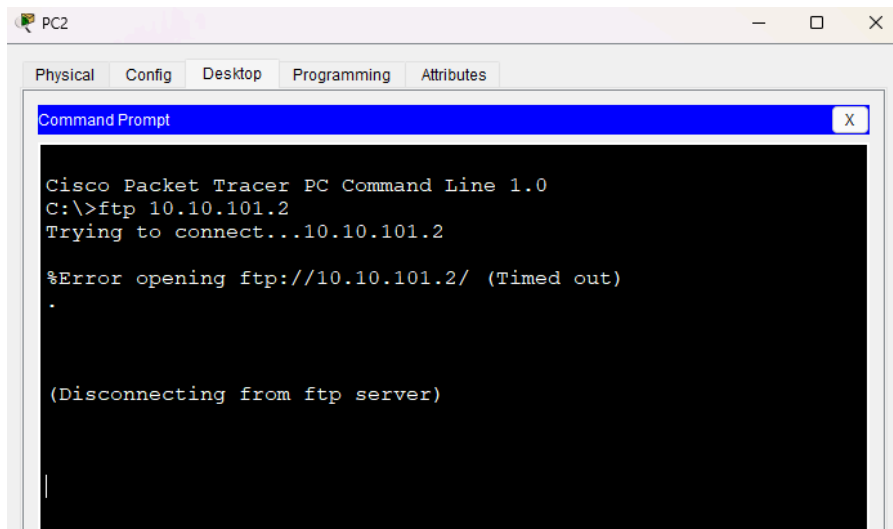
Prueba en el web browser PC de branch1 a Server:



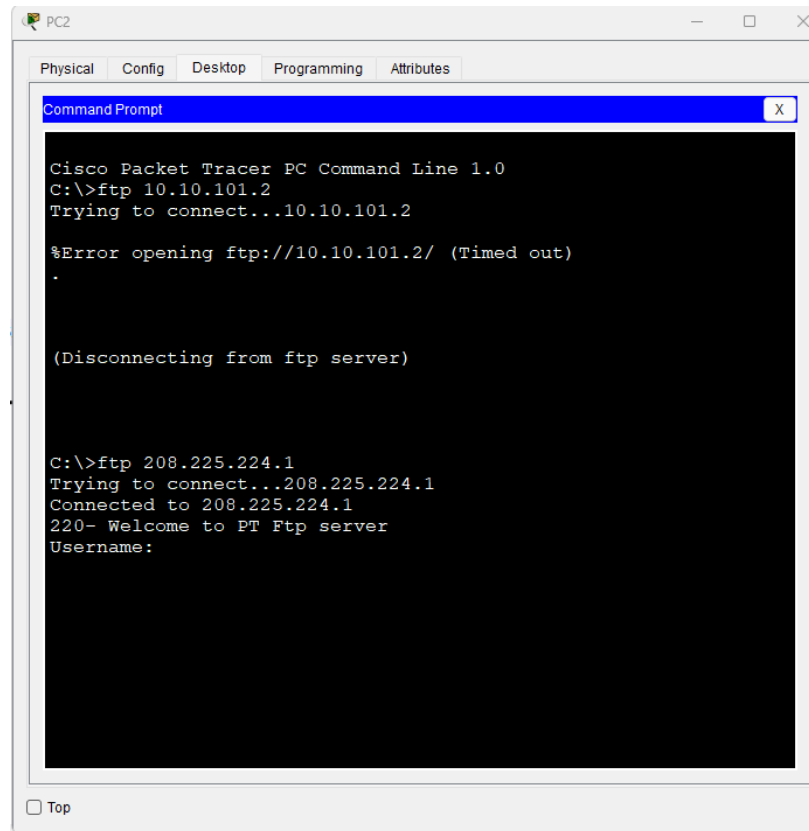
Prueba en el web browser con ip publica PC de branch1 a Server:



Prueba de ftp con ip privada de la branch 2 :



prueba de ftp con ip pública de la branch 2:



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC2. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Command Prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ftp 10.10.101.2
Trying to connect...10.10.101.2

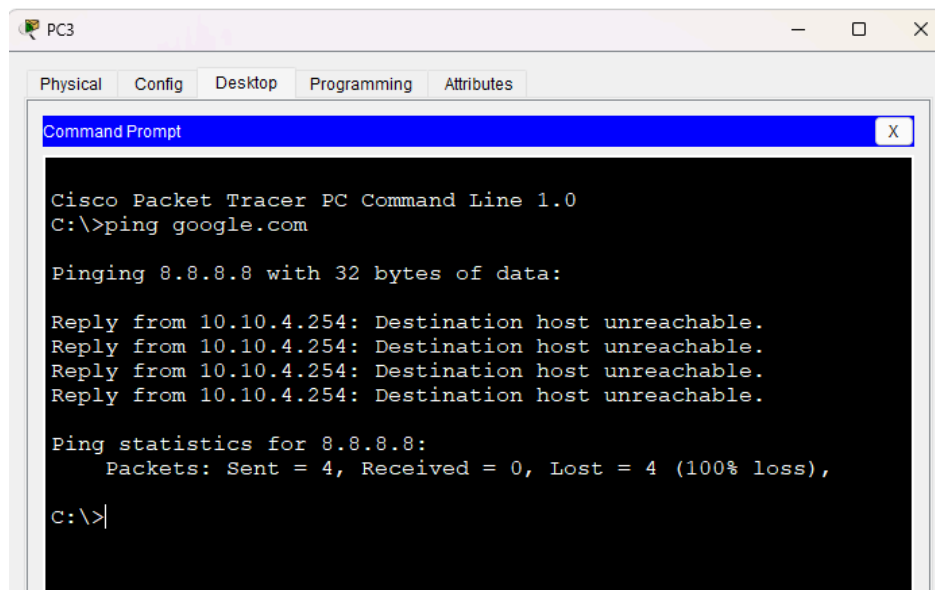
%Error opening ftp://10.10.101.2/ (Timed out)
.

(Disconnecting from ftp server)

C:\>ftp 208.225.224.1
Trying to connect...208.225.224.1
Connected to 208.225.224.1
220- Welcome to PT Ftp server
Username:
```

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

prueba de dns:



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC3. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Command Prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping google.com

Pinging 8.8.8.8 with 32 bytes of data:

Reply from 10.10.4.254: Destination host unreachable.
Reply from 10.10.4.254: Destination host unreachable.
Reply from 10.10.4.254: Destination host unreachable.
Reply from 10.10.4.254: Destination host unreachable.

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>|
```