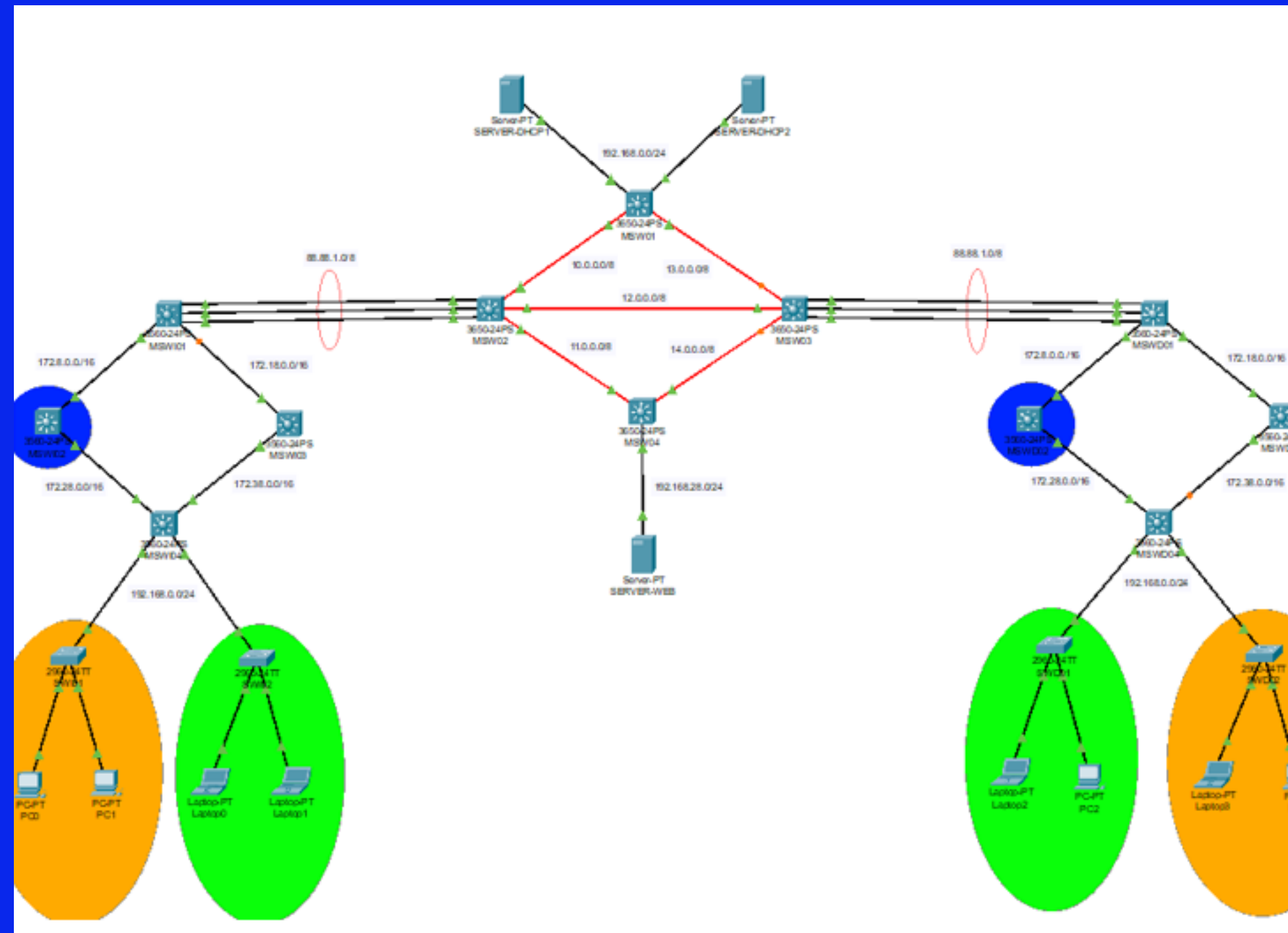


**APRIL
18, 2023**

CERBERUS

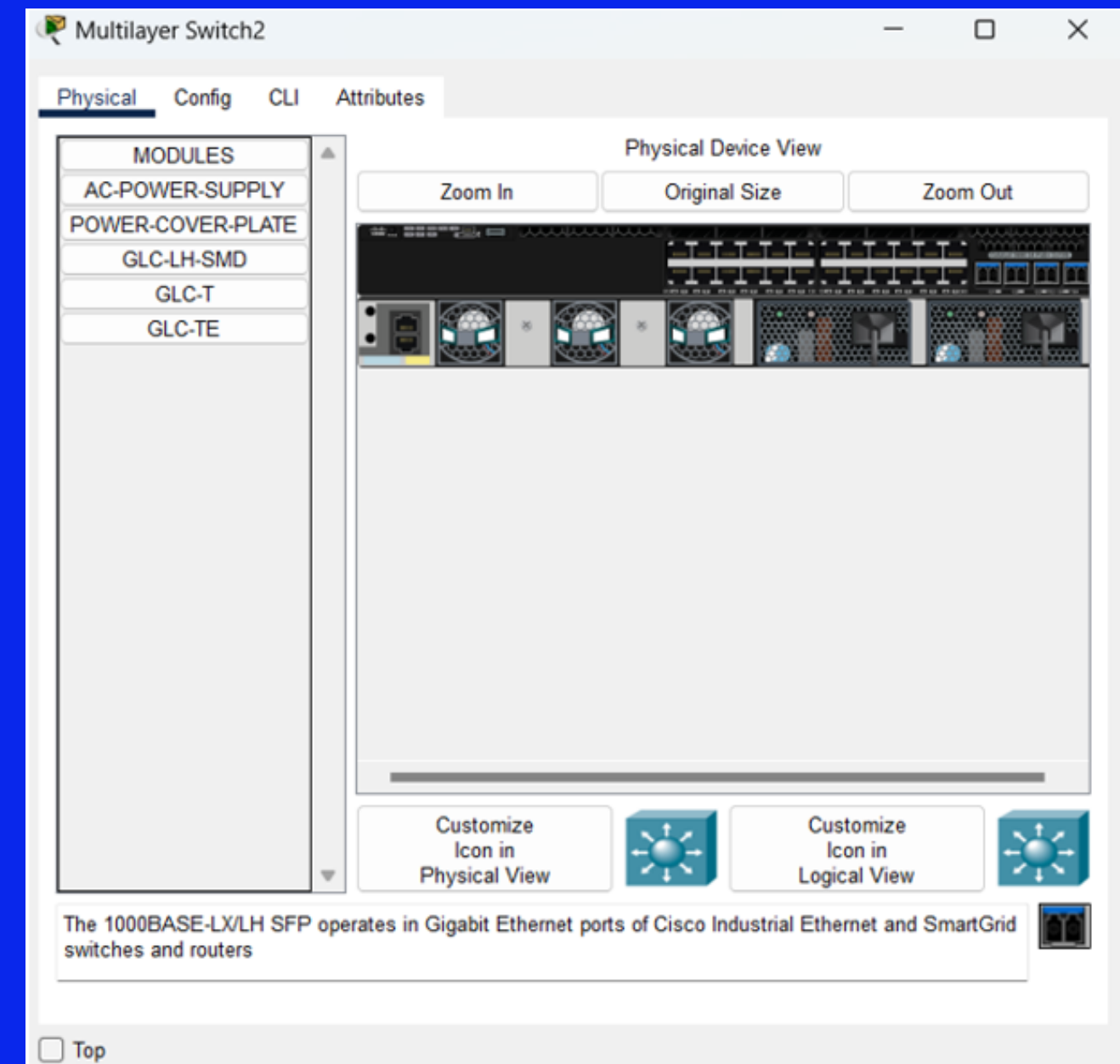
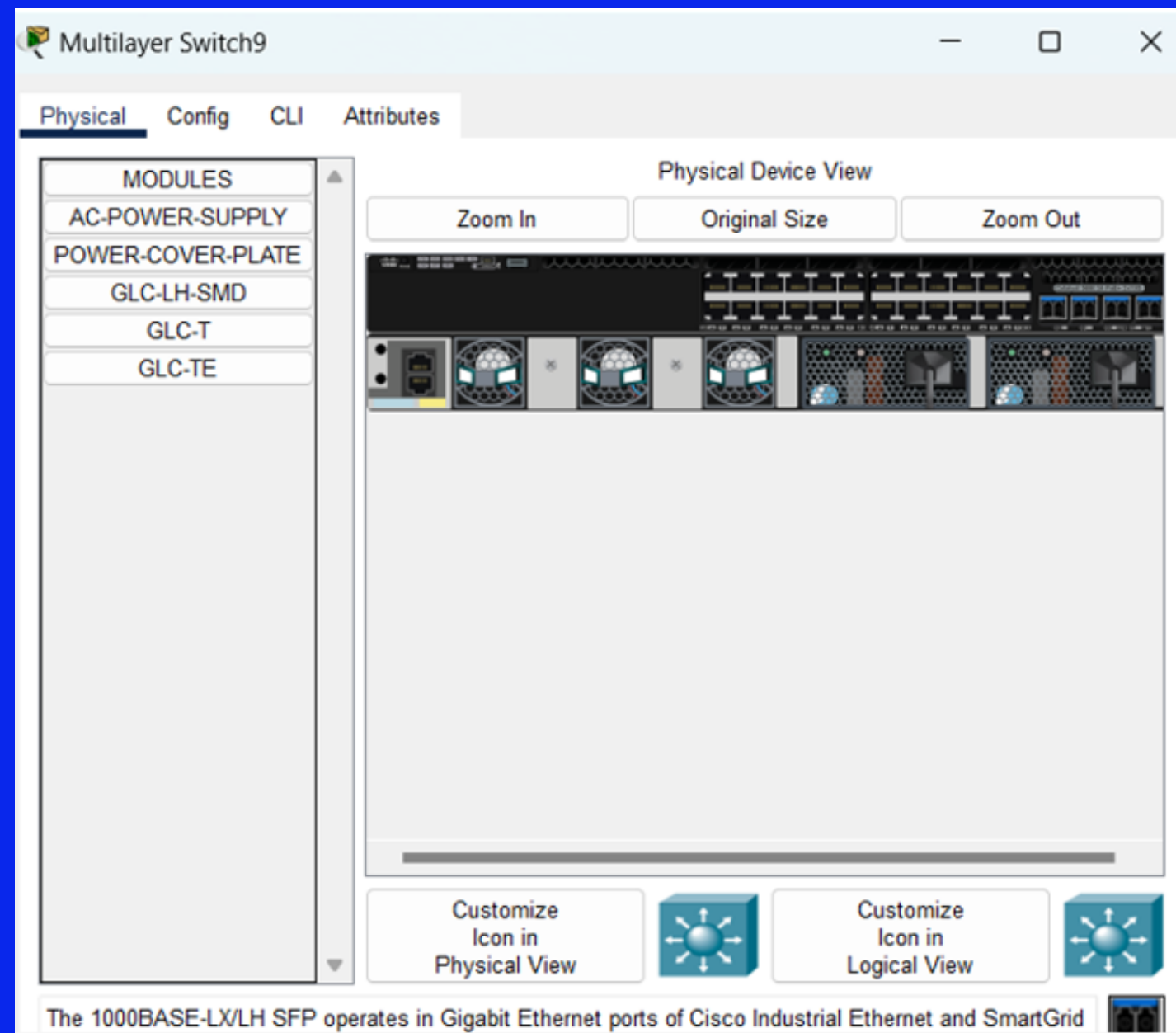
Topología



CONFIGURACIONES

1. Creación del Switch

Lo primero que se realizo es armar el switch 3650 con fuentes de poder y conexiones de fibra

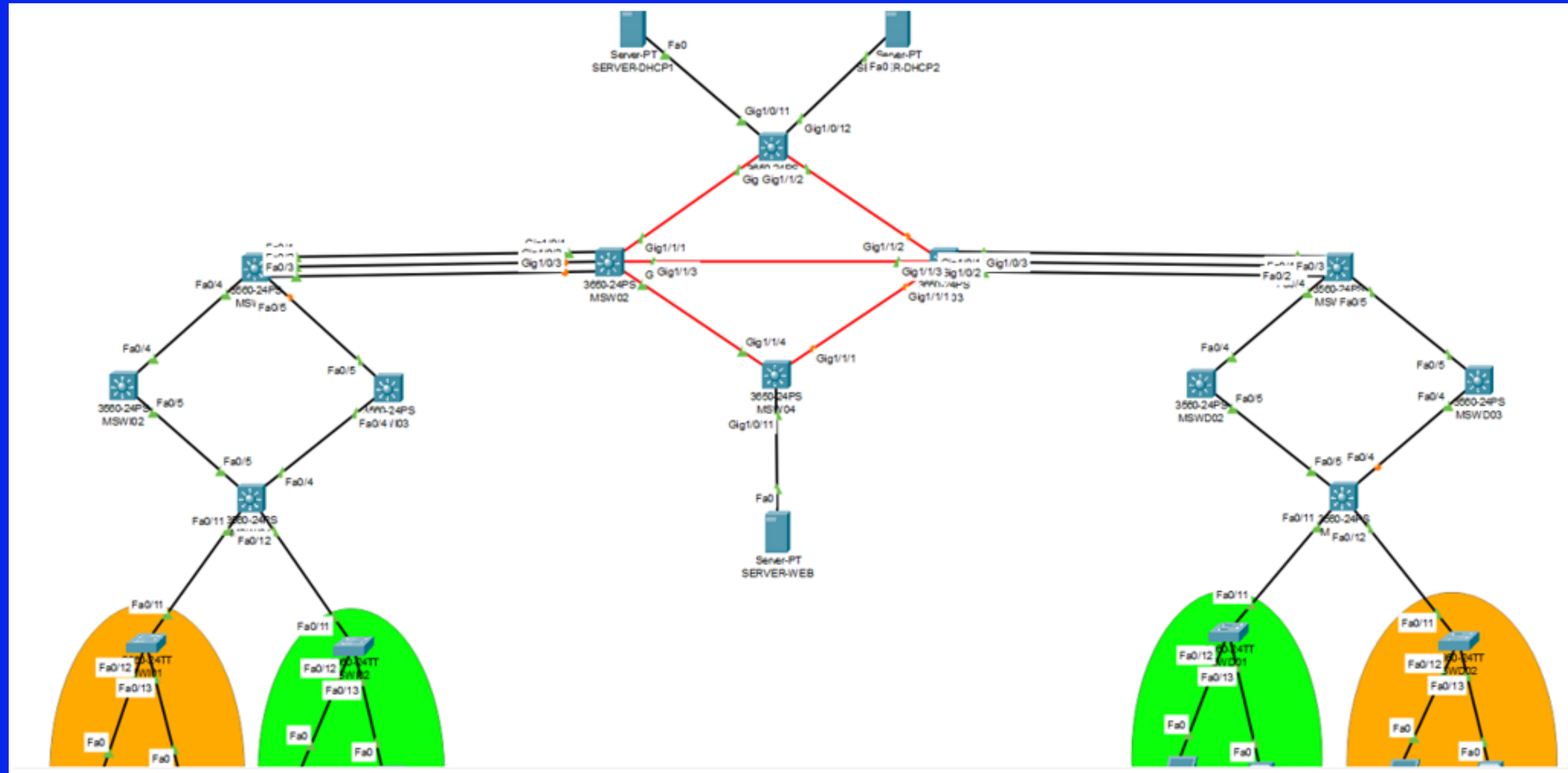


2. Creación de todos los switches

Ingresamos todos los switches que se van a utilizar a parte de los 3650



Realizamos todas las conexiones. Utilizamos alambre de cobra para todas las conexiones excepto para los switches entre edificios. Los cuales tienen serial.



3. Cambio de nombre de los switchs

Cambiamos de nombre a los switch para no confundirnos mediante los siguientes comandos . Esto lo hacemos con todos los switches como se podrá observar en la topología se coloca el mismo nombre que tiene ahí.

```
Switch>ena
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname MSW02
MSW02(config)#exit
MSW02#
%SYS-5-CONFIG_I: Configured from console by console

MSW02#wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
MSW02#
```


4. Switch VTP

Configuramos el switch principal como VTP servidor y los demás como cliente

```
MSW02>ena
MSW02#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MSW02(config)#vtp mode client
Setting device to VTP CLIENT mode.
MSW02(config)#vtp domain G8
Changing VTP domain name from NULL to G8
MSW02(config)#vtp password G8
Setting device VLAN database password to G8
MSW02(config)#vtp version 2
Cannot modify version in VTP client mode
MSW02(config)#exit
MSW02#
%SYS-5-CONFIG_I: Configured from console by console
```

```
MSW02#sh vtp st
VTP Version capable      : 1 to 2
VTP version running      : 1
VTP Domain Name          : G8
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                : 0003.E45B.8800
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

Feature VLAN :

```
VTP Operating Mode      : Client
Maximum VLANs supported locally : 1005
Number of existing VLANs : 5
Configuration Revision   : 0
MD5 digest               : 0xD5 0xC8 0x2C 0x07 0x0F 0x7F 0x41 0xFC
                        0x15 0x82 0xF8 0x80 0xFB 0x3B 0x93 0x4F
```

MSW02#

```
MSW01>
MSW01>ena
MSW01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MSW01(config)#vtp mode server
Device mode already VTP SERVER.
MSW01(config)#vtp domain G8
Changing VTP domain name from NULL to G8
MSW01(config)#vtp password G8
Setting device VLAN database password to G8
MSW01(config)#vtp version 2
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console
```

```
MSW01#sh vtp st
VTP Version capable      : 1 to 2
VTP version running      : 2
VTP Domain Name          : G8
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                : 0007.ECE7.4300
Configuration last modified by 0.0.0.0 at 3-1-93 00:22:05
Local updater ID is 0.0.0.0 (no valid interface found)
```

Feature VLAN :

```
VTP Operating Mode      : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 5
Configuration Revision   : 1
MD5 digest               : 0xD4 0x48 0x5B 0xD2 0x9D 0x7D 0x86 0x52
                        0x15 0xA7 0x0D 0x91 0xD2 0x2A 0x45 0x5B
```

MSW01#

5. Configurar modos del switch

Comenzamos a crear los switchport mode trunk y switchport mode access cada uno con los que se consideran que deben ir

```
MSW01>ena
MSW01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MSW01(config)#int r g1/1/1-2
MSW01(config-if-range)#switchport mode trunk

MSW01(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/1, changed
state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/1, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/2, changed
state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/2, changed
state to up

MSW01(config-if-range)#switchport trunk allowed vlan all
MSW01(config-if-range)#exit
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console

MSW01#
```

```
SWI01>
SWI01>
SWI01>
SWI01>ena
SWI01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWI01(config)#in r f0/12-13
SWI01(config-if-range)#switchport mode access
SWI01(config-if-range)#switchport access vlan 18
SWI01(config-if-range)#no shutdown
SWI01(config-if-range)#exit
SWI01(config)#exit
SWI01#
%SYS-5-CONFIG_I: Configured from console by console

SWI01#wr
Building configuration...
[OK]
SWI01#
```

6. Creacion de las VLANs

Se crean las VLAN en este caso creamos 2 como se muestra en la imagen

```
MSW01>
MSW01>ena
MSW01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MSW01(config)#vlan 8
MSW01(config-vlan)#name VERDE-8
MSW01(config-vlan)#exit
MSW01(config)#vlan 18
MSW01(config-vlan)#name NARANJA-18
MSW01(config-vlan)#exit
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console

MSW01#wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
MSW01#
```

Y como comprobación de que si pasa a los clientes del VTP mostramos lo siguiente

```
MSW02>sh vlan
```

VLAN	Name	Status	Ports
1	default	active	Gig1/0/4, Gig1/0/5, Gig1/0/6, Gig1/0/7 Gig1/0/8, Gig1/0/9, Gig1/0/10, Gig1/0/11 Gig1/0/12, Gig1/0/13, Gig1/0/14, Gig1/0/15 Gig1/0/16, Gig1/0/17, Gig1/0/18, Gig1/0/19 Gig1/0/20, Gig1/0/21, Gig1/0/22, Gig1/0/23 Gig1/0/24, Gig1/1/2
8	VERDE-8	active	
18	NARANJA-18	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Transl
1	enet	100001	1500	-	-	-	-	-	0
8	enet	100008	1500	-	-	-	-	-	0
18	enet	100018	1500	-	-	-	-	-	0
1002	fddi	101002	1500	-	-	-	-	-	0

--More--

Y en nuestro switch server se vera de la siguiente forma

```
MSW01>
MSW01>ena
MSW01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MSW01(config)#vlan 8
MSW01(config-vlan)#name VERDE-8
MSW01(config-vlan)#exit
MSW01(config)#vlan 18
MSW01(config-vlan)#name NARANJA-18
MSW01(config-vlan)#exit
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console

MSW01#wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
MSW01#sh vtp st
VTP Version capable      : 1 to 2
VTP version running      : 1
VTP Domain Name          : G8
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                 : 0007.ECE7.4300
Configuration last modified by 0.0.0.0 at 3-1-93 02:10:24
Local updater ID is 0.0.0.0 (no valid interface found)

Feature VLAN :
-----
VTP Operating Mode        : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs   : 7
Configuration Revision     : 5
MD5 digest                : 0x13 0x7E 0x86 0x52 0x7D 0xF7 0x0D 0xF3
                           0xE8 0x21 0x3E 0xF3 0x47 0xBB 0xC3 0xA4

MSW01#sh vlan

VLAN Name                Status    Ports
-----
1      default              active    Gig1/0/1, Gig1/0/2, Gig1/0/3,
Gig1/0/4
                                   Gig1/0/5, Gig1/0/6, Gig1/0/7,
Gig1/0/8
                                   Gig1/0/9, Gig1/0/10,
Gig1/0/11, Gig1/0/12
```


7. Configuración LACP

Se configura lo que el LACP en las partes involucradas

```
MSWI01#  
MSWI01#  
MSWI01#  
MSWI01#ena  
MSWI01#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
MSWI01(config)#int port-channel 1  
MSWI01(config-if)#switchport trunk encapsulation dot1q  
MSWI01(config-if)#switchport trunk allowed vlan all  
MSWI01(config-if)#no shutdown  
MSWI01(config-if)#exit  
MSWI01(config)#exit  
MSWI01#  
MSWI01#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
MSWI01(config)#int r f0/1-3  
MSWI01(config-if-range)#channel-group 1 mode active  
MSWI01(config-if-range)#no shutdown  
MSWI01(config-if-range)#exit  
MSWI01(config)#exit  
MSWI01#wr  
Building configuration...  
[OK]  
MSWI01#
```

8. Configuración IPs

Se asignan ip a las VLAN para su conexión entre ellas

```
MSW04>
MSW04>ena
MSW04#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MSW04(config)#int vlan 8
MSW04(config-if)#
%LINK-5-CHANGED: Interface Vlan8, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan8, changed state to up

MSW04(config-if)#ip address 192.168.8.4 255.255.255.0
MSW04(config-if)#exit
MSW04(config)#int vlan 18
MSW04(config-if)#
%LINK-5-CHANGED: Interface Vlan18, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan18, changed state to up

MSW04(config-if)#ip address 192.168.18.4 255.255.255.0
MSW04(config-if)#exit
```


9. Configuración OSPF

Se utiliza el protocolo OSPF para la comunicación entre los switches involucrados

```
MSW01(config)#ip routing
MSW01(config)#router ospf 8
MSW01(config-router)#network 192.168.8.0 255.255.255.0 area 0
MSW01(config-router)#network 192.168.18.0 255.255.255.0 area 0
MSW01(config-router)#network 10.0.0.0 255.0.0.0 area 0
MSW01(config-router)#network 13.0.0.0 255.0.0.0 area 0
MSW01(config-router)#exit
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console

MSW01#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA 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

C      192.168.8.0/24 is directly connected, Vlan8
C      192.168.18.0/24 is directly connected, Vlan18

MSW01#
```

Mostramos los vecinos en OSPF

```
MSW01>
MSW01>ena
MSW01#sh ip ospf neighbors
      ^
% Invalid input detected at '^' marker.

MSW01#sh ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
192.168.18.3	1	2WAY/DROTHER	00:00:33	192.168.8.3	Vlan8
192.168.18.4	1	FULL/BDR	00:00:31	192.168.8.4	Vlan8
192.168.18.5	1	FULL/DR	00:00:34	192.168.8.5	Vlan8
192.168.18.5	1	FULL/DR	00:00:34	192.168.18.5	Vlan18
192.168.18.3	1	2WAY/DROTHER	00:00:37	192.168.18.3	Vlan18
192.168.18.4	1	FULL/BDR	00:00:37	192.168.18.4	Vlan18

```
MSW01#
```

10. Configuración EIGRP

Configuramos en este caso los routes 3560 con EIGRP

```
MSW03>ena
MSW03#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MSW03(config)#ip routing
MSW03(config)#router eigrp 28
MSW03(config-router)#network 88.88.1.0
MSW03(config-router)#network 192.168.8.0
MSW03(config-router)#network 192.168.18.0
MSW03(config-router)#no auto-summary
MSW03(config-router)#exit
MSW03(config)#exit
MSW03#
%SYS-5-CONFIG_I: Configured from console by console

MSW03#
%DUAL-5-NBRCHANGE: IP-EIGRP 28: Neighbor 192.168.8.10 (Vlan8) is up: new
adjacency

%DUAL-5-NBRCHANGE: IP-EIGRP 28: Neighbor 192.168.18.10 (Vlan18) is up: new
adjacency

%DUAL-5-NBRCHANGE: IP-EIGRP 28: Neighbor 192.168.8.10 (Vlan8) is resync:
graceful restart

%DUAL-5-NBRCHANGE: IP-EIGRP 28: Neighbor 192.168.18.10 (Vlan18) is resync:
graceful restart

MSW03#sh ip eigrp neighbors
IP-EIGRP neighbors for process 28
```

Mostramos los vecinos de EIGRP

```
MSWI04>
MSWI04>ena
MSWI04#sh ip eigrp neighbors
IP-EIGRP neighbors for process 18
```

H	Address	Interface	Hold	Uptime	SRTT	RTO	Q	Seq
			(sec)		(ms)		Cnt	Num
0	192.168.18.7	Vlan	14	08:30:47	40	1000	0	2
1	192.168.18.8	Vlan	11	08:30:47	40	1000	0	1
2	192.168.18.6	Vlan	10	08:30:47	40	1000	0	3
3	192.168.8.7	Vlan	14	08:30:47	40	1000	0	5
4	192.168.8.8	Vlan	11	08:30:47	40	1000	0	5
5	192.168.8.6	Vlan	13	08:30:47	40	1000	0	6
6	192.168.18.3	Vlan	14	08:28:46	40	1000	0	16
7	192.168.8.3	Vlan	11	08:28:45	40	1000	0	19

```
MSWI04#
```

11. Configuración DHCP

Se configura lo que es el DHCP

The screenshot shows the 'SERVER-DHCP1' configuration window with the 'Services' tab selected. The 'DHCP' service is highlighted in the left sidebar. The main configuration area shows the following settings:

- Interface: FastEthernet0
- Service: ☒ On
- Pool Name: VLAN8
- Default Gateway: 192.168.8.1
- DNS Server: 192.168.8.16
- Start IP Address: 192.168.8.30
- Subnet Mask: 255.255.255.0
- Maximum Number of Users: 150
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Below the configuration fields are buttons for 'Add', 'Save', and 'Remove'. At the bottom, a table lists the configured DHCP pools:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.16...	0.0.0.0	192.16...	255.25...	255	0.0.0.0	0.0.0.0
VLAN8	192.16...	192.16...	192.16...	255.25...	150	0.0.0.0	0.0.0.0

A 'Top' link is located at the bottom left of the window.

Se le asigna una ip estática

SERVER-DHCP1

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.8.15

Subnet Mask 255.255.255.0

Default Gateway 192.168.8.1

DNS Server 192.168.8.16

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::210:11FF:FE77:BC31

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Pasamos la configuración del DHCP por medio de los siguientes comandos

```
MSW01(config)#int vlan 18
MSW01(config-if)#ip helper-address 192.168.18.15
MSW01(config-if)#exit
MSW01(config)#exit
MSW01#
%SYS-5-CONFIG_I: Configured from console by console

MSW01#
```

Probamos que funciona el DHCP

Laptop0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.8.44

Subnet Mask 255.255.255.0

Default Gateway 192.168.8.1

DNS Server 192.168.8.16

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:CFF:FE43:949D

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

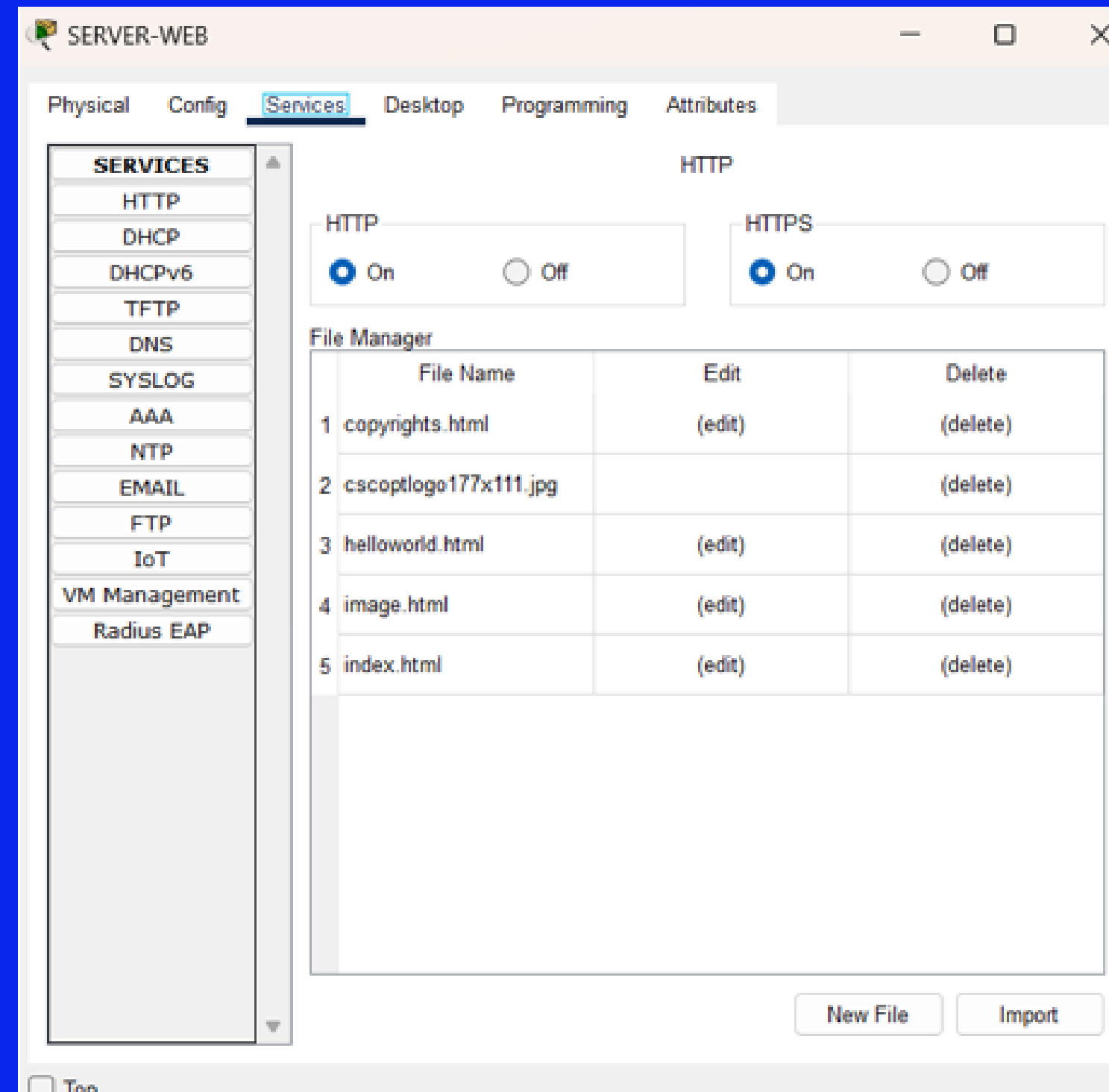
Username

Password

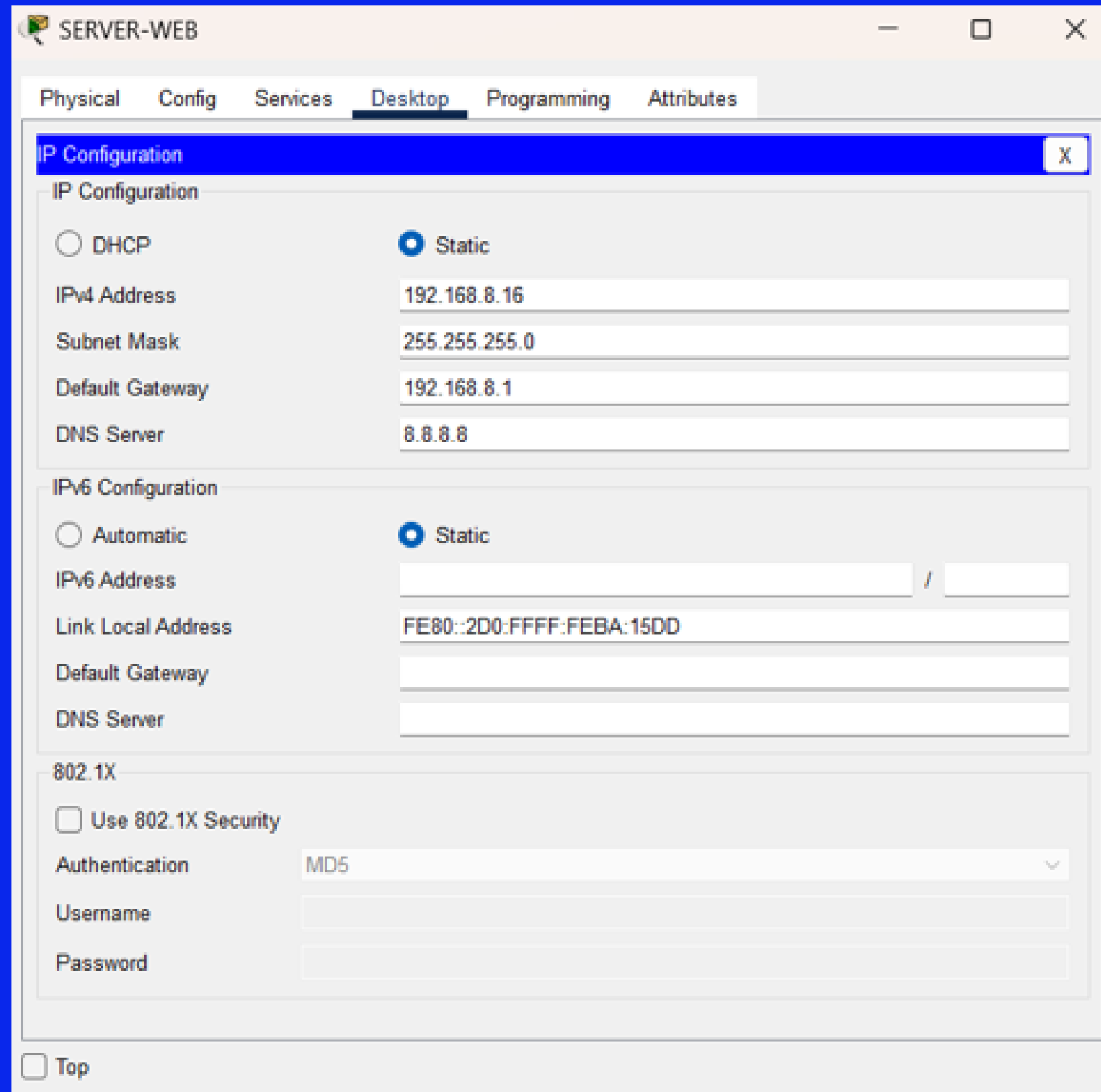
☐ Top

12. Servidor WEB

Configuramos el Servidor WEB



Le asignamos una ip estática al servidor web



The screenshot shows a web-based configuration interface for a device named "SERVER-WEB". The interface has a top navigation bar with tabs: "Physical", "Config", "Services", "Desktop" (which is selected), "Programming", and "Attributes". Below the tabs, there is a sub-header "IP Configuration" with a close button "X". The main configuration area is divided into three sections: "IP Configuration", "IPv6 Configuration", and "802.1X".

IP Configuration

- ☐ DHCP
- ☒ Static
- IPv4 Address: 192.168.8.16
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.8.1
- DNS Server: 8.8.8.8

IPv6 Configuration

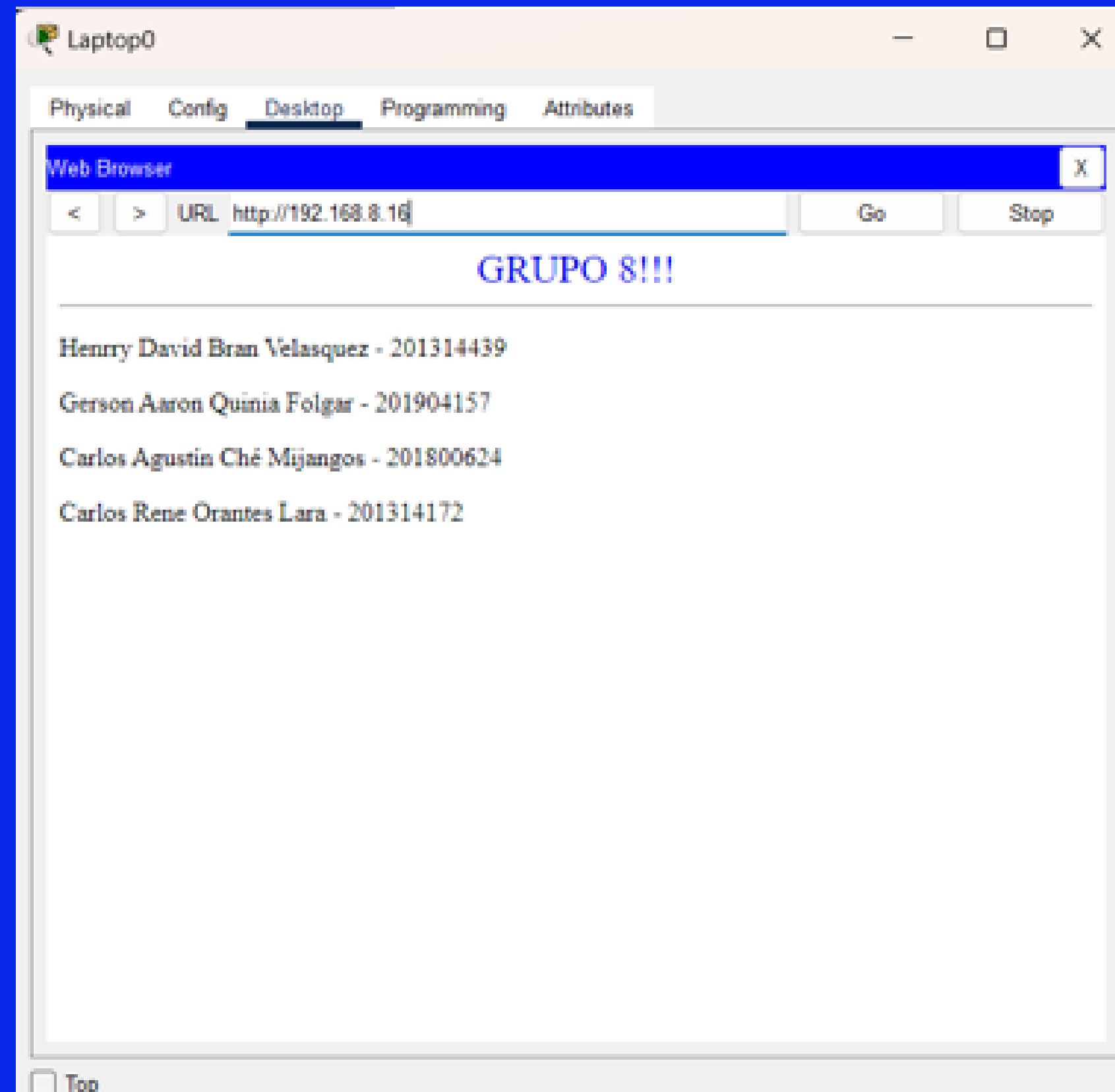
- ☐ Automatic
- ☒ Static
- IPv6 Address: (empty field) / (empty field)
- Link Local Address: FE80::2D0:FFFF:FEBA:15DD
- Default Gateway: (empty field)
- DNS Server: (empty field)

802.1X

- ☐ Use 802.1X Security
- Authentication: MD5 (dropdown menu)
- Username: (empty field)
- Password: (empty field)

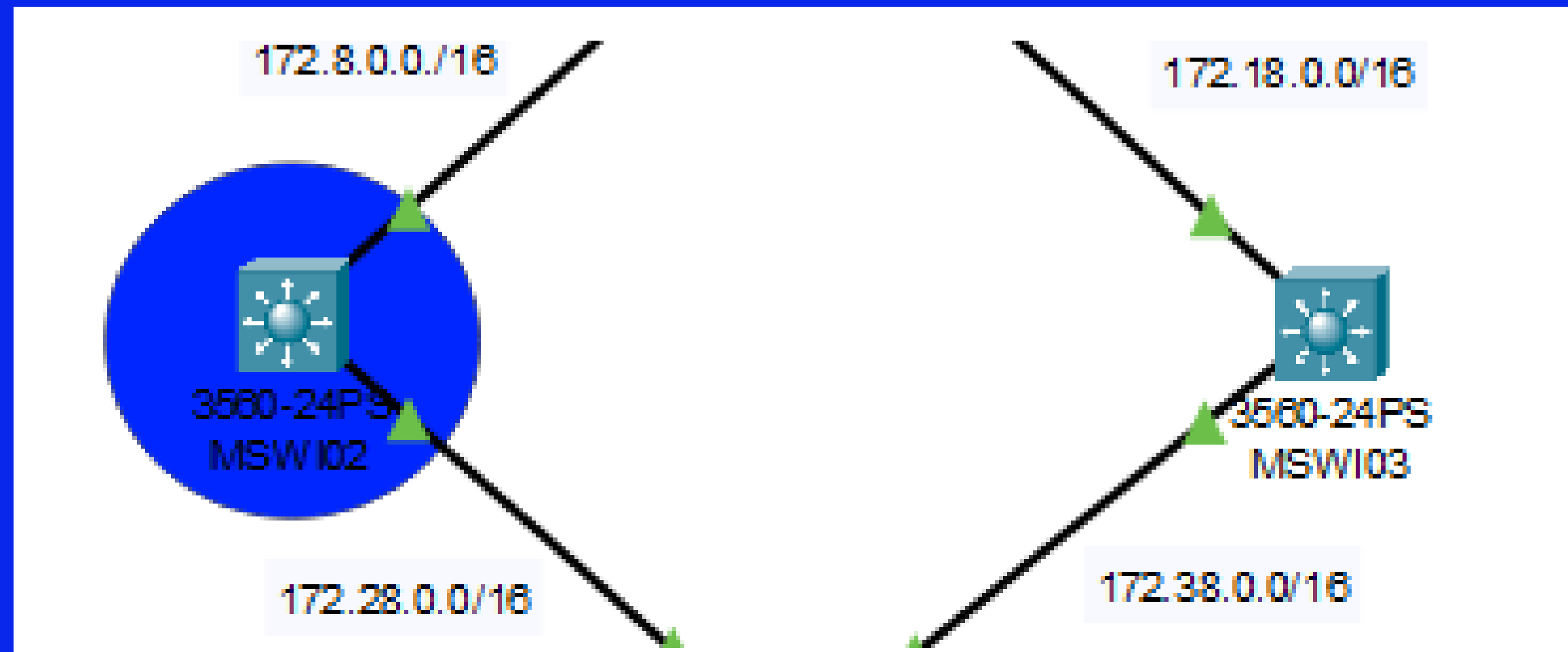
At the bottom left, there is a checkbox labeled "Top".

Probamos que funcione el servidor web



13. Configuración HSRP

Configuramos el HSRP de los switches 3560 que comparten nivel



Donde el azul es el principal

```
MSWI03>
MSWI03>ena
MSWI03#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MSWI03(config)#int vlan 8
MSWI03(config-if)#standby 1 ip 192.168.8.1
MSWI03(config-if)#standby 1 track
%HSRP-6-STATECHANGE: Vlan8 Grp 1 state S
MSWI03(config-if)#
MSWI03(config-if)#standby 1 track f0/5
MSWI03(config-if)#standby 1 preempt
MSWI03(config-if)#exit
MSWI03(config)#exit
MSWI03#
%SYS-5-CONFIG_I: Configured from console by console

MSWI03#sh standby
Vlan8 - Group 1
  State is Standby
    3 state changes, last state change 00:30:46
  Virtual IP address is 192.168.8.1
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (vl default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.063 secs
  Preemption enabled
  Active router is 192.168.8.7
  Standby router is local
  Priority 100 (default 100)
    Track interface FastEthernet0/5 state Up decrement 10
  Group name is hsrp-Vl8-1 (default)
MSWI03#
```

MEJORAS

PORT-SECURITY

Se configuraron los puertos en modo acceso de los switches con port-security en modo MAC address, asignándoles así la MAC del dispositivo al que se encuentran conectados de manera que en caso de que se conecta algún dispositivo diferente el puerto se apagará

<u>Dispositivo</u>	MAC
PC0	00E0.B093.6519
PC1	0001.63CD.1864
PC2	000A.F3DC.05EC
PC3	0001.C9BE.45D6
Laptop0	0090.0C43.949D
Laptop1	0004.9A92.A97E
Laptop2	0040.0B26.CCCB
Laptop3	0002.1777.3D64

SWD02

Physical

Config

CLI

Attributes

IOS Command Line Interface

* Invalid input detected at ... marker.

SWD02(config)#swi

SWD02(config)#int f0/12

SWD02(config-if)#sw

SWD02(config-if)#switchport por

SWD02(config-if)#switchport port-security

SWD02(config-if)#switchport port-security

SWD02(config-if)#switchport port-security mac

SWD02(config-if)#switchport port-security mac-address 0002.1777.3D64

SWD02(config-if)#exit

SWD02(config)#int f0/13

SWD02(config-if)#sw

SWD02(config-if)#switchport por

SWD02(config-if)#switchport port-security

SWD02(config-if)#switchport port-security mac

SWD02(config-if)#switchport port-security mac-address 0001.C9BE.45D6

SWD02(config-if)#exit

SWD02(config)#exit

SWD02#

%SYS-5-CONFIG_I: Configured from console by console

write

Building configuration...

[OK]

SWD02#show port-security address

Secure Mac Address Table

Vlan	Mac Address	Type	Ports	Remaining Age (mins)
18	0002.1777.3D64	SecureConfigured	Fa0/12	-
18	0001.C9BE.45D6	SecureConfigured	Fa0/13	-

Total Addresses in System (excluding one mac per port) : 0

Max Addresses limit in System (excluding one mac per port) : 1024

SWD02#

Copy

Paste

☐ Top

RAPID-STP

Se decidió aplicar como mejora el Rapid Spanning Tree Protocol en los switches que tienen enlaces redundantes, para evitar con anterioridad una posible tormenta de broadcast.

Primero debemos verificar que tipo de STP tienen configurado por defecto los switches. En cada switch colocamos el siguiente comando.

•enable

•sh spanning-tree

En cada switch se deberá obtener una respuesta similar a la siguiente en donde indique que protocolo stp esta utilizando actualmente.

```
MSWI01#sh spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address    0000.0CA6.053A
              Cost        38
              Port        4(FastEthernet0/4)
              Hello Time  2 sec   Max Age 20 sec   Forward Delay 15 sec
```

Se realizo la verificación y todos los switches muestran que están utilizando un PVST. Ahora debemos indicarles a los switches que deben utilizar Rapid STP. Para lograr esto colocamos los siguientes comandos en todos los switches de la red.

- enable**
- configure terminal**
- spanning-tree mode rapid-pvst**
- do write**
- exit**

```
MSWI04>enable
MSWI04#configure ter
MSWI04#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
MSWI04(config)#spann
MSWI04(config)#spanning-tree ?
    mode          Spanning tree operating mode
    portfast      Spanning tree portfast options
    vlan          VLAN Switch Spanning Tree
MSWI04(config)#spanning-tree mode ?
    pvst          Per-Vlan spanning tree mode
    rapid-pvst    Per-Vlan rapid spanning tree mode
MSWI04(config)#spanning-tree mode rapid
MSWI04(config)#spanning-tree mode rapid-pvst
MSWI04(config)#do write
```

Verificamos si el switch si cambio de PVST a Rapid STP.

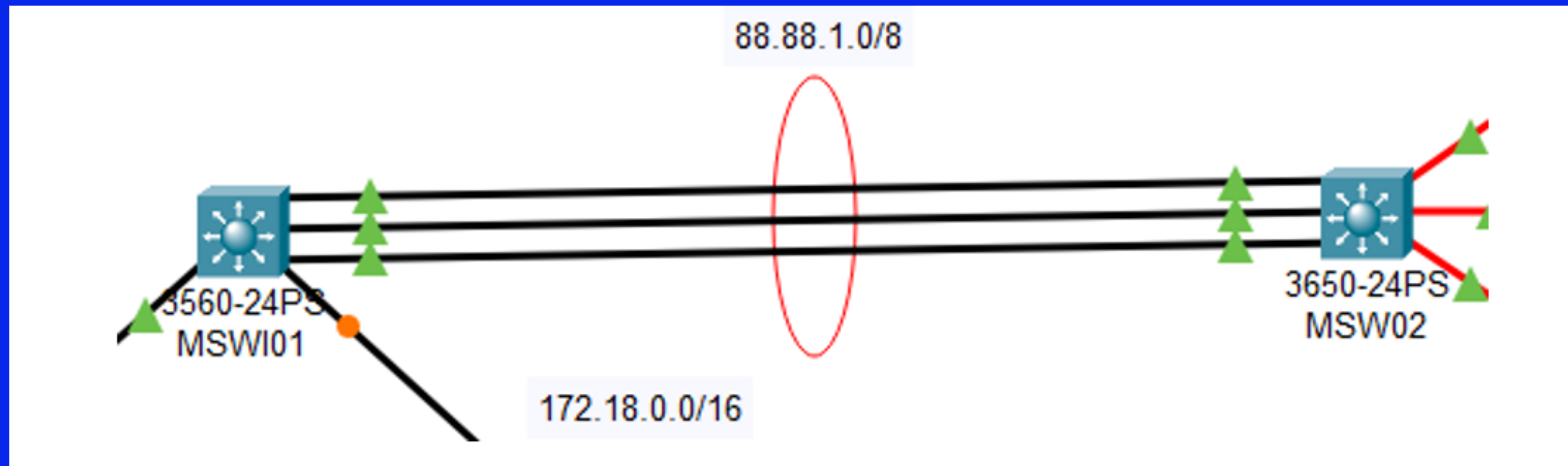
```
MSWI04#sh spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
    Root ID      Priority      32769
                Address      0000.0CA6.053A
                This bridge is the root
                Hello Time    2 sec   Max Age 20 sec   Forward Delay 15 sec

    Bridge ID    Priority      32769   (priority 32768 sys-id-ext 1)
                Address      0000.0CA6.053A
                Hello Time    2 sec   Max Age 20 sec   Forward Delay 15 sec
                Aging Time    20
```

El proceso anterior se realizó con todos los switches de la red.

LACP

Se configuraron las conexiones entre los switches 3560 y 3650 con LACP para agrupar los enlaces y equilibrar el tráfico entre los enlaces miembros para suministrar la carga.



Configuración en el switch 3560

Physical Config CLI Attributes

IOS Command Line Interface

```
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MSWI01(config)#inte
MSWI01(config)#interface po
MSWI01(config)#interface port-channel 1
MSWI01(config-if)#swit
MSWI01(config-if)#switchport tru
MSWI01(config-if)#switchport trunk enca
MSWI01(config-if)#switchport trunk encapsulation dot1q
MSWI01(config-if)#swit
MSWI01(config-if)#switchport tru
MSWI01(config-if)#switchport trunk all
MSWI01(config-if)#switchport trunk allowed vla
MSWI01(config-if)#switchport trunk allowed vlan al
MSWI01(config-if)#switchport trunk allowed vlan all
MSWI01(config-if)#exit
MSWI01(config)#int
MSWI01(config)#interface r
MSWI01(config)#interface range f0/
%LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed
```

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Physical Config CLI Attributes

IOS Command Line Interface

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

MSWI01(config-if-range)#
MSWI01(config-if-range)#channel-gr
MSWI01(config-if-range)#channel-group 1 m
MSWI01(config-if-range)#channel-group 1 mode activ
MSWI01(config-if-range)#channel-group 1 mode active
MSWI01(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

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

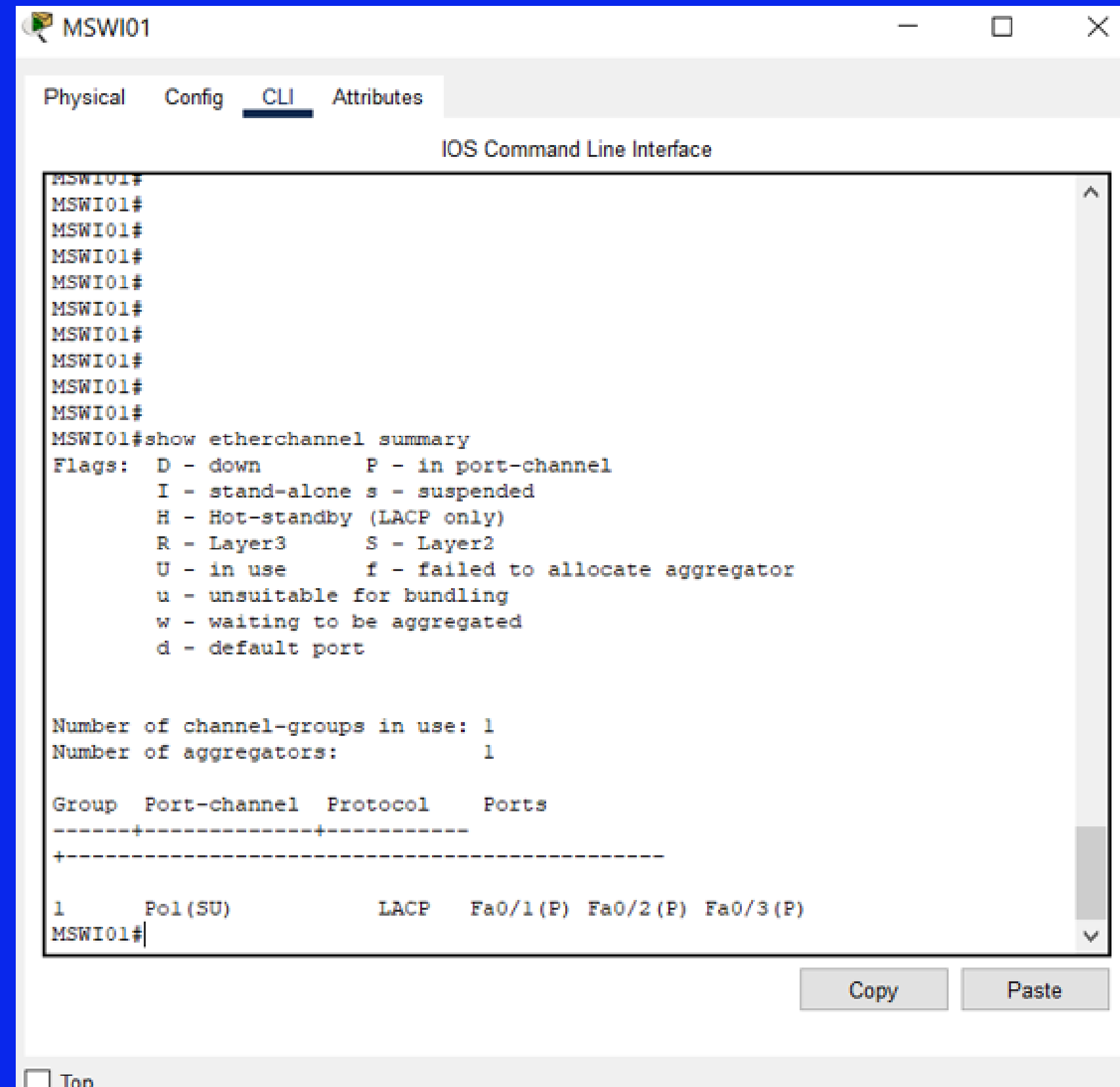
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

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

MSWI01(config-if-range)#
MSWI01(config-if-range)#
MSWI01(config-if-range)#
```

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Interfaces configuradas con LACP:



The screenshot shows a network device window titled "MSWI01" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The command history shows multiple "MSWI01#" prompts followed by the command "show etherchannel summary". The output of this command is as follows:

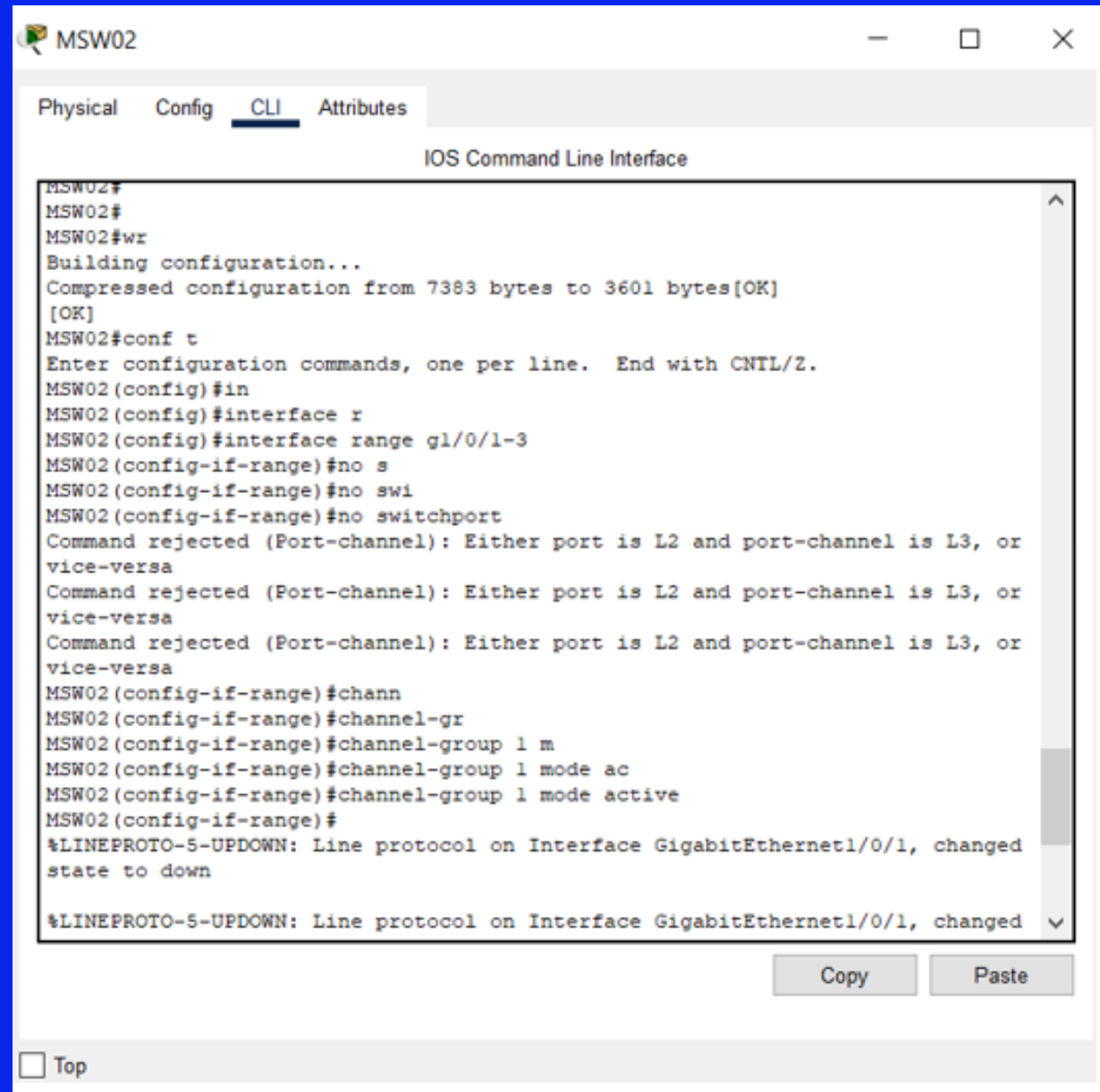
```
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#
MSWI01#show etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----
+-----+-----+-----
1      Po1 (SU)          LACP       Fa0/1 (P) Fa0/2 (P) Fa0/3 (P)
MSWI01#
```

At the bottom of the window, there are "Copy" and "Paste" buttons, and a "Top" link.

Configuración en el switch 3650:



MSW02

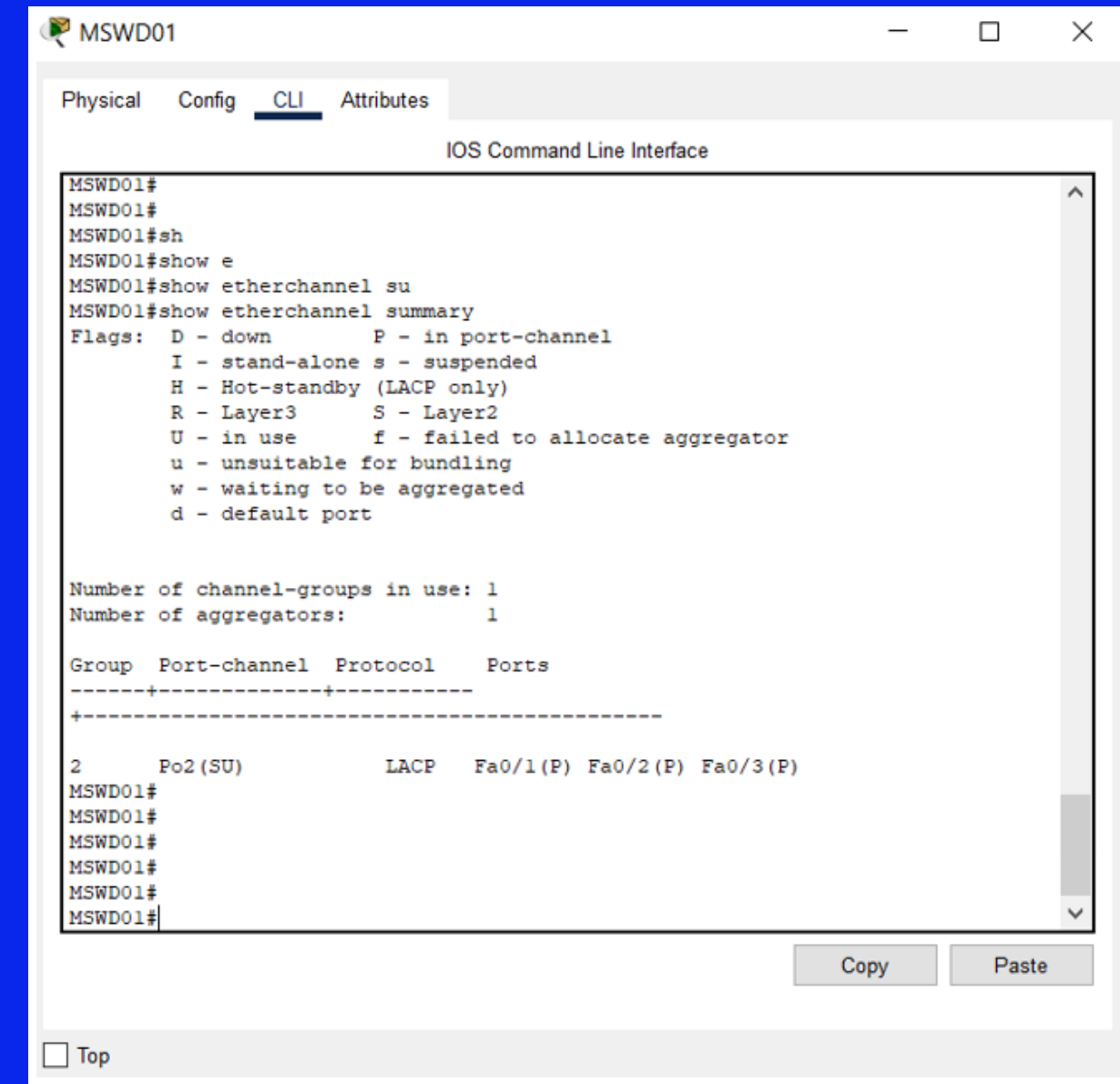
Physical Config CLI Attributes

IOS Command Line Interface

```
MSW02#
MSW02#
MSW02#wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
MSW02#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MSW02(config)#in
MSW02(config)#interface r
MSW02(config)#interface range g1/0/1-3
MSW02(config-if-range)#no s
MSW02(config-if-range)#no swi
MSW02(config-if-range)#no switchport
Command rejected (Port-channel): Either port is L2 and port-channel is L3, or
vice-versa
Command rejected (Port-channel): Either port is L2 and port-channel is L3, or
vice-versa
Command rejected (Port-channel): Either port is L2 and port-channel is L3, or
vice-versa
MSW02(config-if-range)#chann
MSW02(config-if-range)#channel-gr
MSW02(config-if-range)#channel-group 1 m
MSW02(config-if-range)#channel-group 1 mode ac
MSW02(config-if-range)#channel-group 1 mode active
MSW02(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/1, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/1, changed
```

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☐ Top



MSWD01

Physical Config CLI Attributes

IOS Command Line Interface

```
MSWD01#
MSWD01#
MSWD01#sh
MSWD01#show e
MSWD01#show etherchannel su
MSWD01#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone s - suspended
       H - Hot-standby (LACP only)
       R - Layer3        S - Layer2
       U - in use        f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----
2      Po2(SU)          LACP       Fa0/1(P) Fa0/2(P) Fa0/3(P)
MSWD01#
MSWD01#
MSWD01#
MSWD01#
MSWD01#
```

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