

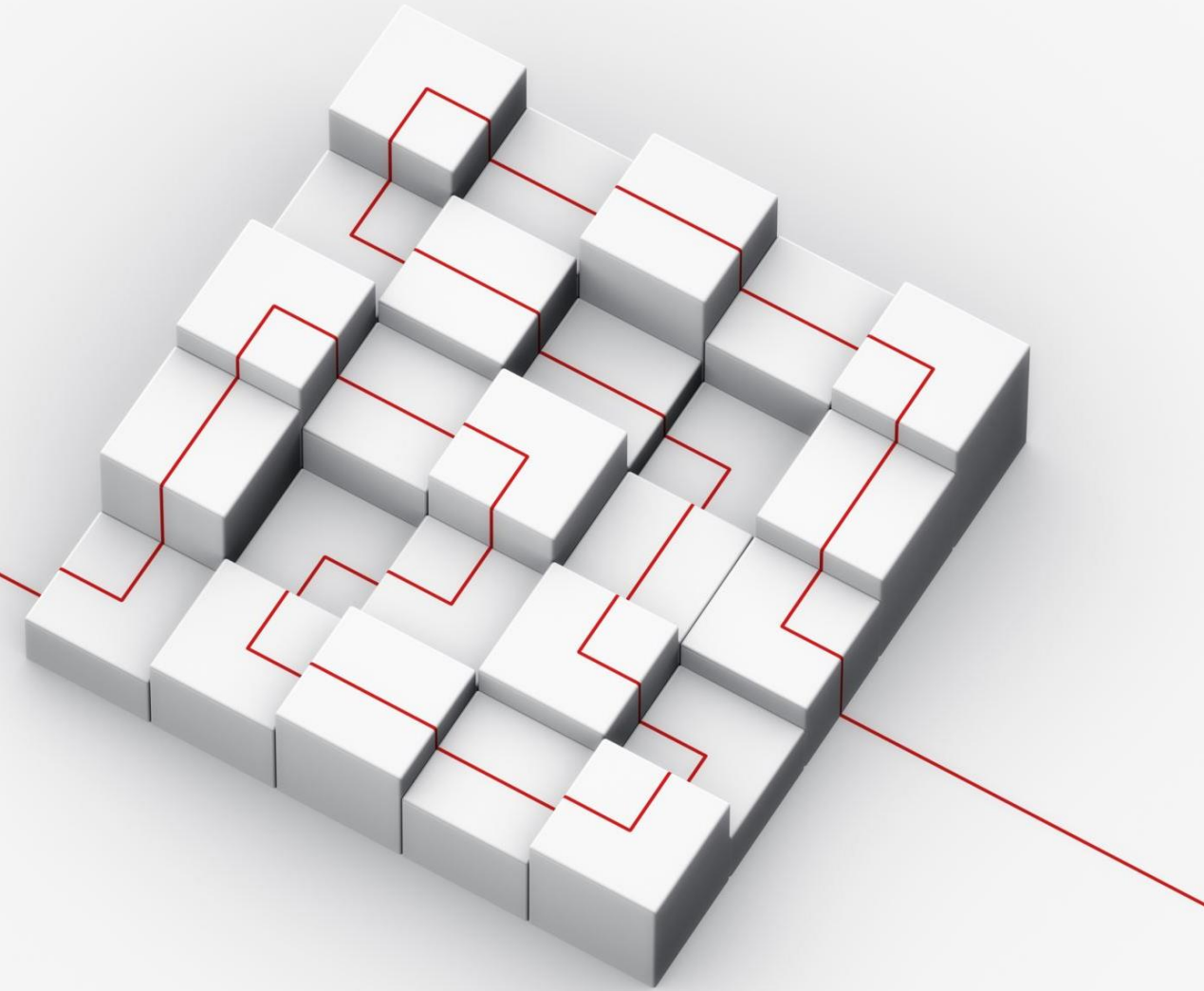
# PROYECTO FINAL SISTEMAS DE TELECOMUNICACIONES

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## CONTENIDO

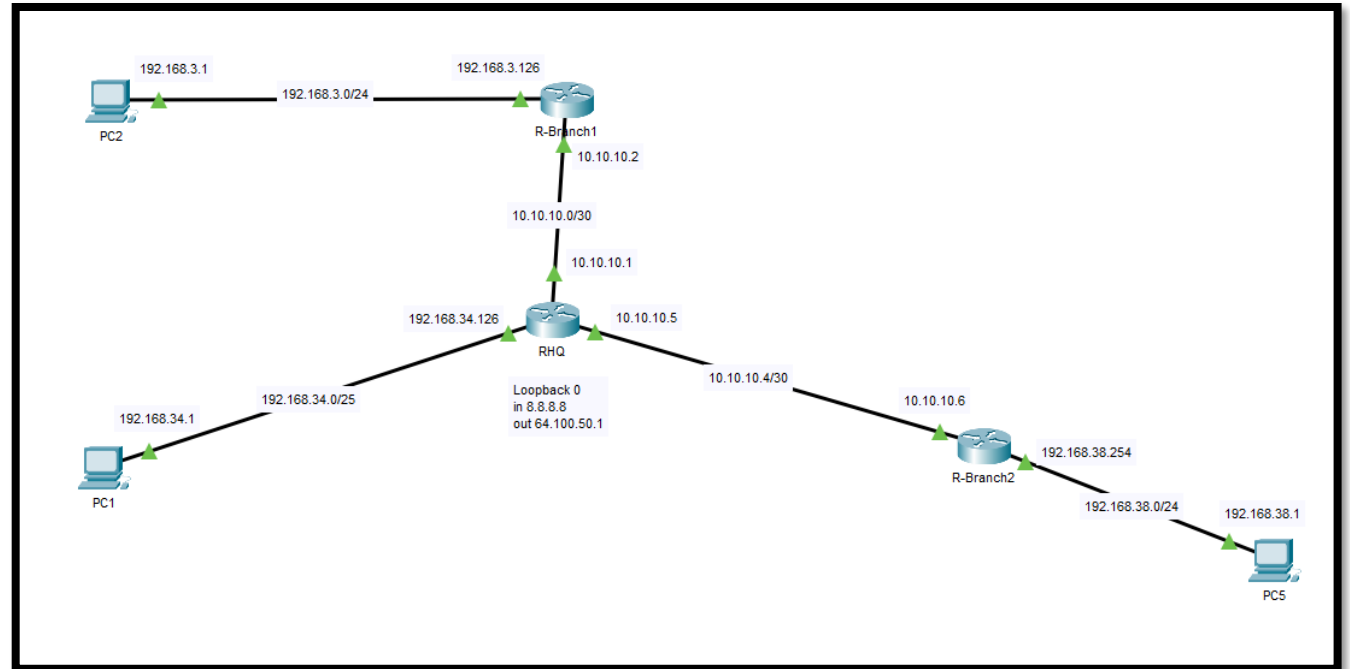
- 1. Objetivos
- 2. Esquema General
- 3. Configuración para RHQ
- 4. Listas de acceso
- 5. Pruebas de listas de acceso
- 6. Configuración para R-Branch I
- 7. Configuración para R-Branch2



## I. OBJETIVOS

- Configuración inicial de los equipos
- Direcccionamiento IPv4(VLSM)
- Configuración de OSPF
- Configuración de ACL'S
- Configuración de NAT
- Configuración de NPT y CDP

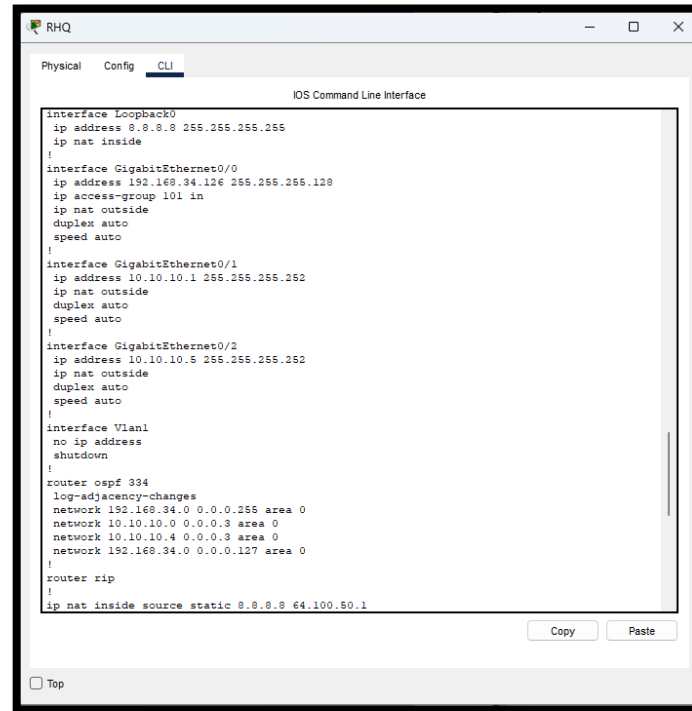
## 2. ESQUEMA GENERAL







### 3. CONFIGURACIÓN PARA RHQ



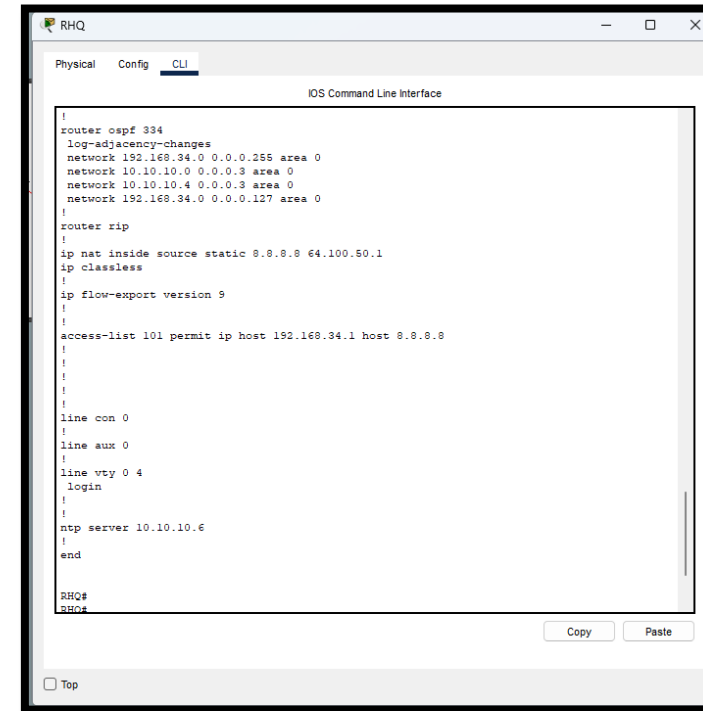
Physical Config CLI

IOS Command Line Interface

```
interface Loopback0
ip address 8.8.8.8 255.255.255.255
ip nat inside
!
interface GigabitEthernet0/0
ip address 192.168.34.126 255.255.255.128
ip access-group 101 in
ip nat outside
duplex auto
speed auto
!
interface GigabitEthernet0/1
ip address 10.10.10.1 255.255.255.252
ip nat outside
duplex auto
speed auto
!
interface GigabitEthernet0/2
ip address 10.10.10.5 255.255.255.252
ip nat outside
duplex auto
speed auto
!
interface Vlan1
no ip address
shutdown
!
router ospf 334
log-adjacency-changes
network 192.168.34.0 0.0.0.255 area 0
network 10.10.10.0 0.0.0.3 area 0
network 10.10.10.4 0.0.0.3 area 0
network 192.168.34.0 0.0.0.127 area 0
!
router rip
!
ip nat inside source static 8.8.8.8 64.100.50.1
```

Copy Paste

☐ Top



Physical Config CLI

IOS Command Line Interface

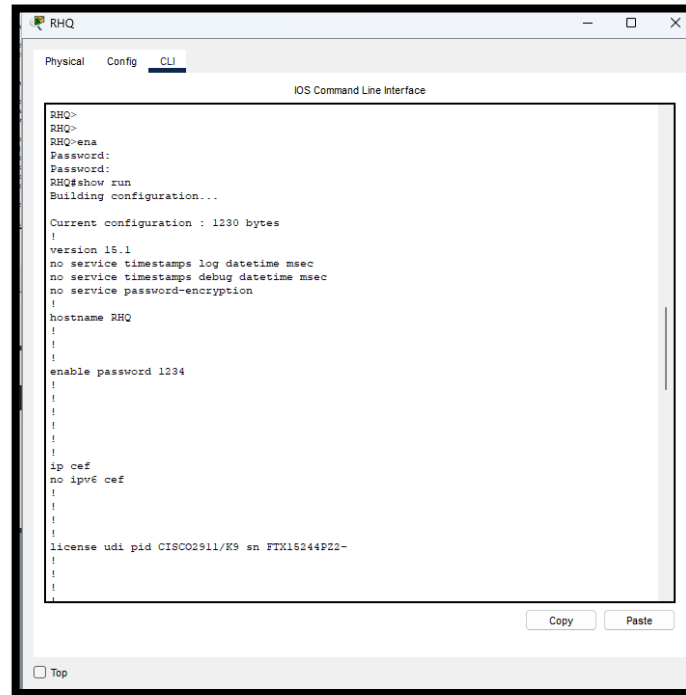
```
!
router ospf 334
log-adjacency-changes
network 192.168.34.0 0.0.0.255 area 0
network 10.10.10.0 0.0.0.3 area 0
network 10.10.10.4 0.0.0.3 area 0
network 192.168.34.0 0.0.0.127 area 0
!
router rip
!
ip nat inside source static 8.8.8.8 64.100.50.1
ip classless
!
ip flow-export version 9
!
!
access-list 101 permit ip host 192.168.34.1 host 8.8.8.8
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
ntp server 10.10.10.6
!
end

RHQ#
RUC#
```

Copy Paste

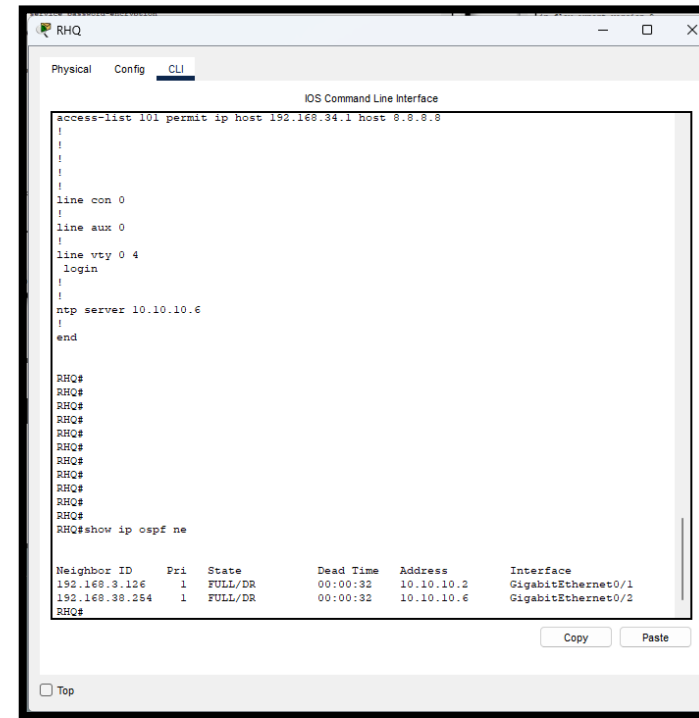
☐ Top

LISTAS DE DIRECCIONAMIENTO, OSPF, INTERFAZ LOOPBACK,  
NAT



```
RHQ>
RHQ>
RHQ>ena
Password:
Password:
RHQ#show run
Building configuration...

Current configuration : 1230 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname RHQ
!
!
enable password 1234
!
!
!
!
ip cef
no ipv6 cef
!
!
!
license udi pid CISCO2911/K9 sn FTX16244PZ2-
!
!
```



```
access-list 101 permit ip host 192.168.34.1 host 8.8.8.8
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
ntp server 10.10.10.6
!
end

RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#show ip ospf ne

Neighbor ID      Pri   State           Dead Time   Address        Interface
192.168.3.126    1     FULL/DR         00:00:32    10.10.10.2     GigabitEthernet0/1
192.168.38.254   1     FULL/DR         00:00:32    10.10.10.6     GigabitEthernet0/2
RHQ#
```

HOSTNAME Y CONTRASEÑAS, OSPF NEIGHBORS



## 4. LISTAS DE ACCESO



The screenshot shows the RHQ CLI window with the following configuration and output:

```
Physical Config CLI
IOS Command Line Interface

!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
ntp server 10.10.10.6
!
end

RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#
RHQ#show ip ospf ne

Neighbor ID      Pri   State           Dead Time   Address        Interface
192.168.3.126    1     FULL/DR         00:00:32    10.10.10.2     GigabitEthernet0/1
192.168.38.254   1     FULL/DR         00:00:32    10.10.10.6     GigabitEthernet0/2
RHQ#
RHQ#sh run | include access
ip access-group 101 in
access-list 101 permit ip host 192.168.34.1 host 8.8.8.8
RHQ#
```

Buttons: Copy, Paste

☐ Top

The screenshot shows the R-Branch1 CLI window with the following output and configuration:

```
Physical Config CLI
IOS Command Line Interface

compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wvl/export/crypto/tool/stqrg.html

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

Cisco CISC02511/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
256K bytes of non-volatile configuration memory.
249956K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
13:48:10: %OSPF-6-ADJCHG: Process 337, Nbr 8.8.8.8 on GigabitEthernet0/1 from LOADING to
FULL, Loading Done

R-Branch1>
R-Branch1>
R-Branch1>ena
Password:
R-Branch1#sh run | in acce
ip access-group 102 in
access-list 102 deny ip host 192.168.3.1 host 8.8.8.8
access-list 102 permit ip any any
R-Branch1#
```

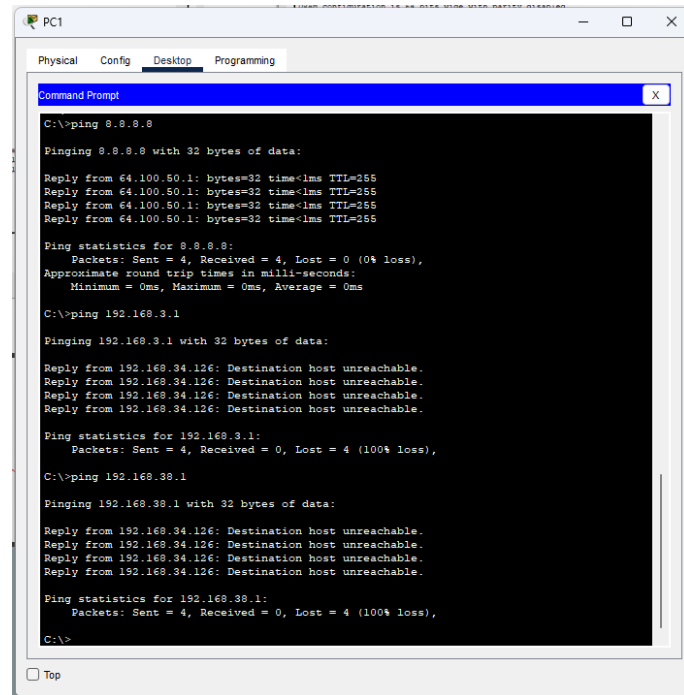
Buttons: Copy, Paste

☐ Top

# LISTAS DE ACCESO



## 5. PRUEBAS DE LISTAS DE ACCESO



PC1

Physical Config Desktop Programming

Command Prompt

```
C:\>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:

Reply from 64.100.50.1: bytes=32 time<1ms TTL=255
Reply from 64.100.50.1: bytes=32 time<1ms TTL=255
Reply from 64.100.50.1: bytes=32 time<1ms TTL=255
Reply from 64.100.50.1: bytes=32 time<1ms TTL=255

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.

Ping statistics for 192.168.3.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.38.1

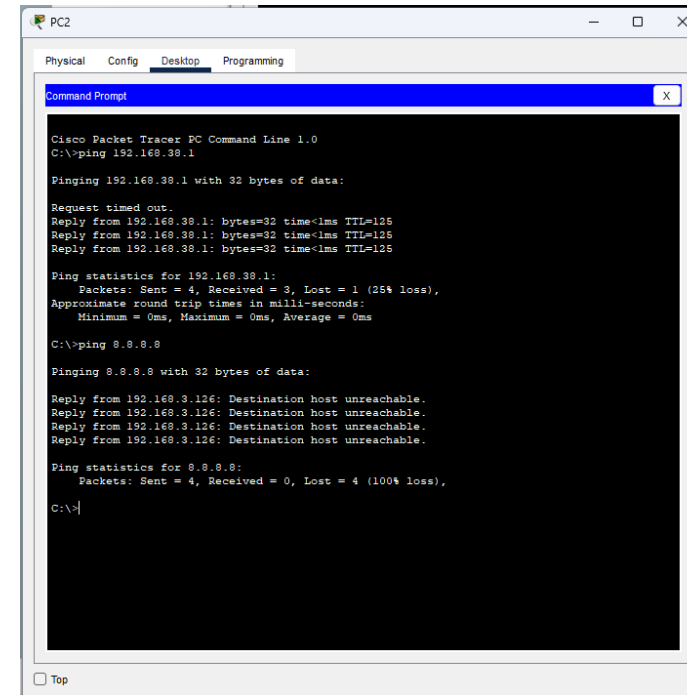
Pinging 192.168.38.1 with 32 bytes of data:

Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.
Reply from 192.168.34.126: Destination host unreachable.

Ping statistics for 192.168.38.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

☐ Top



PC2

Physical Config Desktop Programming

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.38.1

Pinging 192.168.38.1 with 32 bytes of data:

Request timed out.
Reply from 192.168.38.1: bytes=32 time<1ms TTL=125
Reply from 192.168.38.1: bytes=32 time<1ms TTL=125
Reply from 192.168.38.1: bytes=32 time<1ms TTL=125

Ping statistics for 192.168.38.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:

Reply from 192.168.3.126: Destination host unreachable.
Reply from 192.168.3.126: Destination host unreachable.
Reply from 192.168.3.126: Destination host unreachable.
Reply from 192.168.3.126: Destination host unreachable.

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

C:\>
```

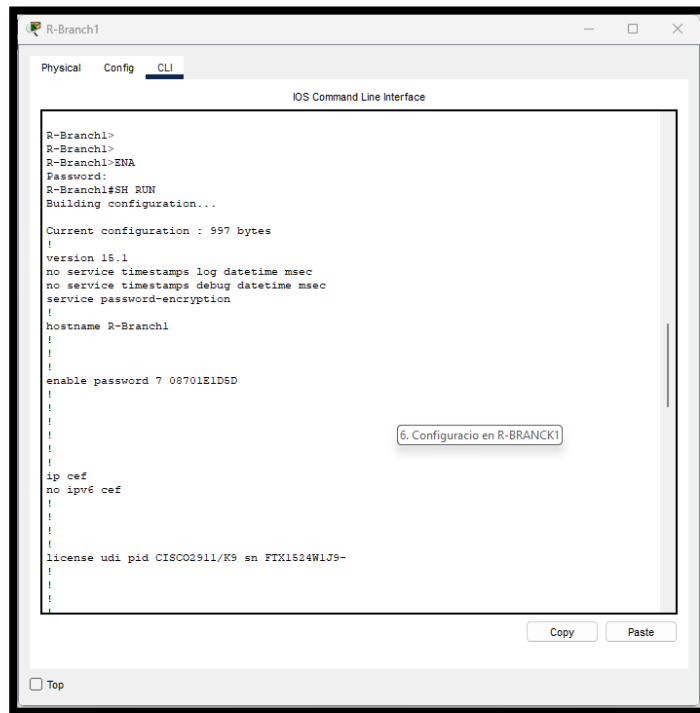
☐ Top

# LISTAS DE ACCESO



## 6. CONFIGURACION EN R-BRANCHI



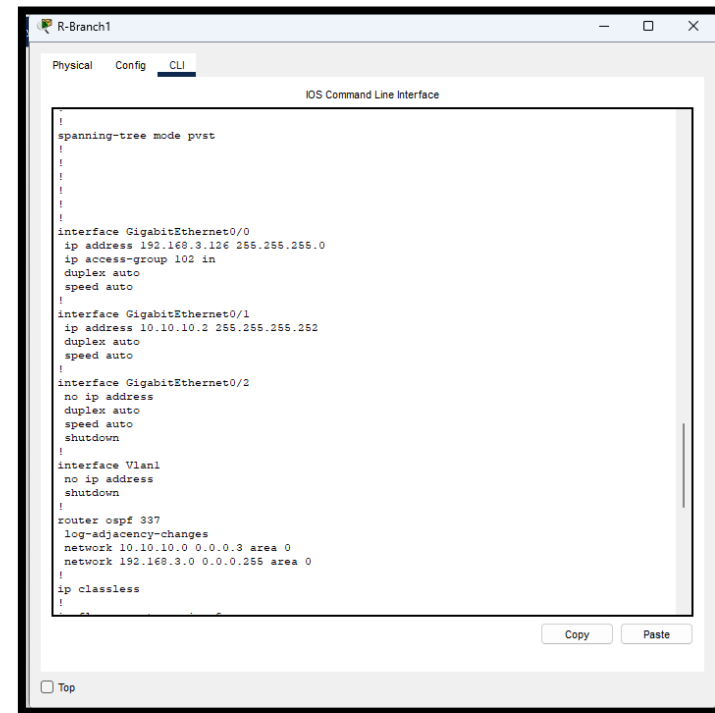


The screenshot shows the R-Branch1 CLI interface with the following content:

```
R-Branch1>
R-Branch1>
R-Branch1>ENA
Password:
R-Branch1#SH RUN
Building configuration...

Current configuration : 997 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname R-Branch1
!
!
enable password 7 08701E1D5D
!
!
!
ip cef
no ipv6 cef
!
!
!
license udi pid CISCO2911/K9 sn FTX1624W1J9-
!
!
```

A tooltip with the text "6. Configuracio en R-BRANCK1" is visible over the configuration text. At the bottom right, there are "Copy" and "Paste" buttons. At the bottom left, there is a "Top" link.



The screenshot shows the R-Branch1 CLI interface with the following content:

```
!
!
spanning-tree mode pvst
!
!
!
!
interface GigabitEthernet0/0
ip address 192.168.3.126 255.255.255.0
ip access-group 102 in
duplex auto
speed auto
!
interface GigabitEthernet0/1
ip address 10.10.10.2 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 337
log-adjacency-changes
network 10.10.10.0 0.0.0.3 area 0
network 192.168.3.0 0.0.0.255 area 0
!
ip classless
!
```

At the bottom right, there are "Copy" and "Paste" buttons. At the bottom left, there is a "Top" link.

• LISTAS DE DIRECCIONAMIENTO, HOSTNAME Y CONTRASEÑAS DE ACCESO

The screenshot shows a Cisco IOS Command Line Interface window titled "R-Branch1". The interface has tabs for "Physical", "Config", and "CLI", with "CLI" being the active tab. The command prompt is "R-Branch1#".

```

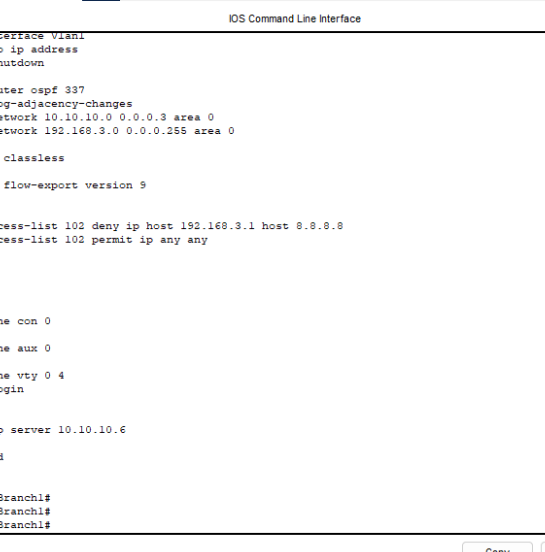
ntp server 10.10.10.6
!
end

R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#
R-Branch1#cdp ne
^
% Invalid input detected at '^' marker.

R-Branch1#sh cdp ne
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID      Local Intf     Holdtime    Capability   Platform    Port ID
RHQ            Gig 0/1        156         R             C2900       Gig 0/1

R-Branch1#sh run | in nt
Current configuration : 997 bytes
interface GigabitEthernet0/0
interface GigabitEthernet0/1
interface GigabitEthernet0/2
interface Vlan1
ntp server 10.10.10.6
R-Branch1#
  
```

At the bottom right of the window are two buttons: "Copy" and "Paste". At the bottom left, there is a checkbox labeled "Top".



```
interface Vlan1
no ip address
shutdown
!
router ospf 337
log-adjacency-changes
network 10.10.10.0 0.0.0.3 area 0
network 192.168.3.0 0.0.0.255 area 0
!
ip classless
!
ip flow-export version 9
!
access-list 102 deny ip host 192.168.3.1 host 8.8.8.8
access-list 102 permit ip any any
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
ntp server 10.10.10.6
!
end

R-Branch1#
R-Branch1#
R-Branch1#
```

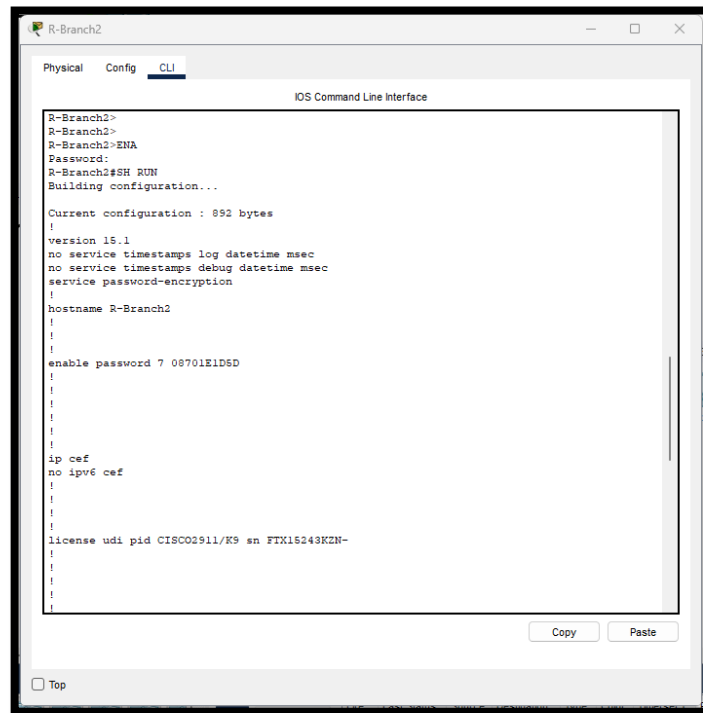
# OSPF, NTP Y CDP





## 7. CONFIGURACION EN R-BRANCH2

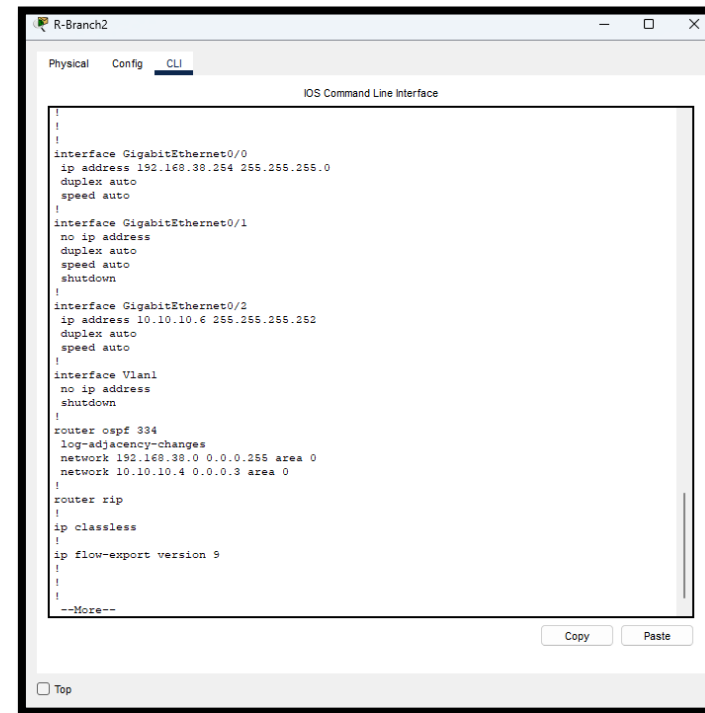




The screenshot shows the R-Branch2 CLI interface with the following commands and output:

```
R-Branch2>
R-Branch2>
R-Branch2>ENA
Password:
R-Branch2#SH RUN
Building configuration...

Current configuration : 892 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname R-Branch2
!
!
enable password 7 08701E1D5D
!
!
!
!
ip cef
no ipv6 cef
!
!
!
license udi pid CISCO2911/K9 sn FTX15243KZN-
!
!
!
```



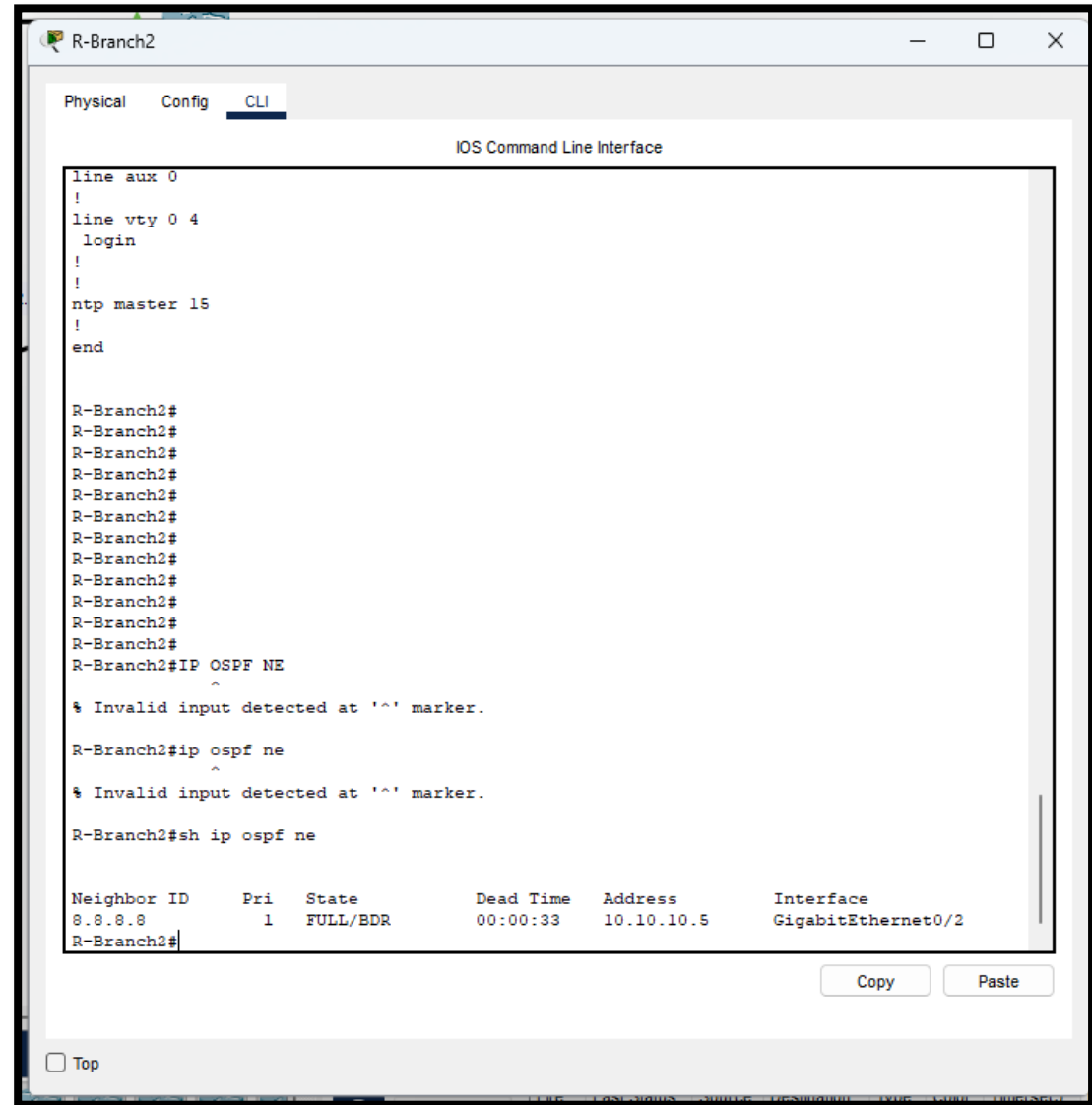
The screenshot shows the R-Branch2 CLI interface with the following configuration commands:

```
!
!
!
interface GigabitEthernet0/0
ip address 192.168.38.254 255.255.255.0
duplex auto
speed auto
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/2
ip address 10.10.10.6 255.255.255.252
duplex auto
speed auto
!
interface Vlan1
no ip address
shutdown
!
router ospf 334
log-adjacency-changes
network 192.168.38.0 0.0.0.255 area 0
network 10.10.10.4 0.0.0.3 area 0
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
--More--
```

• LISTAS DE DIRECCIONAMIENTO,  
HOSTNAME Y CONTRASEÑAS DE ACCESO



# OSPF NEIGHBORS



The screenshot shows a Cisco IOS CLI window for a device named 'R-Branch2'. The window has tabs for 'Physical', 'Config', and 'CLI', with 'CLI' being the active tab. The title bar includes standard window controls (minimize, maximize, close). The main area is titled 'IOS Command Line Interface' and contains the following text:

```
line aux 0
!
line vty 0 4
  login
  !
  !
ntp master 15
!
end

R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#
R-Branch2#IP OSPF NE
^
% Invalid input detected at '^' marker.

R-Branch2#ip ospf ne
^
% Invalid input detected at '^' marker.

R-Branch2#sh ip ospf ne
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
8.8.8.8	1	FULL/BDR	00:00:33	10.10.10.5	GigabitEthernet0/2

R-Branch2#

At the bottom of the window, there are 'Copy' and 'Paste' buttons, and a 'Top' button with a checkbox next to it.