

EVALUACIÓN PRUEBA DE HABILIDADES PRACTICAS CCNA

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**UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD
ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA - ECBTI
INGENIERÍA ELECTRONICA**

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**Diplomado de profundización cisco
Diseño e implementación de soluciones integradas LAN / WLAN**

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Contenido

CONTENIDO.....	4
LISTA DE TABLAS.....	5
LISTA DE FIGURAS.....	6
GLOSARIO.....	7
RESUMEN.....	8
ABSTRACT.....	9
INTRODUCCIÓN.....	10
DESARROLLO.....	11
ESCENARIO 1.....	11
ESCENARIO 2.....	30
CONCLUSIONES.....	65
BIBLIOGRAFÍA.....	66

Lista de tablas

Tabla 1	Tabla de direccionamiento IP para topologia.....	11
Tabla 2	Asignacion configuraciones básicas.....	12
Tabla 3	Asignacion direccionamiento de host en PC1 y PC4.....	24
Tabla 4	configuración capa 2 de la red y soporte host.....	24
Tabla 5	Configuración protocolos de enrutamiento.....	37
Tabla 6	Configuración redundancia de primer salto.....	45

Listado de figura

Figura 1 Escenario 1.....	11
Figura 2 Verificar enlaces troncales en el Switch D1	31
Figura 3 Verificar enlaces troncales en el Switch D2	31
Figura 4 Verificar enlaces troncales en el Switch A1.....	31
Figura 5 Verificar Spanning-tree en el Switch D1.....	32
Figura 6 Verificar Spanning-tree en el Switch D2.....	32
Figura 7 Verificar LACP en Switch D1	33
Figura 8 Verificar LACP en Switch D2	33
Figura 9 Verificar LACP en Switch A1.....	34
Figura 10 Ping entre los dispositivos de la red local desde el PC1	34
Figura 11 IP del PC en DHCP entre los dispositivos de la red local desde PC2 ..	35
Figura 12 IP del PC en DHCP entre los dispositivos de la red local desde PC3 ..	35
Figura 13 Ping entre los dispositivos de la red local desde PC4	36
Figura 14 Tabla de enrutamiento R1	43
Figura 15 Tabla de enrutamiento R3	43
Figura 16 Tabla de enrutamiento D1	44
Figura 17 Tabla de enrutamiento D2	44
Figura 18 Ping Loopback 0 desde D1	45
Figura 19 Ping Loopback 0 desde D2.....	45
Figura 20 Standby en D1	50
Figura 21 Standby en D2.....	50

GLOSARIO

- BGP: Protocolo de puerta de enlace fronteriza. Protocolo de enrutamiento entre dominios que reemplaza a EGP. BGP intercambia información de accesibilidad con otros sistemas BGP. Está definido por RFC 1163.
- NTP: Es un protocolo de Internet para sincronizar los relojes de los sistemas informáticos a través del enrutamiento de paquetes en redes con latencia variable. NTP utiliza UDP como su capa de transporte, usando el puerto 123. Está diseñado para resistir los efectos de la latencia variable.
- OSPF: Primero, abra el camino más corto. Algoritmo de enrutamiento IGP jerárquico de estado de enlace propuesto como sucesor de RIP en la comunidad de Internet. Las características de OSPF incluyen enrutamiento de menor costo, enrutamiento de múltiples rutas y equilibrio de carga. OSPF se derivó de una versión anterior del protocolo IS-IS.
- VLAN: LAN virtual. Grupo de dispositivos en una o más LAN que están configurados (usando software de administración) para que puedan comunicarse como si estuvieran conectados al mismo cable, cuando en realidad están ubicados en varios segmentos de LAN diferentes. Debido a que las VLAN se basan en conexiones lógicas en lugar de físicas, son extremadamente flexibles.
- STP: Par trenzado blindado. Medio de cableado de dos pares utilizado en una variedad de implementaciones de red. El cableado STP tiene una capa de aislamiento blindado para reducir la EMI

RESUMEN

En esta actividad relacionada con la prueba de habilidades, configuraremos una red para que haya accesibilidad general de extremo a extremo, para que los hosts tengan soporte de puerta de enlace predeterminada confiable, y para que los protocolos OSPF y BGP configurados estén operativos dentro de la parte correspondiente a la “Red de la empresa” en la topología. Todas las configuraciones ejecutadas en esta actividad serán verificadas de acuerdo con la guía de trabajo y las especificaciones dadas

ABSTRACT

In this related activity to the skills test, we will configure a network so that there is general end-to-end accessibility, so that hosts have reliable default gateway support, and so that configured OSPF and BGP protocols are operational within of the part corresponding to the “Company Network” in the topology. All the configurations executed in this activity will be verified according to the work guide and the given specifications

INTRODUCCION

En esta etapa del curso presentaremos un adelanto de las actividades de evaluación de nuestro programa que ya han sido resueltas y buscaremos identificar competencias y habilidades que se han ido adquiriendo durante el transcurso del curso. Poner a prueba las habilidades adquiridas en el trabajo realizado y ser capaz de resolver problemas relacionados con diversos aspectos del Networking.

Para esta actividad se asignarán actividades a realizar en un lugar remoto y se ejecutará un software, el cual será la principal herramienta para realizar los procesos solicitados por la guía y de esta manera poder documentar la solución correspondiente.

Finalmente se realiza la configuración de cada uno de los dispositivos, se presentará un informe con la información detallada y se adjunta la configuración realizada.

ESCENARIO 1

Topology

Considering the following image:

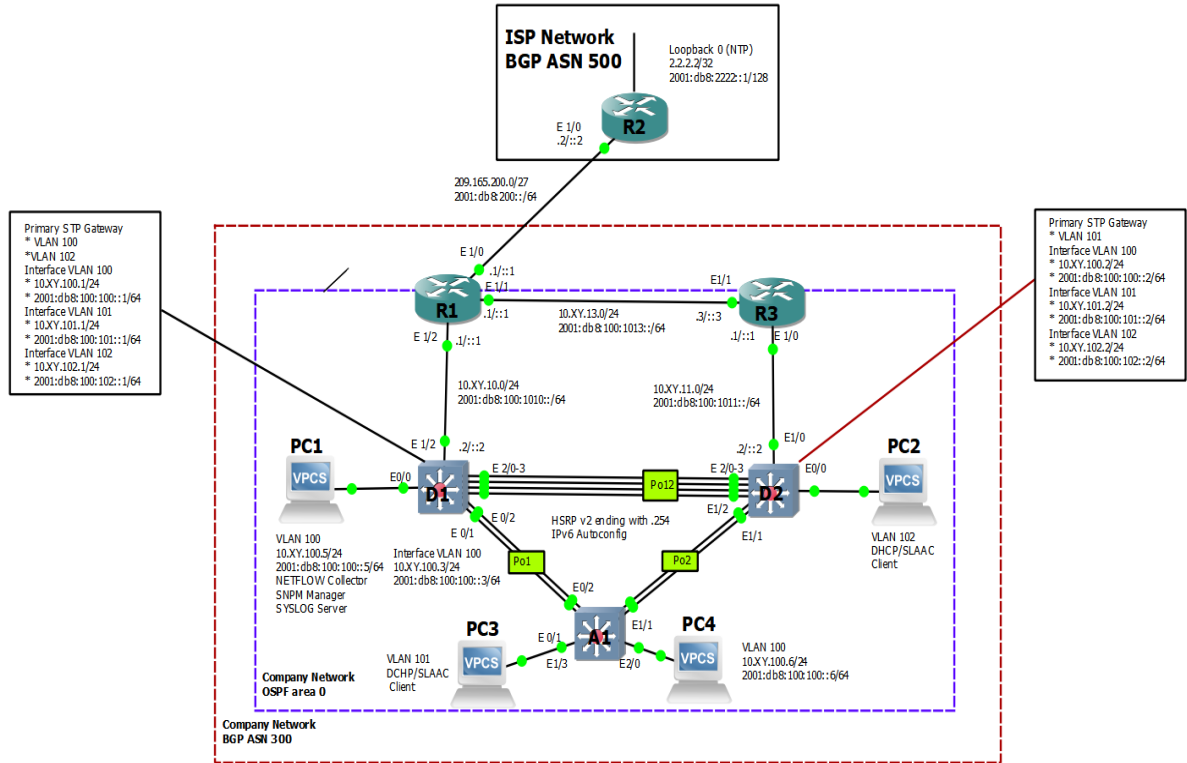


Figure 1. Topology representing scenario 1. Fuente Autor

Addressing Table

Tabla 1 Tabla de direccionamiento IP para topología

Device	Interface	IPv4 Address	IPv6 Address	IPv6 Link-Local
R1	E1/0	209.165.200.22 5/27	2001:db8:200::1/64	fe80::1:1
	E1/2	10.95.10.1/24	2001:db8:100:1010::1 /64	fe80::1:2
	E1/1	10.95.13.1/24	2001:db8:100:1013::1 /64	fe80::1:3
R2	E1/0	209.165.200.22 6/27	2001:db8:200::2/64	fe80::2:1
	Loopback0	2.2.2.2/32	2001:db8:2222::1/128	fe80::2:3
R3	E1/0	10.95.11.1/24	2001:db8:100:1011::1 /64	fe80::3:2
	E1/1	10.95.13.3/24	2001:db8:100:1013::3 /64	fe80::3:3
D1	E1/2	10.95.10.2/24	2001:db8:100:1010::2 /64	fe80::d1:1
	VLAN 100	10.95.100.1/24	2001:db8:100:100::1/ 64	fe80::d1:2
	VLAN 101	10.95.101.1/24	2001:db8:100:101::1/ 64	fe80::d1:3
	VLAN 102	10.60.102.1/24	2001:db8:100:102::1/ 64	fe80::d1:4
D2	E1/0	10.95.11.2/24	2001:db8:100:1011::2 /64	fe80::d2:1
	VLAN 100	10.95.100.2/24	2001:db8:100:100::2/ 64	fe80::d2:2
	VLAN 101	10.95.101.2/24	2001:db8:100:101::2/ 64	fe80::d2:3
	VLAN 102	10.95.102.2/24	2001:db8:100:102::2/ 64	fe80::d2:4

Device	Interface	IPv4 Address	IPv6 Address	IPv6 Link-Local
A1	VLAN 100	10.95.100.3/23	2001:db8:100:100::3/64	fe80::a1:1
PC1	NIC	10.95.100.5/24	2001:db8:100:100::5/64	EUI-64
PC2	NIC	DHCP	SLAAC	EUI-64
PC3	NIC	DHCP	SLAAC	EUI-64
PC4	NIC	10.95.100.6/24	2001:db8:100:100::6/64	EUI-64

Objectives

Part 1: Build the Network and Configure Basic Device Settings and Interface Addressing

Part 2: Configure the Layer 2 Network and Host Support

Part 3: Configure Routing Protocols

Part 4: Configure First-Hop Redundancy

Background / Scenario

In this skills assessment, you are responsible for completing the configuration of the network so there is full end-to-end reachability, so the hosts have reliable default gateway support, and so that management protocols are operational within the “Company Network” part of the topology. Be careful to verify that your configurations meet the provided specifications and that the devices perform as required.

Devices utilized

- 3 Routers (Cisco 7200). [Click on the download link of the images for GNS3.](#)
- 3 Switches (Cisco IOU L2). [Click on the download link of the images for GNS3.](#)
- 4 PCs (Use the GNS3's VPCS)

Build the Network and Configure Basic Device Settings and Interface Addressing
Cable the network as shown in the topology.

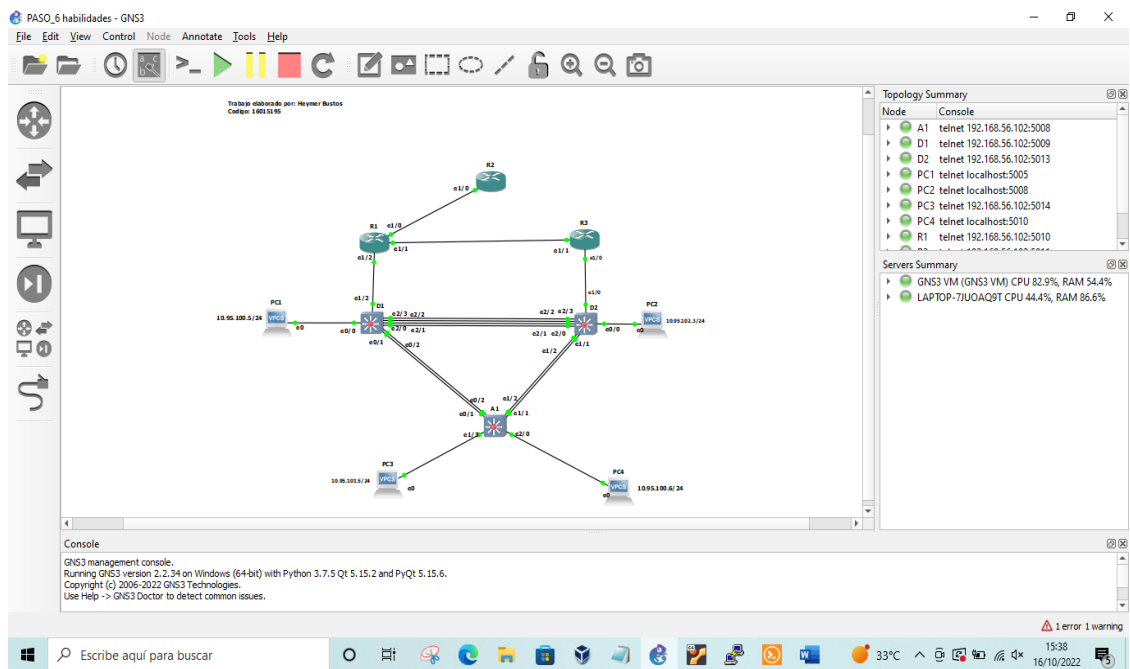


Figure 2. The previous image shows the connection between the different devices based on the instructions given.

Configure basic settings for each device.

Router R1

Tabla 2 Asignacion configuraciones básicas

```

hostname R1
ipv6 unicast-routing
no ip domain lookup
banner motd # R1, ENCOR Skills Assessment#
line con 0
  exec-timeout 0 0
  logging synchronous
exit
interface e1/0

```

```
ip address 209.165.200.225 255.255.255.224
ipv6 address fe80::1:1 link-local
ipv6 address 2001:db8:200::1/64
no shutdown
exit
interface e1/2
ip address 10.95.10.1 255.255.255.0
ipv6 address fe80::1:2 link-local
ipv6 address 2001:db8:100:1010::1/64
no shutdown
exit
interface e1/1
ip address 10.95.13.1 255.255.255.0
ipv6 address fe80::1:3 link-local
ipv6 address 2001:db8:100:1013::1/64
no shutdown
exit
```

The previous code corresponds to the programming of the R1 router where the name of the device, the interfaces, the IP addresses, among others, are changed.

Router R2

```
hostname R2
ipv6 unicast-routing
no ip domain lookup
banner motd # R2, ENCOR Skills Assessment#
line con 0
exec-timeout 0 0
logging synchronous
exit
```

```
interface e1/0
ip address 209.165.200.226 255.255.255.224
ipv6 address fe80::2:1 link-local
ipv6 address 2001:db8:200::2/64
no shutdown
exit
interface Loopback 0
ip address 2.2.2.2 255.255.255.255
ipv6 address fe80::2:3 link-local
ipv6 address 2001:db8:2222::1/128
no shutdown
exit
```

The previous code corresponds to the programming of the R2 router where the name of the device, the interfaces, the IP addresses, among others, are changed.

Router R3

```
hostname R3
ipv6 unicast-routing
no ip domain lookup
banner motd # R3, ENCOR Skills Assessment#
line con 0
exec-timeout 0 0
logging synchronous
exit
interface e1/0
ip address 10.95.11.1 255.255.255.0
ipv6 address fe80::3:2 link-local
ipv6 address 2001:db8:100:1011::1/64
no shutdown
exit
interface e1/1
```



```
ip address 10.95.13.3 255.255.255.0
ipv6 address fe80::3:3 link-local
ipv6 address 2001:db8:100:1010::2/64
no shutdown
exit
```

The previous code corresponds to the programming of the R3 router where the name of the device, the interfaces, the IP addresses, among others, are changed.

Switch D1

```
hostname D1
ip routing
ipv6 unicast-routing
no ip domain lookup
banner motd # D1, ENCOR Skills Assessment#
line con 0
  exec-timeout 0 0
  logging synchronous
  exit
vlan 100
  name Management
  exit
vlan 101
  name UserGroupA
  exit
vlan 102
  name UserGroupB
  exit
vlan 999
  name NATIVE
  exit
interface e1/2
```

```
no switchport
ip address 10.95.10.2 255.255.255.0
ipv6 address fe80::d1:1 link-local
ipv6 address 2001:db8:100:1010::2/64
no shutdown
exit
interface vlan 100
ip address 10.95.100.1 255.255.255.0
ipv6 address fe80::d1:2 link-local
ipv6 address 2001:db8:100:100::1/64
no shutdown
exit
interface vlan 101
ip address 10.95.101.1 255.255.255.0
ipv6 address fe80::d1:3 link-local
ipv6 address 2001:db8:100:101::1/64
no shutdown
exit
interface vlan 102
ip address 10.95.102.1 255.255.255.0
ipv6 address fe80::d1:4 link-local
ipv6 address 2001:db8:100:102::1/64
no shutdown
exit
ip dhcp excluded-address 10.60.101.1 10.60.101.109
ip dhcp excluded-address 10.60.101.141 10.60.101.254
ip dhcp excluded-address 10.60.102.1 10.60.102.109
ip dhcp excluded-address 10.60.102.141 10.60.102.254
ip dhcp pool VLAN-101
network 10.95.101.0 255.255.255.0
default-router 10.95.101.254
```

```
exit
ip dhcp pool VLAN-102
network 10.95.102.0 255.255.255.0
default-router 10.95.102.254
exit
interface range e0/0-3,e1/0-1,e1/3,e2/0-3,e3/0-3
shutdown
exit
```

In the previous Code, it corresponds to the programming of switch D1, in which the name of the device, the warning notice, the name of each of the VLANs, the IP addresses, the Ethernet interfaces, among others, are configured.

Switch D2

```
hostname D2
ip routing
ipv6 unicast-routing
no ip domain lookup
banner motd # D2, ENCOR Skills Assessment#
line con 0
exec-timeout 0 0
logging synchronous
exit
vlan 100
name Management
exit
vlan 101
name UserGroupA
exit
vlan 102
```

```
name UserGroupB
exit
vlan 999
name NATIVE
exit
interface e1/0
no switchport
ip address 10.95.11.2 255.255.255.0
ipv6 address fe80::d1:1 link-local
ipv6 address 2001:db8:100:1011::2/64
no shutdown
exit
interface vlan 100
ip address 10.95.100.2 255.255.255.0
ipv6 address fe80::d2:2 link-local
ipv6 address 2001:db8:100:100::2/64
no shutdown
exit
interface vlan 101
ip address 10.95.101.2 255.255.255.0
ipv6 address fe80::d2:3 link-local
ipv6 address 2001:db8:100:101::2/64
no shutdown
exit
interface vlan 102
ip address 10.95.102.2 255.255.255.0
ipv6 address fe80::d2:4 link-local
ipv6 address 2001:db8:100:102::2/64
no shutdown
exit
ip dhcp excluded-address 10.95.101.1 10.60.101.209
```

```
ip dhcp excluded-address 10.95.101.241 10.60.101.254
ip dhcp excluded-address 10.95.102.1 10.60.102.209
ip dhcp excluded-address 10.95.102.241 10.60.102.254
ip dhcp pool VLAN-101
  network 10.95.101.0 255.255.255.0
  default-router 10.95.0.101.254
  exit
ip dhcp pool VLAN-102
  network 10.95.102.0 255.255.255.0
  default-router 10.95.102.254
  exit
interface range e0/0-3,e1/1-3,e2/0-3,e3/0-3
  shutdown
  exit
```

In the previous Code, it corresponds to the programming of switch D2, in which the name of the device, the warning notice, the name of each of the VLANs, the IP addresses, the Ethernet interfaces, among others, are configured.

Switch A1

```
hostname A1
no ip domain lookup
banner motd # A1, ENCOR Skills Assessment#
line con 0
  exec-timeout 0 0
  logging synchronous
  exit
vlan 100
  name Management
  exit
vlan 101
```

```

name UserGroupA
exit
vlan 102
name UserGroupB
exit
vlan 999
name NATIVE
exit
interface vlan 100
ip address 10.95.100.3 255.255.255.0
ipv6 address fe80::a1:1 link-local
ipv6 address 2001:db8:100:100::3/64
no shutdown
exit
interface range e0/0,e0/3,e1/0,e2/1-3,e3/0-3
shutdown
exit

```

In the previous Code, it corresponds to the programming of switch A1, in which the name of the device, the warning notice, the name of each of the VLANs, the IP addresses, the Ethernet interfaces, among others, are configured.

- a. Save the running configuration to startup-config on all devices.
- b. Configure PC 1 and PC 4 host addressing as shown in the addressing table. Assign a default gateway address of 10.60.100.254 which will be the HSRP virtual IP address used in Part 4.

Configure the Layer 2 Network and Host Support

In this part of the Skills Assessment, you will complete the Layer 2 network configuration and set up basic host support. At the end of this part, all the switches should be able to communicate. PC2 and PC3 should receive addressing from DHCP and SLAAC.

Your configuration tasks are as follows:

Tabla 3 Asignacion direccionamiento de host en PC1 y PC4

Task#	Task	Specification	Points
2.1	On all switches, configure IEEE 802.1Q trunk interfaces on interconnecting switch links	Enable 802.1Q trunk links between: <ul style="list-style-type: none"> • D1 and D2 • D1 and A1 • D2 and A1 	6
2.2	On all switches, change the native VLAN on trunk links.	Use VLAN 999 as the native VLAN.	6
2.3	On all switches, enable the Rapid Spanning-Tree Protocol.	Use Rapid Spanning Tree.	3
2.4	On D1 and D2, configure the appropriate RSTP root bridges based on the information in the topology diagram. D1 and D2 must provide backup in case of root bridge failure.	Configure D1 and D2 as root for the appropriate VLANs with mutually supporting priorities in case of switch failure.	2
2.5	On all switches, create LACP EtherChannels as shown in the topology diagram.	Use the following channel numbers: <ul style="list-style-type: none"> • D1 to D2 – Port channel 12 • D1 to A1 – Port channel 1 • D2 to A1 – Port channel 2 	3
2.6	On all switches, configure host access ports connecting to PC1, PC2, PC3, and PC4.	Configure access ports with appropriate VLAN settings as shown in the topology diagram. Host ports should transition immediately to forwarding state.	4
2.7	Verify IPv4 DHCP services.	PC2 and PC3 are DHCP clients and should be receiving valid IPv4 addresses.	1

Task#	Task	Specification	Points
2.8	Verify local LAN connectivity.	<p>PC1 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.100.1 • D2: 10.95.100.2 • PC4: 10.95.100.6 <p>PC2 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.102.1 • D2: 10.95.102.2 <p>PC3 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.101.1 • D2: 10.95.101.2 <p>PC4 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.100.1 • D2: 10.95.100.2 • PC1: 10.95.100.5 	1

Switch D1

```

interface range e2/0-3
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk native vlan 999
channel-group 12 mode active
no shutdown
exit

interface range e0/1-2
switchport trunk encapsulation dot1q

```



```
switchport mode trunk
switchport trunk native vlan 999
channel-group 1 mode active
no shutdown
exit
spanning-tree mode rapid-pvst
spanning-tree vlan 100,102 root primary
spanning-tree vlan 101 root secondary
interface e0/0
switchport mode access
switchport access vlan 100
spanning-tree portfast
no shutdown
exit
end
```

The previous Code corresponds to the programming of switch D1, in which the different ranges of interfaces used, the encapsulation mode, the Trunk operation mode, the priority VLANs, among others, are configured.

Switch D2.

```
interface range e2/0-3
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk native vlan 999
channel-group 12 mode active
no shutdown
exit
interface range e1/1-2
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk native vlan 999
```

```
channel-group 2 mode active
no shutdown
exit
spanning-tree mode rapid-pvst
spanning-tree vlan 101 root primary
spanning-tree vlan 100,102 root secondary
interface e0/0
switchport mode access
switchport access vlan 102
spanning-tree portfast
no shutdown
exit
end
```

The previous Code corresponds to the programming of switch D2, in which the different ranges of interfaces used, the encapsulation mode, the Trunk operation mode, the priority VLANs, among others, are configured.

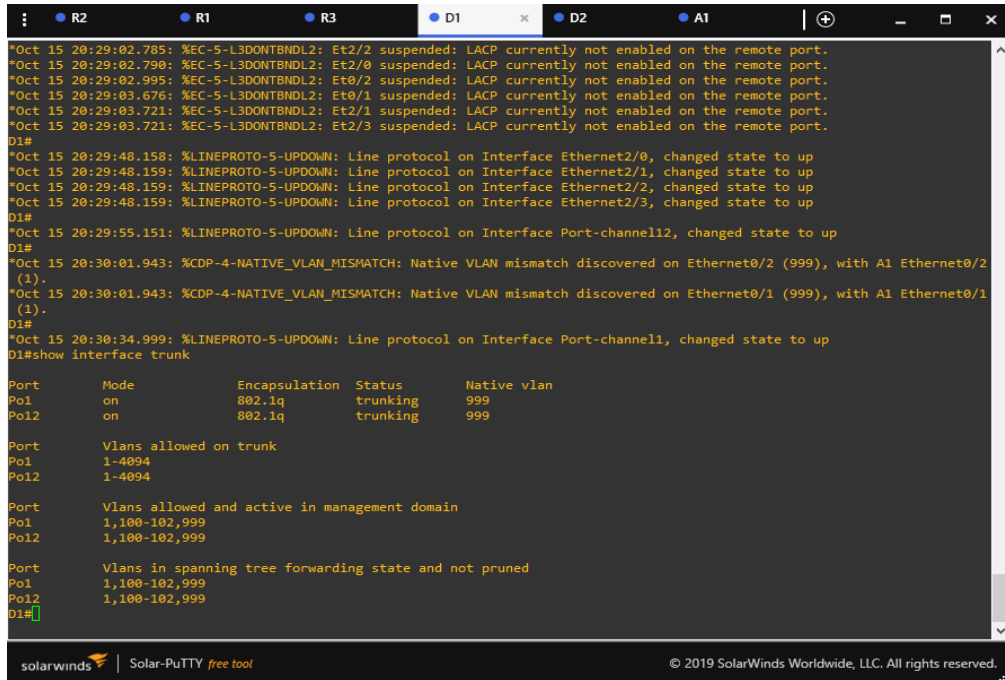
Switch A1.

```
spanning-tree mode rapid-pvst
interface range e0/1-2
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk native vlan 999
channel-group 1 mode active
no shutdown
exit
interface range e1/1-2
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk native vlan 999
```

```
channel-group 2 mode active
no shutdown
exit
interface e1/3
switchport mode access
switchport access vlan 101
spanning-tree portfast
no shutdown
exit
interface e2/0
switchport mode access
switchport access vlan 100
spanning-tree portfast
no shutdown
exit
end
```

The previous Code corresponds to the programming of switch A1, in which the different ranges of interfaces used, the encapsulation mode, the Trunk operation mode, the priority VLANs, among others, are configured.

Verification interfaces trunk. D1



```
Oct 15 20:29:02.785: %EC-5-L3DONTBNL2: Et2/2 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:02.790: %EC-5-L3DONTBNL2: Et2/0 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:02.995: %EC-5-L3DONTBNL2: Et0/2 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:03.676: %EC-5-L3DONTBNL2: Et0/1 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:03.721: %EC-5-L3DONTBNL2: Et2/1 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:03.721: %EC-5-L3DONTBNL2: Et2/3 suspended: LACP currently not enabled on the remote port.
D1#
Oct 15 20:29:48.158: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/0, changed state to up
Oct 15 20:29:48.159: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/1, changed state to up
Oct 15 20:29:48.159: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/2, changed state to up
Oct 15 20:29:48.159: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/3, changed state to up
D1#
Oct 15 20:29:55.151: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel12, changed state to up
D1#
Oct 15 20:30:01.943: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet0/2 (999), with A1 Ethernet0/2 (1).
Oct 15 20:30:01.943: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet0/1 (999), with A1 Ethernet0/1 (1).
D1#
Oct 15 20:30:34.999: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
D1#show interface trunk

Port      Mode      Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking   999
Po12      on        802.1q         trunking   999

Port      Vlans allowed on trunk
Po1       1-4094
Po12      1-4094

Port      Vlans allowed and active in management domain
Po1       1,100-102,999
Po12      1,100-102,999

Port      Vlans in spanning tree forwarding state and not pruned
Po1       1,100-102,999
Po12      1,100-102,999
D1#
```

Figure 3. The image shows verification of the interfaces in trunk mode on device D1.
D2.



```
(1).
Oct 15 20:29:55.212: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/1 (999), with A1 Ethernet1/1 (1).
Oct 15 20:29:56.220: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/2 (999), with A1 Ethernet1/2 (1).
Oct 15 20:29:56.220: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/1 (999), with A1 Ethernet1/1 (1).
D2(config)# end
Oct 15 20:29:57.229: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/2 (999), with A1 Ethernet1/2 (1).
Oct 15 20:29:57.229: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/1 (999), with A1 Ethernet1/1 (1).
D2(config)# end
Oct 15 20:29:58.181: %EC-5-L3DONTBNL2: Et1/1 suspended: LACP currently not enabled on the remote port.
Oct 15 20:29:58.906: %EC-5-L3DONTBNL2: Et1/2 suspended: LACP currently not enabled on the remote port.
D2(config)# end
D2#
Oct 15 20:30:12.928: %SYS-5-CONFIG_I: Configured from console by console
D2#
Oct 15 20:30:34.875: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up
D2#show interface trunk

Port      Mode      Encapsulation  Status      Native vlan
Po2       on        802.1q         trunking   999
Po12      on        802.1q         trunking   999

Port      Vlans allowed on trunk
Po2       1-4094
Po12      1-4094

Port      Vlans allowed and active in management domain
Po2       1,100-102,999
Po12      1,100-102,999

Port      Vlans in spanning tree forwarding state and not pruned
Po2       1,100-102,999
Po12      1,100-102,999
D2#
```

Figure 4. The image shows verification of the interfaces in trunk mode on device D2. A1.

```

A1(config-if)#switchport mode access
A1(config-if)#switchport access vlan 100
A1(config-if)#spanning-tree portfast
Warning: portfast should only be enabled on ports connected to a single
host. Connecting hubs, concentrators, switches, bridges, etc... to this
interface when portfast is enabled, can cause temporary bridging loops.
Use with CAUTION

Portfast has been configured on Ethernet2/0 but will only
have effect when the interface is in a non-trunking mode.
A1(config-if)#no shutdown
A1(config-if)#exit
A1(config)#end
A1#
A1#
*Oct 15 20:30:28.253: %SYS-5-CONFIG_I: Configured from console by console
A1#
*Oct 15 20:30:34.884: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up
*Oct 15 20:30:34.999: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
A1#
A1#show interface trunk

Port      Mode          Encapsulation  Status        Native vlan
Po2       on             802.1q         trunking     999
Po1       on             802.1q         trunking     999

Port      Vlans allowed on trunk
Po2       1-4094
Po1       1-4094

Port      Vlans allowed and active in management domain
Po2       1,100-102,999
Po1       1,100-102,999

Port      Vlans in spanning tree forwarding state and not pruned
Po2       101
Po1       1,100,102,999
A1#

```

Figure 5. The image shows the verification of the connection to VLANs 100 and 101 and their respective Ethernet ports.

2.8	Verify local LAN connectivity.	<p>PC1 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.100.1 • D2: 10.95.100.2 • PC4: 10.95.100.6 <p>PC2 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.102.1 • D2: 10.95.102.2 <p>PC3 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.101.1 • D2: 10.95.101.2 <p>PC4 should successfully ping:</p> <ul style="list-style-type: none"> • D1: 10.95.100.1 • D2: 10.95.100.2 <p>PC1: 10.95.100.5</p>
-----	--------------------------------	---

IP configuration on pcs

PC1.

D1: D1: 10.95.100.1

```
NAME IP/MASK GATEWAY MAC LPORT RHOST:PORT
VPCS1 0.0.0.0/0 0.0.0.0 00:50:79:66:68:02 10000 127.0.0.1:10001
      fe80::250:79ff:fe66:6802/64

VPCS> address 10.95.100.5/24
Bad command: "address 10.95.100.5/24". Use ? for help.

VPCS> ip 10.95.100.5 255.255.255.0
Checking for duplicate address...
PC1 : 10.95.100.5 255.255.255.0

VPCS> ping 10.95.100.1
host (10.95.100.1) not reachable

VPCS> ping 10.95.100.1
84 bytes from 10.95.100.1 icmp_seq=1 ttl=255 time=0.604 ms
84 bytes from 10.95.100.1 icmp_seq=2 ttl=255 time=0.765 ms
84 bytes from 10.95.100.1 icmp_seq=3 ttl=255 time=0.909 ms
84 bytes from 10.95.100.1 icmp_seq=4 ttl=255 time=0.863 ms
84 bytes from 10.95.100.1 icmp_seq=5 ttl=255 time=1.051 ms

VPCS> █
```

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Figure 6. Figures 6, 7 and 8 show the evidence of connection between PC1 and devices D1, D2 and PC4 respectively.

D2: 10.95.100.2

```
VPCS> ping 10.95.100.2
84 bytes from 10.95.100.2 icmp_seq=1 ttl=255 time=1.020 ms
84 bytes from 10.95.100.2 icmp_seq=2 ttl=255 time=1.327 ms
84 bytes from 10.95.100.2 icmp_seq=3 ttl=255 time=0.929 ms
84 bytes from 10.95.100.2 icmp_seq=4 ttl=255 time=0.797 ms
84 bytes from 10.95.100.2 icmp_seq=5 ttl=255 time=0.880 ms

VPCS> █
```

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Figure 8. PC2.

- D1:10.95.102.1

```
VPCS> ping 10.95.102.1
84 bytes from 10.95.102.1 icmp_seq=1 ttl=255 time=1.323 ms
84 bytes from 10.95.102.1 icmp_seq=2 ttl=255 time=2.811 ms
84 bytes from 10.95.102.1 icmp_seq=3 ttl=255 time=0.938 ms
84 bytes from 10.95.102.1 icmp_seq=4 ttl=255 time=1.581 ms
84 bytes from 10.95.102.1 icmp_seq=5 ttl=255 time=4.382 ms

VPCS> █
```

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Figure 9. Figures 9 and 10 show the evidence of connection between PC2 and devices D1, D2 respectively.

- D2: 10.95.102.2

```
VPCS> ping 10.95.102.2
84 bytes from 10.95.102.2 icmp_seq=1 ttl=255 time=1.321 ms
84 bytes from 10.95.102.2 icmp_seq=2 ttl=255 time=1.471 ms
84 bytes from 10.95.102.2 icmp_seq=3 ttl=255 time=0.867 ms
84 bytes from 10.95.102.2 icmp_seq=4 ttl=255 time=0.738 ms
84 bytes from 10.95.102.2 icmp_seq=5 ttl=255 time=1.985 ms

VPCS> █
```

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Figure 10.

D1: 10.95.101.1

```
84 bytes from 10.95.101.1 icmp_seq=1 ttl=255 time=1.860 ms
84 bytes from 10.95.101.1 icmp_seq=2 ttl=255 time=1.410 ms
84 bytes from 10.95.101.1 icmp_seq=3 ttl=255 time=2.403 ms
84 bytes from 10.95.101.1 icmp_seq=4 ttl=255 time=2.221 ms
84 bytes from 10.95.101.1 icmp_seq=5 ttl=255 time=2.029 ms

VPCS> 
```

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Figure 11. Figures 11 and 12 show the connection evidence between PC3 and devices D1, D2 respectively.

- D2: 10.95.101.2

```
84 bytes from 10.95.101.2 icmp_seq=1 ttl=255 time=1.160 ms
84 bytes from 10.95.101.2 icmp_seq=2 ttl=255 time=1.105 ms
84 bytes from 10.95.101.2 icmp_seq=3 ttl=255 time=1.406 ms
84 bytes from 10.95.101.2 icmp_seq=4 ttl=255 time=1.510 ms
84 bytes from 10.95.101.2 icmp_seq=5 ttl=255 time=1.725 ms

VPCS> 
```

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Figure 12. PC4.

D1: 10.95.100.1

```
VPCS> ping 10.95.100.1
34 bytes from 10.95.100.1 icmp_seq=1 ttl=255 time=1.711 ms
34 bytes from 10.95.100.1 icmp_seq=2 ttl=255 time=5.378 ms
34 bytes from 10.95.100.1 icmp_seq=3 ttl=255 time=3.829 ms
34 bytes from 10.95.100.1 icmp_seq=4 ttl=255 time=2.100 ms
34 bytes from 10.95.100.1 icmp_seq=5 ttl=255 time=3.481 ms

VPCS> █
```

Figure 13. Figures 13 and 14 show the connection evidence between PC4 and devices D1 and PC1 respectively.

- PC1: 10.60.100.5

```
VPCS> ping 10.95.100.5
10.95.100.5 icmp_seq=1 ttl=64 time=0.001 ms
10.95.100.5 icmp_seq=2 ttl=64 time=0.001 ms
10.95.100.5 icmp_seq=3 ttl=64 time=0.001 ms
10.95.100.5 icmp_seq=4 ttl=64 time=0.001 ms
10.95.100.5 icmp_seq=5 ttl=64 time=0.001 ms

VPCS> █
```

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Figure 14

```
VPCS> ping 10.95.100.6
34 bytes from 10.95.100.6 icmp_seq=1 ttl=64 time=1.325 ms
34 bytes from 10.95.100.6 icmp_seq=2 ttl=64 time=1.357 ms
34 bytes from 10.95.100.6 icmp_seq=3 ttl=64 time=1.570 ms
34 bytes from 10.95.100.6 icmp_seq=4 ttl=64 time=1.617 ms
34 bytes from 10.95.100.6 icmp_seq=5 ttl=64 time=2.220 ms

VPCS> █
```

ESCENARIO 2

En este escenario se continua con la configuración del escenario 1. El primer paso es configurar los protocolos de enrutamiento, desde los dispositivos, en la tabla 5 se muestran los comandos para dicha configuración.

Tabla 1 Configuración protocolos de enrutamiento

Router R1	<pre>Config t router ospf 4 router-id 0.0.4.1 network 10.73.10.0 0.0.0.255 area 0 network 10.73.13.0 0.0.0.255 area 0 default-information originate exit ipv6 router ospf 6 router-id 0.0.6.1 default-information originate exit interface e1/2 ipv6 ospf 6 area 0 exit interface e1/1 ipv6 ospf 6 area 0 exit ip route 10.0.0.0 255.0.0.0 null 0 ipv6 route 2001:db8:100::/48 null 0 router bgp 300</pre>
------------------	--

	<pre> bgp router-id 1.1.1.1 neighbor 209.165.200.226 remote-as 500 neighbor 2001:db8:200::2 remote-as 500 address-family ipv4 unicast neighbor 209.165.200.226 activate no neighbor 2001:db8:200::2 activate network 10.0.0.0 mask 255.0.0.0 exit-address-family address-family ipv6 unicast no neighbor 209.165.200.226 activate neighbor 2001:db8:200::2 activate network 2001:db8:100::/48 exit-address-family </pre>
Router R2	<pre> Config t ip route 0.0.0.0 0.0.0.0 loopback 0 ipv6 route ::/0 loopback 0 router bgp 500 bgp router-id 2.2.2.2 neighbor 209.165.200.225 remote-as 300 neighbor 2001:db8:200::1 remote-as 300 address-family ipv4 neighbor 209.165.200.225 activate no neighbor 2001:db8:200::1 activate network 2.2.2.2 mask 255.255.255.255 </pre>

	<pre> network 0.0.0.0 exit-address-family address-family ipv6 no neighbor 209.165.200.225 activate neighbor 2001:db8:200::1 activate network 2001:db8:2222::1/128 network ::/0 exit-address-family </pre>
Router R3	<pre> Config t router ospf 4 router-id 0.0.4.3 network 10.73.11.0 0.0.0.255 area 0 network 10.73.13.0 0.0.0.255 area 0 exit ipv6 router ospf 6 router-id 0.0.6.3 exit interface e1/0 ipv6 ospf 6 area 0 exit interface e1/1 ipv6 ospf 6 area 0 exit </pre>
Switch D1	<pre> Config t </pre>

```
router ospf 4
router-id 0.0.4.131
network 10.73.10.0 0.0.0.255 area 0
network 10.73.100.0 0.0.0.255 area 0
network 10.73.101.0 0.0.0.255 area 0
network 10.73.102.0 0.0.0.255 area 0
passive-interface default
no passive-interface e1/2
exit
ipv6 router ospf 6
router-id 0.0.6.131
passive-interface default
no passive-interface e1/2
exit
interface e1/2
ipv6 ospf 6 area 0
exit
interface vlan 100
ipv6 ospf 6 area 0
exit
interface vlan 101
ipv6 ospf 6 area 0
exit
interface vlan 102
```

	<pre> ipv6 ospf 6 area 0 exit </pre>
Switch D2	<pre> Config t router ospf 4 router-id 0.0.4.132 network 10.73.11.0 0.0.0.255 area 0 network 10.73.100.0 0.0.0.255 area 0 network 10.73.101.0 0.0.0.255 area 0 network 10.73.102.0 0.0.0.255 area 0 passive-interface default no passive-interface e1/0 exit ipv6 router ospf 6 router-id 0.0.6.132 passive-interface default no passive-interface e1/0 exit interface e1/0 ipv6 ospf 6 area 0 exit interface vlan 100 ipv6 ospf 6 area 0 exit interface vlan 101 </pre>

	<pre> ipv6 ospf 6 area 0 exit interface vlan 102 ipv6 ospf 6 area 0 exit </pre>
--	---

El siguiente paso es realizar la verificación de la tabla de enrutamiento IPv4 en los dispositivos configurados, con los comandos que se muestran en la figura 14 - 19.

```

R1#
*Nov 15 23:52:11.131: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#
*Nov 15 23:53:05.615: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#
*Nov 15 23:54:03.563: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#
*Nov 15 23:54:55.031: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#
*Nov 15 23:55:53.527: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#
*Nov 15 23:56:50.487: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not half duplex), with D1 Ethernet1/2 (half duplex).
R1#show ip route
Codes: L - local, C - connected, S - static, 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
        I - IS-IS, su - IS-IS summary, 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, H - NHRP, I - LISP
        + - replicated route, % - next hop override

Gateway of last resort is 209.165.200.226 to network 0.0.0.0

R1#
0.0.0.0/0 [20/0] via 209.165.200.226, 00:31:00
2.0.0.0/32 is subnetted, 1 subnets
B   2.2.2.2 [20/0] via 209.165.200.226, 00:31:00
10.0.0.0/8 is variably subnetted, 9 subnets, 3 masks
S   10.0.0.0/8 is directly connected, Null0
C   10.73.10.0/24 is directly connected, Ethernet1/2
L   10.73.10.1/32 is directly connected, Ethernet1/2
O   10.73.11.0/24 [110/20] via 10.73.13.3, 00:31:15, Ethernet1/1
C   10.73.13.0/24 is directly connected, Ethernet1/1
L   10.73.13.1/32 is directly connected, Ethernet1/1
O   10.73.100.0/24 [110/11] via 10.73.10.2, 00:20:14, Ethernet1/2
O   10.73.101.0/24 [110/11] via 10.73.10.2, 00:20:14, Ethernet1/2
O   10.73.102.0/24 [110/11] via 10.73.10.2, 00:20:14, Ethernet1/2
209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C   209.165.200.224/27 is directly connected, Ethernet1/0
C   209.165.200.225/32 is directly connected, Ethernet1/0

```

Figura 1 Tabla de enrutamiento en R


```

R3#
*Nov 15 23:51:16.955: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:52:13.215: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:53:10.435: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:54:08.111: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:55:00.943: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:55:54.543: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:56:53.675: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#
*Nov 15 23:57:50.823: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/0 (not half duplex), with D2 Ethernet1/0 (half duplex).
R3#show ip route
Codes: L - local, C - connected, S - static, 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
       I - IS-IS, su - IS-IS summary, 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, H - NHRP, I - IISF
       * - replicated route, % - next hop override

Gateway of last resort is 10.73.10.1 to network 0.0.0.0

O*E2 0.0.0.0/0 [110/1] via 10.73.13.1, 00:31:55, Ethernet1/1
O 10.73.10.0/24 [110/0] via 10.73.13.1, 00:25:29, Ethernet1/1
C 10.73.11.0/24 is directly connected, Ethernet1/0
C 10.73.13.0/24 is directly connected, Ethernet1/1
L 10.73.13.0/32 is directly connected, Ethernet1/1
O 10.73.100.0/24 [110/11] via 10.73.11.2, 00:25:06, Ethernet1/0
O 10.73.101.0/24 [110/11] via 10.73.11.2, 00:25:06, Ethernet1/0
O 10.73.102.0/24 [110/11] via 10.73.11.2, 00:25:06, Ethernet1/0

```

Figura 2 Tabla de enrutamiento en R3

```

--More--
*Nov 16 04:54:20.427: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not full duplex), with R1 Ethernet1/2 (full duplex).
--More--
*Nov 16 04:55:12.282: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not full duplex), with R1 Ethernet1/2 (full duplex).
--More--
*Nov 16 04:55:01.948: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not full duplex), with R1 Ethernet1/2 (full duplex).
--More--
*Nov 16 04:55:52.419: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not full duplex), with R1 Ethernet1/2 (full duplex).
--More--
*Nov 16 04:56:37.330: MCDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on Ethe
rnet1/2 (not full duplex), with R1 Ethernet1/2 (full duplex).
--More--
R1#show ip route
Codes: L - local, C - connected, S - static, 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
       I - IS-IS, su - IS-IS summary, 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, H - NHRP, I - IISF
       * - replicated route, % - next hop override

Gateway of last resort is 10.73.10.1 to network 0.0.0.0

O*E2 0.0.0.0/0 [110/1] via 10.73.10.1, 00:21:44, Ethernet1/2
O 10.73.10.0/24 is directly connected, Ethernet1/2
C 10.73.10.2/32 is directly connected, Ethernet1/2
O 10.73.11.0/24 [110/50] via 10.73.10.1, 00:21:44, Ethernet1/2
O 10.73.13.0/24 [110/0] via 10.73.10.1, 00:21:44, Ethernet1/2
C 10.73.100.0/24 is directly connected, Vlan100
L 10.73.100.1/32 is directly connected, Vlan100
C 10.73.101.0/24 is directly connected, Vlan101
L 10.73.101.1/32 is directly connected, Vlan101
C 10.73.102.0/24 is directly connected, Vlan102
L 10.73.102.1/32 is directly connected, Vlan102

```

Figura 3 Tabla de enrutamiento en D1

```

D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 102
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#Config t
D2(config)#

% Invalid input detected at '^' marker.

D2(config)#router ospf 4
D2(config-router)#router-id 0.0.4.132
D2(config-router)#network 10.73.11.0 0.0.0.255 area 0
D2(config-router)#network 10.73.100.0 0.0.0.255 area 0
D2(config-router)#network 10.73.101.0 0.0.0.255 area 0
D2(config-router)#network 10.73.102.0 0.0.0.255 area 0
D2(config-router)#passive-interface default
D2(config-router)#no passive-interface e1/0
D2(config)#ipv6 router ospf 6
D2(config-rttr)#router-id 0.0.6.132
D2(config-rttr)#passive-interface default
D2(config-rttr)#no passive-interface e1/0
D2(config-rttr)#exit
D2(config)#interface e1/0
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 100
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 101
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 102
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config-if)#exit
D2(config)#exit
D2#
Nov 22 03:09:20.498: %SYS-5-CONFIG_I: Configured from console by console

```

Figura 4 Tabla de enrutamiento en D2

```

D1(config)#router ospf 4
D1(config-router)#router-id 0.0.4.131
D1(config-router)#network 10.73.10.0 0.0.0.255 area 0
D1(config-router)#network 10.73.100.0 0.0.0.255 area 0
D1(config-router)#network 10.73.101.0 0.0.0.255 area 0
D1(config-router)#network 10.73.102.0 0.0.0.255 area 0
D1(config-router)#passive-interface default
D1(config-router)#no passive-interface e1/2
D1(config-router)#exit
D1(config)#ipv6 router ospf 6
D1(config-rttr)#router-id 0.0.6.131
D1(config-rttr)#passive-interface default
D1(config-rttr)#no passive-interface e1/2
D1(config-rttr)#exit
D1(config)#interface e1/2
D1(config-if)#ipv6 ospf 6 area 0
D1(config-if)#exit
D1(config)#interface vlan 100
D1(config-if)#ipv6 ospf 6 area 0
D1(config-if)#exit
D1(config)#interface vlan 101
D1(config-if)#ipv6 ospf 6 area 0
D1(config-if)#exit
D1(config)#interface vlan 102
D1(config-if)#ipv6 ospf 6 area 0
D1(config-if)#exit
D1(config-if)#exit
D1(config)#
D1#
Nov 22 03:08:52.554: %SYS-5-CONFIG_I: Configured from console by console
D1#ping 2001:db8:2222::1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:2222::1, timeout is 2 seconds:
% No valid route for destination
Success rate is 0 percent (0/1)
D1#

```

Figura 5 Ping hacia Loopback 0 desde D1

```

D2(config-router)#network 10.73.101.0 0.0.0.255 area 0
D2(config-router)#network 10.73.102.0 0.0.0.255 area 0
D2(config-router)#passive-interface default
D2(config-router)#no passive-interface e1/0
D2(config-router)#exit
D2(config)#ipv6 router ospf 6
D2(config-rttr)#router-id 0.0.6.132
D2(config-rttr)#passive-interface default
D2(config-rttr)#no passive-interface e1/0
D2(config-rttr)#exit
D2(config)#interface e1/0
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 100
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 101
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#interface vlan 102
D2(config-if)#ipv6 ospf 6 area 0
D2(config-if)#exit
D2(config)#exit
D2#
*Nov 22 03:09:20.498: %SYS-5-CONFIG_I: Configured from console by console
D2#ping 2001:db8:2222::1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:2222::1, timeout is 2 seconds:

% No valid route for destination
Success rate is 0 percent (0/1)
D2#ping 2001:db8:2222::1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:2222::1, timeout is 2 seconds:

% No valid route for destination
Success rate is 0 percent (0/1)
D2#

```

Figura 6 Ping hacia Loopback 0 desde D2

Tabla 2 Configuración redundancia de primer salto

Switch D1	<pre> config t ip sla 4 icmp-echo 10.73.10.1 frequency 5 exit ip sla 6 icmp-echo 2001:db8:100:1010::1 frequency 5 exit ip sla Schedule 4 life forever start-time now ip sla Schedule 6 life forever start-time now </pre>
------------------	---

```
track 4 ip sla 4
delay up 10 down 15
exit
track 6 ip sla 6
delay up 10 down 15
exit
interface vlan 100
standby version 2
standby 104 ip 10.73.100.254
standby 104 priority 150
standby 104 preempt
standby 104 track 4 decrement 60
standby 106 ipv6 autoconfig
standby 106 priority 150
standby 106 preempt
standby 106 track 6 decrement 60
exit
interface vlan 101
standby version 2
standby 114 ip 10.73.101.254
standby 114 preempt
standby 114 track 4 decrement 60
standby 116 ipv6 autoconfig
standby 116 preempt
```

	<pre> standby 116 track 6 decrement 60 exit interface vlan 102 standby version 2 standby 124 ip 10.73.102.254 standby 124 priority 150 standby 124 preempt standby 124 track 4 decrement 60 standby 126 ipv6 autoconfig standby 126 priority 150 standby 126 preempt standby 126 track 6 decrement 60 exit end </pre>
Switch D2	<pre> Config t ip sla 4 icmp-echo 10.73.11.1 frequency 5 exit ip sla 6 icmp-echo 2001:db8:100:1011::1 frequency 5 exit ip sla schedule 4 life forever start-time now </pre>

```
ip sla schedule 6 life forever start-time now
```

```
track 4 ip sla 4
```

```
delay up 10 down 15
```

```
exit
```

```
track 6 ip sla 6
```

```
delay up 10 down 15
```

```
exit
```

```
interface vlan 100
```

```
standby version 2
```

```
standby 104 ip 10.73.100.254
```

```
standby 104 preempt
```

```
standby 104 track 4 decrement 60
```

```
standby 106 ipv6 autoconfig
```

```
standby 106 preempt
```

```
standby 106 track 6 decrement 60
```

```
exit
```

```
interface vlan 101
```

```
standby version 2
```

```
standby 114 ip 10.73.101.254
```

```
standby 114 priority 150
```

```
standby 114 preempt
```

```
standby 114 track 4 decrement 60
```

```
standby 116 ipv6 autoconfig
```

```
standby 116 priority 150
```

<pre>standby 116 preempt standby 116 track 6 decrement 60 exit interface vlan 102 standby version 2 standby 124 ip 10.73.102.254 standby 124 preempt standby 124 track 4 decrement 60 standby 126 ipv6 autoconfig standby 126 preempt standby 126 track 6 decrement 60 exit end</pre>

Después se realiza la verificación de las configuraciones de las SLAs y del Standby en los Switch configurados

```

R1
duplex auto
!
interface Vlan1
no ip address
shutdown
!
interface Vlan100
ip address 10.73.100.1 255.255.255.0
standby version 2
standby 104 ip 10.73.100.254
standby 104 priority 150
standby 104 preempt
standby 104 track 4 decrement 60
standby 106 ipv6 autoconfig
standby 106 priority 150
standby 106 preempt
standby 106 track 6 decrement 60
ipv6 address FE80::D1:2 link-local
ipv6 address 2001:DB8:100:100::1/64
!
interface Vlan101
ip address 10.73.101.1 255.255.255.0
standby version 2
standby 114 ip 10.73.101.254
standby 114 preempt
standby 114 track 4 decrement 60
standby 116 ipv6 autoconfig
standby 116 preempt
standby 116 track 6 decrement 60
ipv6 address FE80::D1:3 link-local
ipv6 address 2001:DB8:100:101::1/64
!
interface Vlan102
ip address 10.73.102.1 255.255.255.0
standby version 2
standby 124 ip 10.73.102.254
standby 124 priority 150
--More--
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```

Figura 7 Standby en D1

```

R1
shutdown
duplex auto
!
interface Ethernet3/1
shutdown
duplex auto
!
interface Ethernet3/2
shutdown
duplex auto
!
interface Ethernet3/3
shutdown
duplex auto
!
interface Vlan1
no ip address
shutdown
!
interface Vlan100
ip address 10.73.100.2 255.255.255.0
standby version 2
standby 104 ip 10.73.100.254
standby 104 preempt
standby 104 track 4 decrement 60
standby 106 ipv6 autoconfig
standby 106 preempt
standby 106 track 6 decrement 60
ipv6 address FE80::D2:2 link-local
ipv6 address 2001:DB8:100:100::2/64
!
interface Vlan101
ip address 10.73.101.2 255.255.255.0
standby version 2
standby 114 ip 10.73.101.254
--More--
Nov 23 01:50:22.590: %HSRP-5-STATECHANGE: Vlan100 Grp 106 state Standby -> Active
--More--
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```

Figura 8 Standby en D2

CONCLUSIONES

Con el desarrollo del presente trabajo se llevaron a cabo una serie de implementaciones donde se ponen a prueba los conceptos adquiridos en el transcurso del diplomado, yendo primeramente de la interpretación de la topología, saber que dispositivos utilizar, que herramienta de simulación adecuar y que imágenes son apropiadas para el desarrollo de la actividad. Es de anotar que el uso de imágenes tipo Dynamips, IOU, QEMU y la utilización de la máquina virtual para poder emular estos dispositivos fue algo bastante complejo, la activación, el uso de scripts y demás fueron cosas que complicaron el desarrollo de la actividad. Solamente con el hecho de tener inconvenientes al principio de la prueba da a entender que este mundo de las redes es muy amplio, que no está demás reforzar sobre los conceptos adquiridos y por qué no, pensar a en un futuro poder ejercer como administrador de redes en una gran compañía

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