

DIPLOMADO DE PROFUNDIZACION CISCO
PRUEBA DE HABILIDADES PRÁCTICAS CCNP

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

INGENIERÍA ELECTRONICA

BARRANCABERMEJA

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NOTA DE ACEPTACIÓN

Firma del Presidente del Jurado

Firma del Jurado

Firma del Jurado

BARRANCABERMEJA, 22 de noviembre de 2021

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En primer lugar, quiero darle gracias a Dios por darme la oportunidad de adquirir nuevos conocimientos por medio de mis estudios; en segundo lugar, a mis padres por su apoyo incondicional, por siempre tener esas palabras de aliento que me impulsan a cumplir mis sueños.

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GLOSARIO

CCNP: Cisco Certified Network Professional

CISCO: es una empresa de origen estadounidense fabricante de dispositivos para redes locales y externa, también presta el servicio de soluciones de red, su objetivo es conectar a todos y demostrar las cosas asombrosas que se pueden lograr con una visión clara del futuro.

CONMUTACIÓN: es la acción que permite establecer una vía, que uno un extremo al otro, permitiendo la entrega de la señal desde su origen hasta el lugar donde es requerida.

Electrónica: se ocupa de circuitos eléctricos que implican componentes eléctricos activos tales como tubos de vacío, transistores, diodos y circuitos integrados y tecnologías de interconexión pasiva asociadas.

ENRUTAMIENTO: se considera una función básica para buscar un camino entre todas las posibilidades de red de paquetes cuyas topologías poseen una gran conectividad.

REDES: es un conjunto de equipos conectados por medio de cables, señales, ondas o cualquier otro método de transporte de datos, que comparten información (archivos), recursos (CD-ROM, impresoras, etc.)

ROUTER: dispositivo que permite interconectar computadoras que funcionan en el marco de una red. Su función es la de establecer la ruta que destinará a cada paquete de datos dentro de una red informática.

ROUTING: capacidad de mover paquetes a través de las redes.

SWITCH: dispositivo de interconexión utilizado para conectar equipos en red formando lo que se conoce como una red de área local (LAN) y cuyas especificaciones técnicas siguen el estándar conocido como Ethernet (o técnicamente IEEE 802.3).

SWICTHING: mover tramas de un sitio a otro dentro de una red local.

RESUMEN

Por medio del desarrollo de dos escenarios podemos poner en práctica las habilidades y conocimientos adquiridos en el módulo CCNP, en el primer escenario encontramos el proceso de enrutamiento del protocolo BGP en dispositivos electrónicos denominados como router, con el proceso de configuración del BGP se permite una comunicación fácil y rápida en la interacción de los dispositivos relacionados.

En el segundo escenario se desarrolla utilizando SWITCHS y PCS, utilizamos los protocolos de configuración y conmutación con DTP (DYNAMIC TRUNKING PROTOCOL) y el VTP, permitiendo con ello la conmutación entre los SWITCHS y PCS de acuerdo a las redes VLAN, que tiene asignadas, por otro lado es importante indicar que la electrónica permite el desarrollo de los diferentes dispositivos y a su vez la configuración permitiendo el surgimiento de diferentes ámbitos de la comunicación, la automatización y el entrenamiento.

Los ROUTERS y los SWITCH en sus diferentes funciones se deben configurar de acuerdo al modelo y versión que corresponda a cada uno de ellos, proceso que se puede evidenciar en el desarrollo de este escenario

Palabras Clave: CISCO, CCNP, Conmutación, Enrutamiento, Redes, Electrónica

ABSTRACT

Through the development of two scenarios we can put into practice the skills and knowledge acquired in the CCNP module, in the first scenario we find the routing process of the BGP protocol in electronic devices called a router, with the BGP configuration process a easy and fast communication in the interaction of related devices.

In the second scenario, it is developed using SWITCHS and PCS, we use the configuration and switching protocols with DTP (DYNAMIC TRUNKING PROTOCOL) and VTP, thus allowing switching between SWITCHS and PCS according to the VLAN networks, which are assigned, on the other hand, it is important to point out that electronics allows the development of different devices and at the same time the configuration allowing the emergence of different areas of communication, automation and training.

The ROUTERS and SWITCHs in their different functions must be configured according to the model and version that corresponds to each of them, a process that can be evidenced in the development of this scenario

Keywords: CISCO, CCNP, Routing, Swicthing, Networking, Electronics.

INTRODUCCIÓN

El presente trabajo tiene como objetivo principal, la aplicación de los conocimientos adquiridos a lo largo del proceso de aprendizaje inmerso en los temas vistos en el DIPLOMADO DE PROFUNDIZACION CISCO PRUEBA DE HABILIDADES PRÁCTICAS CCNP, en el cual se tiene como finalidad la construcción de un escenario donde se configuren los parámetros básicos del ROUTER, el SWITCH y los dispositivos finales.

De igual manera se realizará la configuración de cada red y el soporte host, esto para asegurar la conectividad, de igual manera se tendrán muy en cuenta los protocolos de enrutamiento necesarios para cada uno de los dispositivos garantizando el resultado esperado.

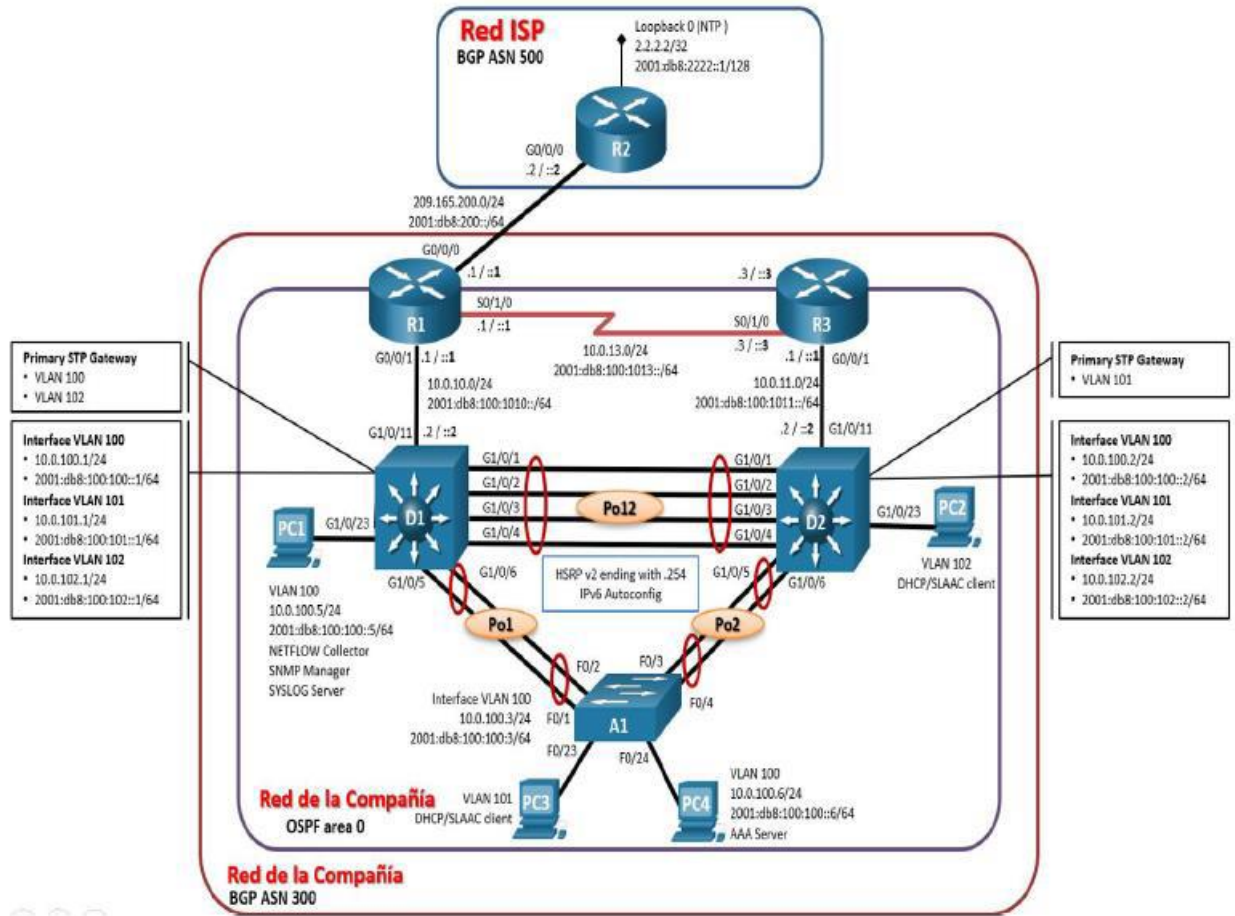
De igual manera se realizó el proceso de configuración de contrales con interfaces IEEE 802.1Q, sobre la interconexión entre SWITCHES y a partir de ella la creación del ETHER CHANNELS LACP, como último paso tenemos la configuración de los dispositivos de direccionamiento DHCP y SLAAC.

Para este proceso se utilizaron los protocolos de enrutamiento IPv4 e IPv6, la simulación y verificación de cada una de las configuraciones de acuerdo al escenario planteado por medio del software Packet Tracer

DESARROLLO

ESCENARIO 1

Ilustración 1_Escenario 1



Dispositivo	Interfaz	Dirección IPv4	Dirección IPv6	IPv6 Link-Local
R1	G0/0/0	209.165.200.225/27	2001:db8:200::1/64	fe80::1:1
	G0/0/1	10.0.10.1/24	2001:db8:100:1010::1/64	fe80::1:2
	S0/1/0	10.0.13.1/24	2001:db8:100:1013::1/64	fe80::1:3
R2	G0/0/0	209.165.200.226/27	2001:db8:200::2/64	fe80::2:1
	Loopback 0	2.2.2.2/32	2001:db8:2222::1/128	fe80::2:3
R3	G0/0/1	10.0.11.1/24	2001:db8:100:1011::1/64	fe80::3:2
	S0/1/0	10.0.13.3/24	2001:db8:100:1013::3/64	fe80::3:3
D1	G1/0/11	10.0.10.2/24	2001:db8:100:1010::2/64	fe80::d1:1
	VLAN 100	10.0.100.1/24	2001:db8:100:100::1/64	fe80::d1:2
	VLAN 101	10.0.101.1/24	2001:db8:100:101::1/64	fe80::d1:3
	VLAN 102	10.0.102.1/24	2001:db8:100:102::1/64	fe80::d1:4
D2	G1/0/11	10.0.11.2/24	2001:db8:100:1011::2/64	fe80::d2:1
	VLAN 100	10.0.100.2/24	2001:db8:100:100::2/64	fe80::d2:2
	VLAN 101	10.0.101.2/24	2001:db8:100:101::2/64	fe80::d2:3
	VLAN 102	10.0.102.2/24	2001:db8:100:102::2/64	fe80::d2:4
A1	VLAN 100	10.0.100.3/23	2001:db8:100:100::3/64	fe80::a1:1
PC1	NIC	10.0.100.5/24	2001:db8:100:100::5/64	EUI-64
PC2	NIC	DHCP	SLAAC	EUI-64
PC3	NIC	DHCP	SLAAC	EUI-64
PC4	NIC	10.0.100.6/24	2001:db8:100:100::6/64	EUI-64

Tabla 1_Tabla de direccionamiento


```
no ip domain lookup
banner motd # R1, ENCOR Skills Assessment, Scenario 1 #
line con 0
exec-timeout 0 0
logging synchronous
exit
interface g0/0
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 g1/0
ip address 10.0.10.1 255.255.255.0
ipv6 address fe80::1:2 link-local
ipv6 address 2001:db8:100:1010::1/64
no shutdown
exit
interface s2/0
ip address 10.0.13.1 255.255.255.0
ipv6 address fe80::1:3 link-local
ipv6 address 2001:db8:100:1013::1/64
no shutdown
exit
```

Ilustración 3_Aplicación código R1



```
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#ipv6 unicast-routing
R1(config)#no ip domain lookup
R1(config)#banner motd # R1, ENCOR Skills Assessment, Scenario 1 #
R1(config)#line con 0
R1(config-line)#exec-timeout 0 0
R1(config-line)#logging synchronous
R1(config-line)#exit
R1(config)#interface g0/0
R1(config-if)#ip address 209.165.200.226 255.255.255.224
R1(config-if)#ipv6 address fe80::1:1 link-local
R1(config-if)#ipv6 address 2001:db8:200::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface g1/0
R1(config-if)#ip address 10.0.10.1 255.255.255.0
R1(config-if)#ipv6 address fe80::1:2 link-local
R1(config-if)#ipv6 address 2001:db8:100:1010::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface s2/0
R1(config-if)#ip address 10.0.13.1 255.255.255.0
R1(config-if)#ipv6 address fe80::1:3 link-local
R1(config-if)#ipv6 address 2001:db8:100:1013::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
*Nov 25 17:48:58.770: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Nov 25 17:48:59.251: %LINK-3-UPDOWN: Interface GigabitEthernet1/0, changed state to up
*Nov 25 17:48:59.779: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
R1(config-if)#exit
*Nov 25 17:48:59.923: %LINK-3-UPDOWN: Interface Serial2/0, changed state to up
R1(config-if)#exit
*Nov 25 17:49:00.351: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0, changed state to up
*Nov 25 17:49:00.921: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
R1(config-if)#exit
*Nov 25 17:49:25.847: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
R1(config-if)#exit
```

Router R2

hostname R2

ipv6 unicast-routing

no ip domain lookup

banner motd # R2, ENCOR Skills Assessment, Scenario 1 #

line con 0

exec-timeout 0 0

logging synchronous

exit

interface g0/0

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

Ilustración 4_Aplicación código R2



```
Compiled Thu 25-Sep-14 10:36 by prod_rel_team
*Nov 28 16:10:41.911: %SNMP-5-COLDSTART: SNMP agent on host Router is undergoing a cold start
*Nov 28 16:10:42.359: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Nov 28 16:10:42.363: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Nov 28 16:11:04.135: %SYS-3-CPUHOG: Task is running for (2048)msecs, more than (2000)msecs (0/0),process = Crypto CA.
-Traceback= 0x63C9A88Cz 0x64F17D70z 0x64A70A2Cz 0x64A83D3Cz 0x64A83EFCz 0x64A72238z 0x64A72380z 0x64A5BDACz 0x64A56ABCz 0x64
A56B3Cz 0x64A56518z 0x64F1D748z 0x64F1D4FCz 0x64F1D4FCz 0x64F1D900z 0x64A5B360z
Router>enable
Router#conf
Router#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#ipv6 unicast-routing
R2(config)#no ip domain lookup
R2(config)#banner motd # R2, ENCOR Skills Assessment, Scenario 1 #
R2(config)#line con 0
R2(config-line)#exec-timeout 0 0
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#interface g0/0
R2(config-if)#ip address 209.165.200.226 255.255.255.224
R2(config-if)#ipv6 address fe80::2:1 link-local
R2(config-if)#ipv6 address 2001:db8:200::2/64
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface Loopback 0
R2(config-if)#ip address 2.2.2.2 255.255.255.255
R2(config-if)#ipv6 address fe80::2:3 link-local
R2(config-if)#ipv6 address 2001:db8:2222::1/128
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#
*Nov 28 16:19:25.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R2(config)#
*Nov 28 16:19:26.663: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Nov 28 16:19:27.663: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
R2(config)#
```

Interface Loopback 0 R2

```
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
```

Ilustración 5_ Interface Loopback 0 R2



```
R2 con0 is now available

Press RETURN to get started.

R2, ENCOR Skills Assessment, Scenario 1
R2>
R2>enable
R2#conf
R2#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#
R2(config)#
R2(config)#interface Loopback 0
R2(config-if)#ip address 2.2.2.2 255.255.255.255
R2(config-if)#ipv6 address fe80::2:3 link-local
R2(config-if)#ipv6 address 2001:db8:2222::1/128
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#
```

Router R3

hostname R3

ipv6 unicast-routing

no ip domain lookup

banner motd # R3, ENCOR Skills Assessment, Scenario 1 #

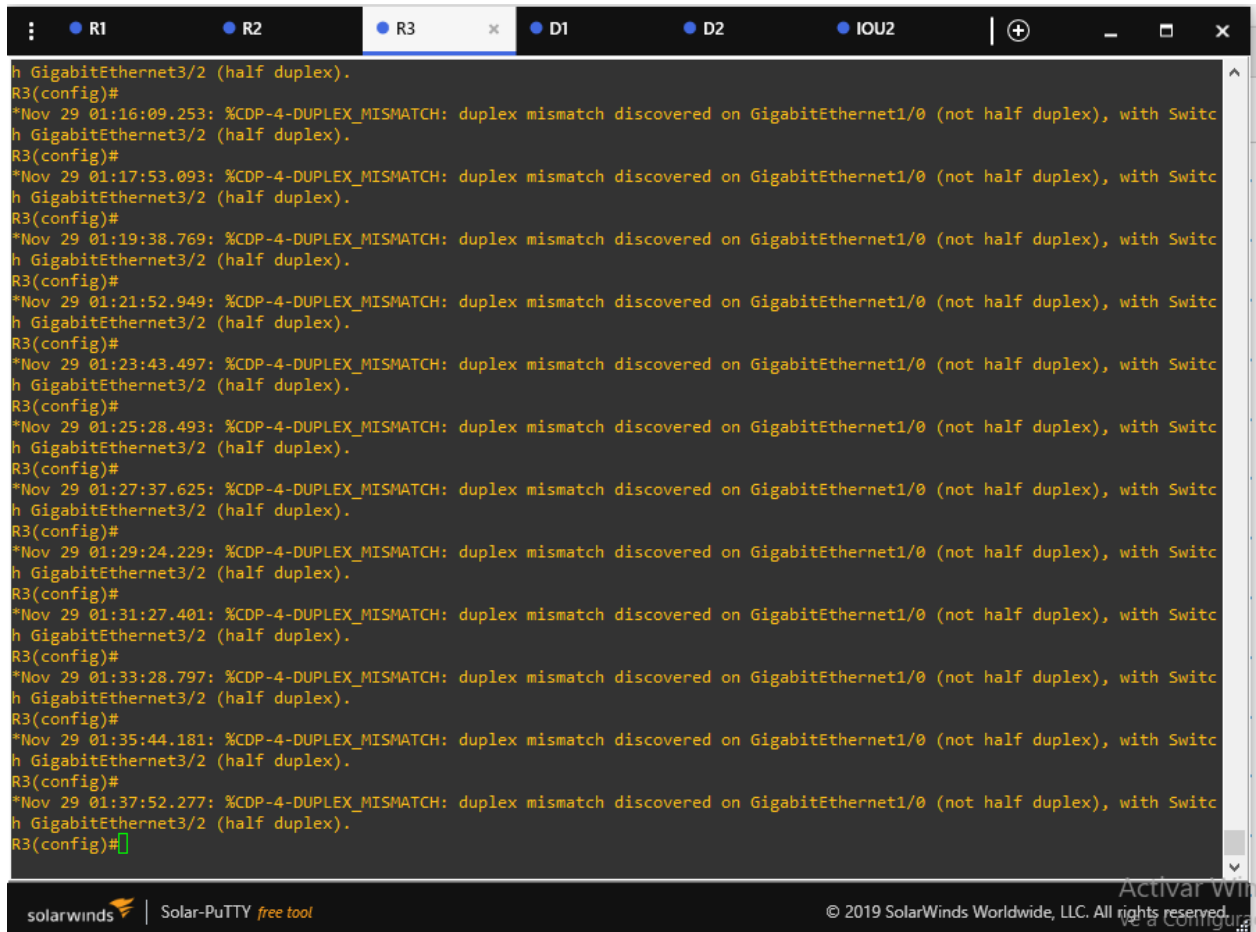
line con 0

exec-timeout 0 0

logging synchronous

```
exit
interface g1/0
ip address 10.0.11.1 255.255.255.0
ipv6 address fe80::3:2 link-local
ipv6 address 2001:db8:100:1011::1/64
no shutdown
exit
interface s2/0
ip address 10.0.13.3 255.255.255.0
ipv6 address fe80::3:3 link-local
ipv6 address 2001:db8:100:1010::2/64
no shutdown
exit
```

Ilustración 6_Aplicación código R3



```
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:16:09.253: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:17:53.093: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:19:38.769: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:21:52.949: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:23:43.497: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:25:28.493: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:27:37.625: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:29:24.229: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:31:27.401: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:33:28.797: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:35:44.181: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
*Nov 29 01:37:52.277: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with Switc
h GigabitEthernet3/2 (half duplex).
R3(config)#
```

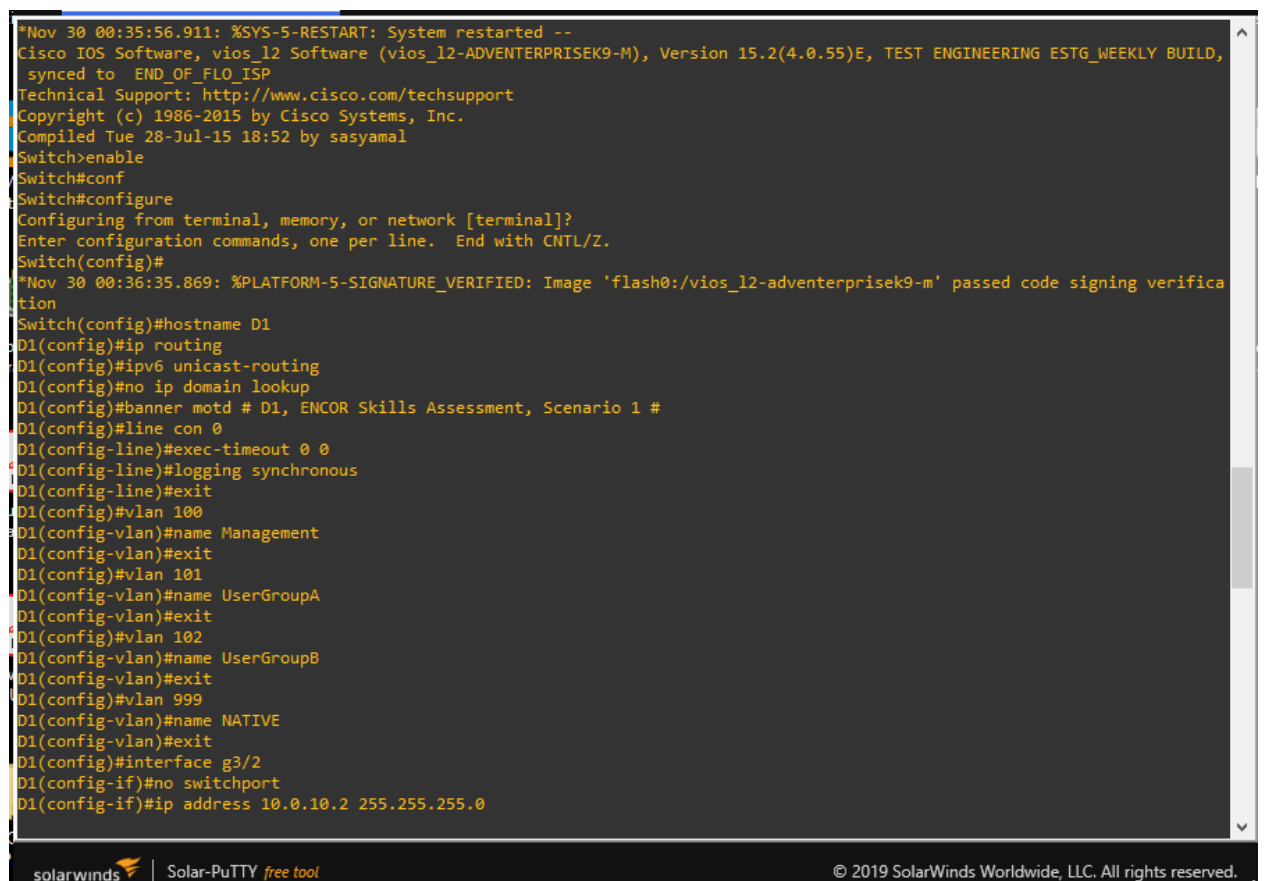
Switch D1

```
hostname D1
ip routing
ipv6 unicast-routing
no ip domain lookup
banner motd # D1, ENCOR Skills Assessment, Scenario 1 #
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 g3/2
no switchport
ip address 10.0.10.2 255.255.255.0
ipv6 address fe80::d1:1 link-local
ipv6 address 2001:db8:100:1010::2/64
no shutdown
exit
interface vlan 100
ip address 10.0.100.1 255.255.255.0
ipv6 address fe80::d1:2 link-local
ipv6 address 2001:db8:100:100::1/64
no shutdown
exit
interface vlan 101
ip address 10.0.101.1 255.255.255.0
ipv6 address fe80::d1:3 link-local
ipv6 address 2001:db8:100:101::1/64
no shutdown
exit
interface vlan 102
ip address 10.0.102.1 255.255.255.0
ipv6 address fe80::d1:4 link-local
ipv6 address 2001:db8:100:102::1/64
no shutdown
exit
ip dhcp excluded-address 10.0.101.1 10.0.101.109
ip dhcp excluded-address 10.0.101.141 10.0.101.254
ip dhcp excluded-address 10.0.102.1 10.0.102.109
ip dhcp excluded-address 10.0.102.141 10.0.102.254
ip dhcp pool VLAN-101
network 10.0.101.0 255.255.255.0
```

```
default-router 10.0.101.254
exit
ip dhcp pool VLAN-102
network 10.0.102.0 255.255.255.0
default-router 10.0.102.254
exit
interface range g0/0-3, g1/0-3, g3/0-3
shutdown
exit
```

Ilustración 7_Aplicación código D2



```
*Nov 30 00:35:56.911: %SYS-5-RESTART: System restarted --
Cisco IOS Software, vios_l2 Software (vios_l2-ADVENTERPRISEK9-M), Version 15.2(4.0.55)E, TEST ENGINEERING ESTG_WEEKLY BUILD,
syncd to END_OF_FLO_ISP
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2015 by Cisco Systems, Inc.
Compiled Tue 28-Jul-15 18:52 by sasyamal
Switch>enable
Switch#conf
Switch#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
*Nov 30 00:36:35.869: %PLATFORM-5-SIGNATURE_VERIFIED: Image 'flash0:/vios_l2-adventerprisek9-m' passed code signing verification
Switch(config)#hostname D1
D1(config)#ip routing
D1(config)#ipv6 unicast-routing
D1(config)#no ip domain lookup
D1(config)#banner motd # D1, ENCOR Skills Assessment, Scenario 1 #
D1(config)#line con 0
D1(config-line)#exec-timeout 0 0
D1(config-line)#logging synchronous
D1(config-line)#exit
D1(config)#vlan 100
D1(config-vlan)#name Management
D1(config-vlan)#exit
D1(config)#vlan 101
D1(config-vlan)#name UserGroupA
D1(config-vlan)#exit
D1(config)#vlan 102
D1(config-vlan)#name UserGroupB
D1(config-vlan)#exit
D1(config)#vlan 999
D1(config-vlan)#name NATIVE
D1(config-vlan)#exit
D1(config)#interface g3/2
D1(config-if)#no switchport
D1(config-if)#ip address 10.0.10.2 255.255.255.0
```

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Switch D2

```
hostname D2
ip routing
ipv6 unicast-routing
no ip domain lookup
banner motd # D2, ENCOR Skills Assessment, Scenario 1 #
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

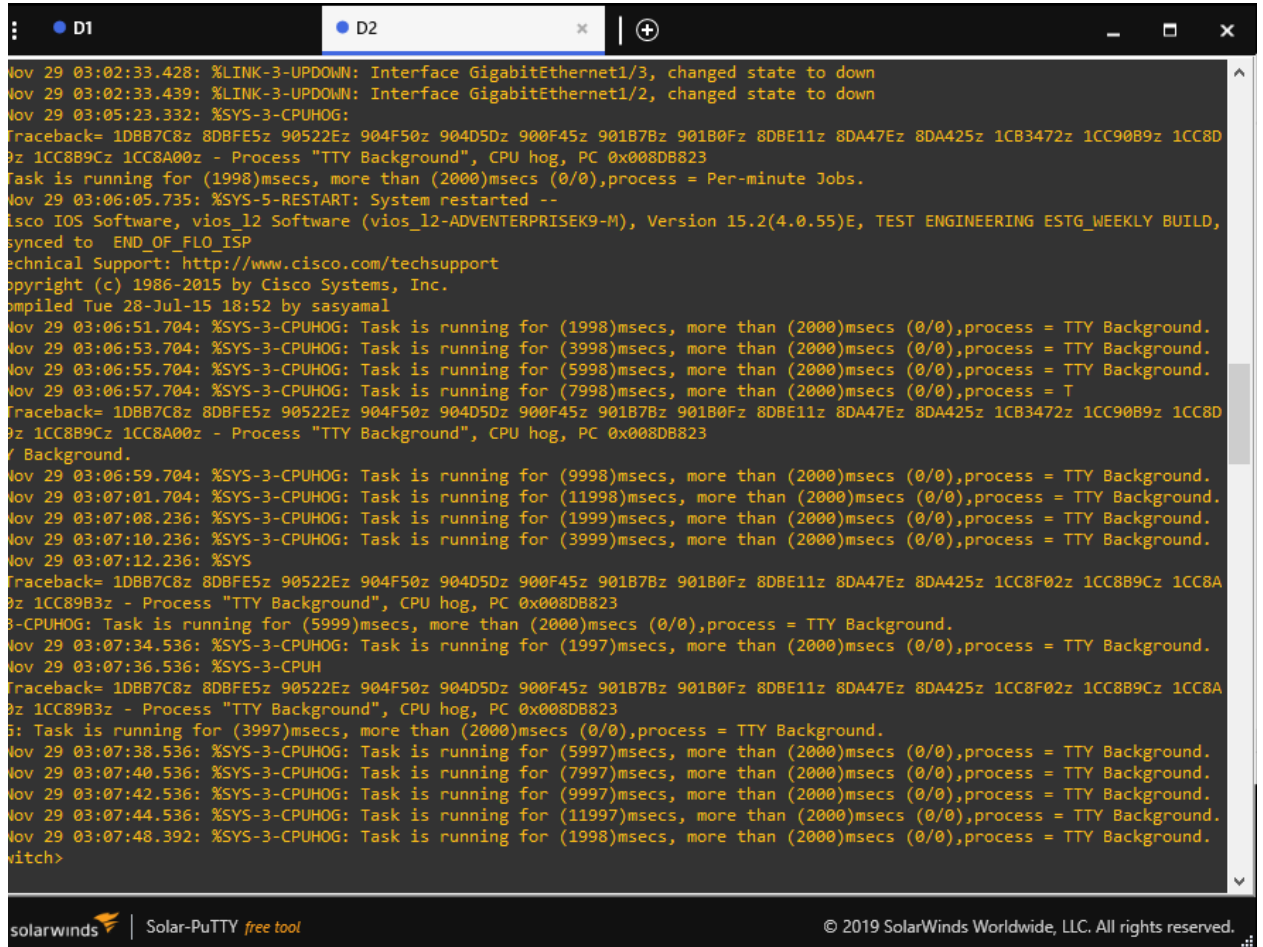
interface g3/2
no switchport
ip address 10.0.11.2 255.255.255.0
ipv6 address fe80::d1:1 link-local
ipv6 address 2001:db8:100:1011::2/64
no shutdown

exit

interface vlan 100
ip address 10.0.100.2 255.255.255.0
ipv6 address fe80::d2:2 link-local
ipv6 address 2001:db8:100:100::2/64
no shutdown
exit
interface vlan 101
ip address 10.0.101.2 255.255.255.0
ipv6 address fe80::d2:3 link-local
ipv6 address 2001:db8:100:101::2/64
```

```
no shutdown
exit
interface vlan 102
ip address 10.0.102.2 255.255.255.0
ipv6 address fe80::d2:4 link-local
ipv6 address 2001:db8:100:102::2/64
no shutdown
exit
ip dhcp excluded-address 10.0.101.1 10.0.101.209
ip dhcp excluded-address 10.0.101.241 10.0.101.254
ip dhcp excluded-address 10.0.102.1 10.0.102.209
ip dhcp excluded-address 10.0.102.241 10.0.102.254
ip dhcp pool VLAN-101
network 10.0.101.0 255.255.255.0
default-router 10.0.101.254
exit
ip dhcp pool VLAN-102
network 10.0.102.0 255.255.255.0
default-router 10.0.102.254
exit
interface range g0/0-3, g1/0-3,g3/0-3
shutdown
exit
```

Ilustración 8_Aplicación código D2



```
Nov 29 03:02:33.428: %LINK-3-UPDOWN: Interface GigabitEthernet1/3, changed state to down
Nov 29 03:02:33.439: %LINK-3-UPDOWN: Interface GigabitEthernet1/2, changed state to down
Nov 29 03:05:23.332: %SYS-3-CPUHOG:
Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8DBE11z 8DA47Ez 8DA425z 1CB3472z 1CC90B9z 1CC8D
9z 1CC8B9Cz 1CC8A00z - Process "TTY Background", CPU hog, PC 0x008DB823
Task is running for (1998)msecs, more than (2000)msecs (0/0),process = Per-minute Jobs.
Nov 29 03:06:05.735: %SYS-5-RESTART: System restarted --
Cisco IOS Software, vios_12 Software (vios_12-ADVENTERPRISEK9-M), Version 15.2(4.0.55)E, TEST ENGINEERING ESTG_WEEKLY BUILD,
sync'd to END_OF_FLO_ISP
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2015 by Cisco Systems, Inc.
Compiled Tue 28-Jul-15 18:52 by sasyamal
Nov 29 03:06:51.704: %SYS-3-CPUHOG: Task is running for (1998)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:06:53.704: %SYS-3-CPUHOG: Task is running for (3998)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:06:55.704: %SYS-3-CPUHOG: Task is running for (5998)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:06:57.704: %SYS-3-CPUHOG: Task is running for (7998)msecs, more than (2000)msecs (0/0),process = T
Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8DBE11z 8DA47Ez 8DA425z 1CB3472z 1CC90B9z 1CC8D
9z 1CC8B9Cz 1CC8A00z - Process "TTY Background", CPU hog, PC 0x008DB823
TTY Background.
Nov 29 03:06:59.704: %SYS-3-CPUHOG: Task is running for (9998)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:01.704: %SYS-3-CPUHOG: Task is running for (11998)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:08.236: %SYS-3-CPUHOG: Task is running for (1999)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:10.236: %SYS-3-CPUHOG: Task is running for (3999)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:12.236: %SYS
Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8DBE11z 8DA47Ez 8DA425z 1CC8F02z 1CC8B9Cz 1CC8A
9z 1CC89B3z - Process "TTY Background", CPU hog, PC 0x008DB823
3-CPUHOG: Task is running for (5999)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:34.536: %SYS-3-CPUHOG: Task is running for (1997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:36.536: %SYS-3-CPUH
Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8DBE11z 8DA47Ez 8DA425z 1CC8F02z 1CC8B9Cz 1CC8A
9z 1CC89B3z - Process "TTY Background", CPU hog, PC 0x008DB823
5: Task is running for (3997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:38.536: %SYS-3-CPUHOG: Task is running for (5997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:40.536: %SYS-3-CPUHOG: Task is running for (7997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:42.536: %SYS-3-CPUHOG: Task is running for (9997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:44.536: %SYS-3-CPUHOG: Task is running for (11997)msecs, more than (2000)msecs (0/0),process = TTY Background.
Nov 29 03:07:48.392: %SYS-3-CPUHOG: Task is running for (1998)msecs, more than (2000)msecs (0/0),process = TTY Background.
with>
```

Switch A1

hostname A1

no ip domain lookup

banner motd # A1, ENCOR Skills Assessment, Scenario 1 #

line con 0

exec-timeout 0 0

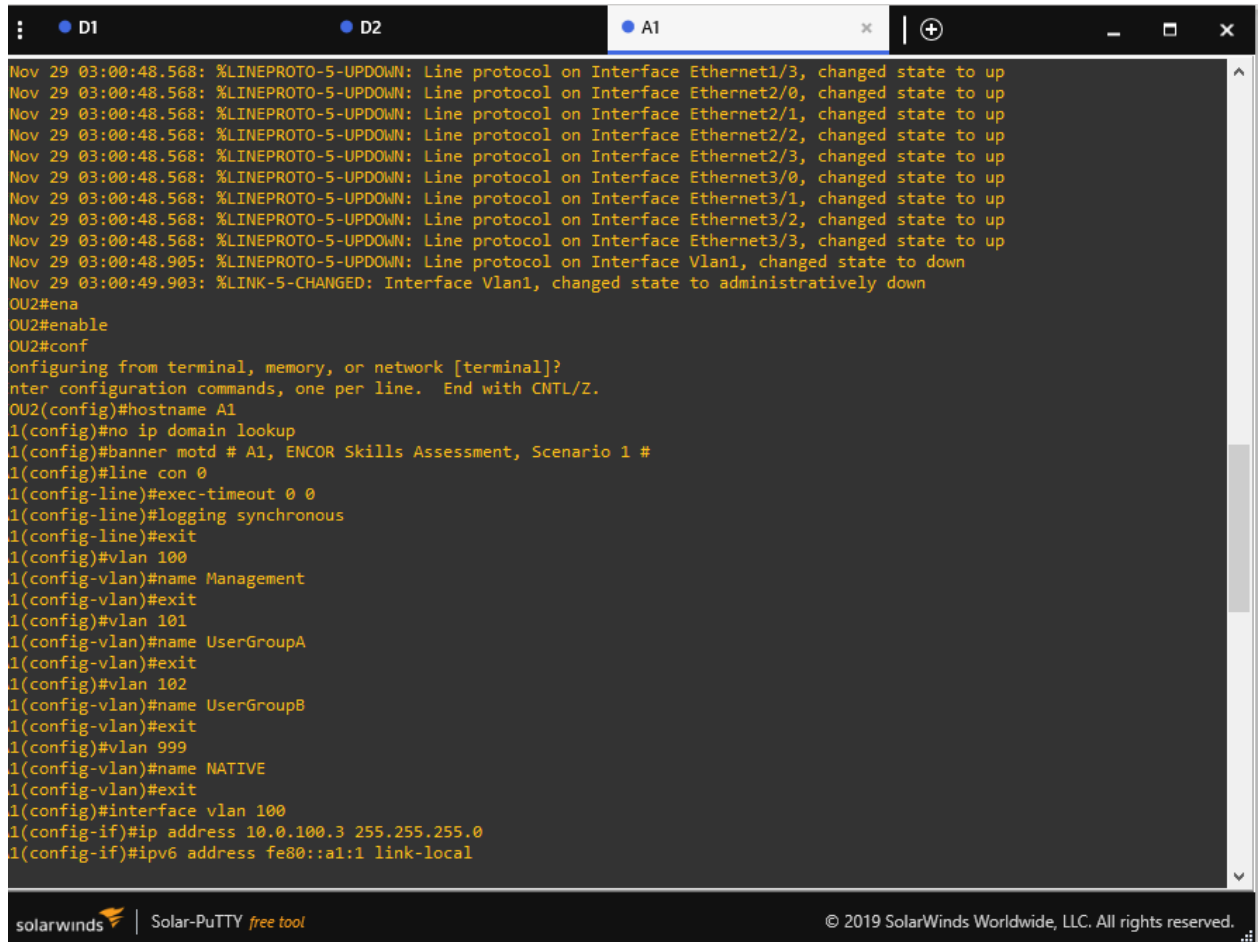
logging synchronous

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 10.0.100.3 255.255.255.0
ipv6 address fe80::a1:1 link-local
ipv6 address 2001:db8:100:100::3/64
no shutdown
exit
interface range e1/2-3, e2/0-3, e3/0-3
shutdown
exit
```

Ilustración 9_Aplicación código A1



```
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/3, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/0, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/1, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/2, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/3, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/0, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/1, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/2, changed state to up
Nov 29 03:00:48.568: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/3, changed state to up
Nov 29 03:00:48.905: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to down
Nov 29 03:00:49.903: %LINK-5-CHANGED: Interface Vlan1, changed state to administratively down
OU2#ena
OU2#enable
OU2#conf
OU2#conf
onfiguring from terminal, memory, or network [terminal]?
nter configuration commands, one per line. End with CNTL/Z.
OU2(config)#hostname A1
1(config)#no ip domain lookup
1(config)#banner motd # A1, ENCOR Skills Assessment, Scenario 1 #
1(config)#line con 0
1(config-line)#exec-timeout 0 0
1(config-line)#logging synchronous
1(config-line)#exit
1(config)#vlan 100
1(config-vlan)#name Management
1(config-vlan)#exit
1(config)#vlan 101
1(config-vlan)#name UserGroupA
1(config-vlan)#exit
1(config)#vlan 102
1(config-vlan)#name UserGroupB
1(config-vlan)#exit
1(config)#vlan 999
1(config-vlan)#name NATIVE
1(config-vlan)#exit
1(config)#interface vlan 100
1(config-if)#ip address 10.0.100.3 255.255.255.0
1(config-if)#ipv6 address fe80::a1:1 link-local
```

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PARTE 2: CONFIGURAR LA CAPA 2 DE LA RED Y EL SOPORTE DE HOST

En esta parte de la prueba de habilidades, debe completar la configuración de la capa 2 de la red y establecer el soporte básico de host. Al final de esta parte, todos los switches deben poder comunicarse. PC2 y PC3 deben recibir direccionamiento de DHCP y SLAAC.

Las tareas de configuración son las siguientes:

Tarea#	Tarea	Especificación
2.1	En todos los switches configure interfaces troncales IEEE 802.1Q sobre los enlaces de interconexión entre switches.	Habilite enlaces trunk 802.1Q entre: <ul style="list-style-type: none"> • D1 and D2 • D1 and A1 • D2 and A1
2.2	En todos los switches cambie la VLAN nativa en los enlaces troncales.	Use VLAN 999 como la VLAN nativa.
2.3	En todos los switches habilite el protocolo Rapid Spanning-Tree (RSTP)	Use Rapid Spanning Tree (RSPT).
2.4	En D1 y D2, configure los puentes raíz RSTP (root bridges) según la información del diagrama de topología. D1 y D2 deben proporcionar respaldo en caso de falla del puente raíz (root bridge).	Configure D1 y D2 como raíz (root) para las VLAN apropiadas, con prioridades de apoyo mutuo en caso de falla del switch.
2.5	En todos los switches, cree EtherChannels LACP como se muestra en el diagrama de topología.	Use los siguientes números de canales: <ul style="list-style-type: none"> • D1 a D2 – Port channel 12 • D1 a A1 – Port channel 1 • D2 a A1 – Port channel 2
2.6	En todos los switches, configure los puertos de	Configure los puertos de acceso con la

	acceso del host (host access port) que se conectan a PC1, PC2, PC3 y PC4.	configuración de VLAN adecuada, como se muestra en el diagrama de topología. Los puertos de host deben pasar inmediatamente al estado de reenvío (forwarding).
2.7	Verifique los servicios DHCP IPv4.	PC2 y PC3 son clientes DHCP y deben recibir direcciones IPv4 válidas.
2.8	Verifique la conectividad de la LAN local	<p>PC1 debería hacer ping con éxito a:</p> <ul style="list-style-type: none"> • D1: 10.0.100.1 • D2: 10.0.100.2 • PC4: 10.0.100.6 <p>PC2 debería hacer ping con éxito a:</p> <ul style="list-style-type: none"> • D1: 10.0.102.1 • D2: 10.0.102.2 <p>PC3 debería hacer ping con éxito a:</p> <ul style="list-style-type: none"> • D1: 10.0.101.1 • D2: 10.0.101.2 <p>PC4 debería hacer ping con éxito a:</p> <ul style="list-style-type: none"> • D1: 10.0.100.1 • D2: 10.0.100.2 • PC1: 10.0.100.5

Tabla 2_Tabla 1 Configurar los protocolos de enrutamiento

Ilustración 10_configuración D1

```
*Nov 30 00:35:56.911: %SYS-5-RESTART: System restarted --
Cisco IOS Software, vios_l2 Software (vios_l2-ADVENTERPRISEK9-M), Version 15.2(4.0.55)E, TEST ENGINEERING ESTG_WEEKLY BUILD,
sync'd to END_OF_FLO_ISP
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2015 by Cisco Systems, Inc.
Compiled Tue 28-Jul-15 18:52 by sasyamal
Switch>enable
Switch#conf
Switch#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
*Nov 30 00:36:35.869: %PLATFORM-5-SIGNATURE_VERIFIED: Image 'flash0:/vios_l2-adventerprisek9-m' passed code signing verification
Switch(config)#hostname D1
D1(config)#ip routing
D1(config)#ipv6 unicast-routing
D1(config)#no ip domain lookup
D1(config)#banner motd # D1, ENCOR Skills Assessment, Scenario 1 #
D1(config)#line con 0
D1(config-line)#exec-timeout 0 0
D1(config-line)#logging synchronous
D1(config-line)#exit
D1(config)#vlan 100
D1(config-vlan)#name Management
D1(config-vlan)#exit
D1(config)#vlan 101
D1(config-vlan)#name UserGroupA
D1(config-vlan)#exit
D1(config)#vlan 102
D1(config-vlan)#name UserGroupB
D1(config-vlan)#exit
D1(config)#vlan 999
D1(config-vlan)#name NATIVE
D1(config-vlan)#exit
D1(config)#interface g3/2
D1(config-if)#no switchport
D1(config-if)#ip address 10.0.10.2 255.255.255.0
```

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Ilustración 11_Configuración D2



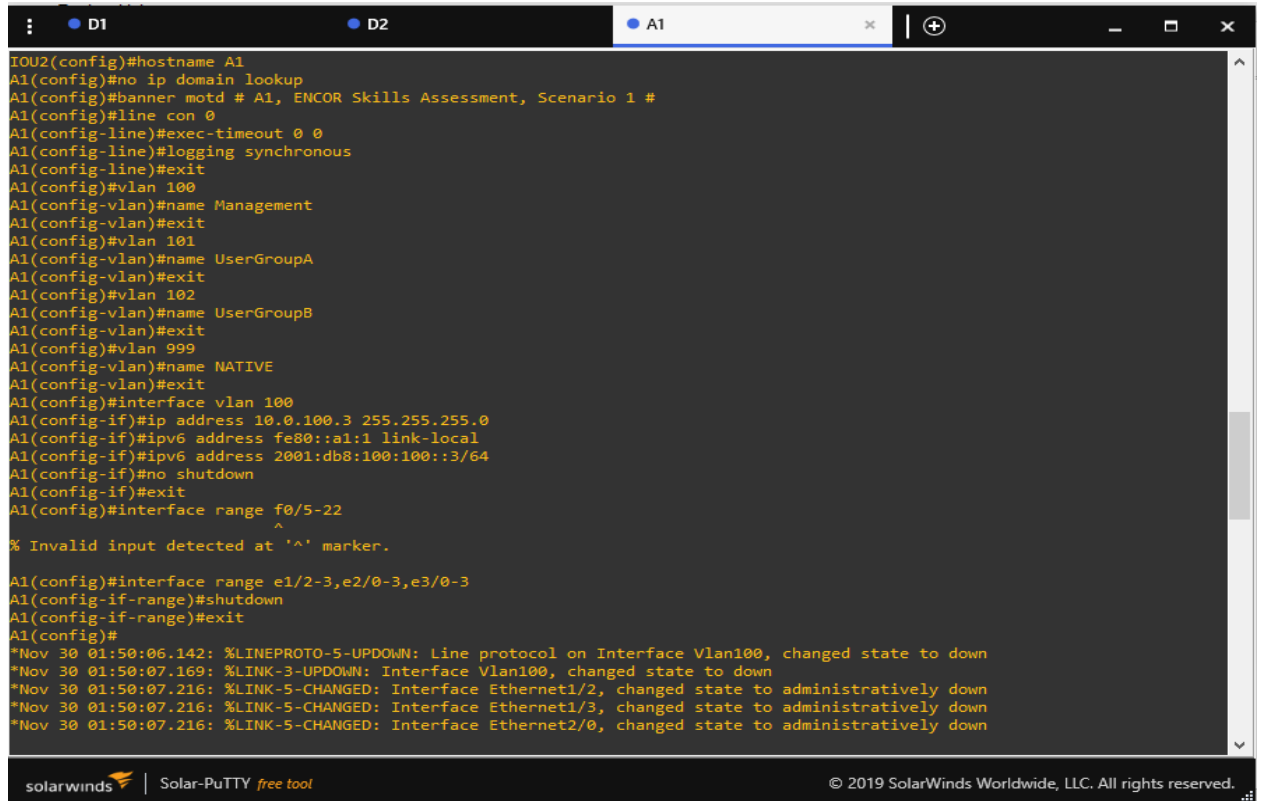
```

D1
D2
*Nov 30 01:32:30.783: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
*Nov 30 01:32:30.790: %LINK-5-CHANGED: Interface GigabitEthernet1/2, changed state to administratively down
*Nov 30 01:32:30.796: %LINK-5-CHANGED: Interface GigabitEthernet1/3, changed state to administratively down
*Nov 30 01:32:30.799: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to down
*Nov 30 01:32:30.804: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/3, changed state to down
*Nov 30 01:32:30.810: %LINK-5-CHANGED: Interface GigabitEthernet3/0, changed state to administratively down
*Nov 30 01:32:30.812: %LINK-5-CHANGED: Interface GigabitEthernet3/1, changed state to administratively down
D2(config)#
*Nov 30 01:32:32.804: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet3/3, changed state to down
D2(config)#hostname D2
D2(config)#ip routing
D2(config)#ipv6 unicast-routing
D2(config)#no ip domain lookup
D2(config)#banner motd # D2, ENCOR Skills Assessment, Scenario 1 #
D2(config)#line con 0
D2(config-line)#exec-timeout 0 0
D2(config-line)#logging synchronous
D2(config-line)#exit
D2(config)#vlan 100
D2(config-vlan)#name Management
D2(config-vlan)#exit
D2(config)#vlan 101
D2(config-vlan)#name UserGroupA
D2(config-vlan)#exit
D2(config)#vlan 102
D2(config-vlan)#name UserGroupB
D2(config-vlan)#exit
D2(config)#vlan 999
D2(config-vlan)#name NATIVE
D2(config-vlan)#exit
D2(config)#interface g3/2
D2(config-if)#no switchport
D2(config-if)#ip address 10.0.11.2 255.255.255.0
D2(config-if)#ipv6 address fe80::d1:1 link-local
D2(config-if)#ipv6 address 2001:db8:100:1011::2/64
D2(config-if)#no shutdown
D2(config-if)#exit
D2(config)#interface vl1

```

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Ilustración 12_Configuraciones A1



```
TOU2(config)#hostname A1
A1(config)#no ip domain lookup
A1(config)#banner motd # A1, ENCOR Skills Assessment, Scenario 1 #
A1(config)#line con 0
A1(config-line)#exec-timeout 0 0
A1(config-line)#logging synchronous
A1(config-line)#exit
A1(config)#vlan 100
A1(config-vlan)#name Management
A1(config-vlan)#exit
A1(config)#vlan 101
A1(config-vlan)#name UserGroupA
A1(config-vlan)#exit
A1(config)#vlan 102
A1(config-vlan)#name UserGroupB
A1(config-vlan)#exit
A1(config)#vlan 999
A1(config-vlan)#name NATIVE
A1(config-vlan)#exit
A1(config)#interface vlan 100
A1(config-if)#ip address 10.0.100.3 255.255.255.0
A1(config-if)#ipv6 address fe80::a1:1 link-local
A1(config-if)#ipv6 address 2001:db8:100:100::3/64
A1(config-if)#no shutdown
A1(config-if)#exit
A1(config)#interface range f0/5-22
      ^
% Invalid input detected at '^' marker.

A1(config)#interface range e1/2-3,e2/0-3,e3/0-3
A1(config-if-range)#shutdown
A1(config-if-range)#exit
A1(config)#
*Nov 30 01:50:06.142: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan100, changed state to down
*Nov 30 01:50:07.169: %LINK-3-UPDOWN: Interface Vlan100, changed state to down
*Nov 30 01:50:07.216: %LINK-5-CHANGED: Interface Ethernet1/2, changed state to administratively down
*Nov 30 01:50:07.216: %LINK-5-CHANGED: Interface Ethernet1/3, changed state to administratively down
*Nov 30 01:50:07.216: %LINK-5-CHANGED: Interface Ethernet2/0, changed state to administratively down
```

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Ilustración 13_configuración PC1



```
A1(config)#interface vlan 100
A1(config-if)#ip address 10.0.100.3 255.255.255.0
A1(config-if)#ipv6 address fe80::a1:1 link-local
A1(config-if)#ipv6 address 2001:db8:100:100::1/64
A1(config-if)#no shutdown
A1(config-if)#exit
A1(config)#interface range e1/2-3, e2/0-3, e3/0-3
A1(config-if-range)#shutdown
A1(config-if-range)#exit
A1(config)#hostname A1
A1(config)#no ip domain lookup
A1(config)#banner motd # A1, ENCOR Skills Assessment, Scenario 1 #
A1(config)#line con 0
A1(config-line)#exec-timeout 0 0
A1(config-line)#logging synchronous
A1(config-line)#exit
A1(config)#vlan 100
A1(config-vlan)#name Management
A1(config-vlan)#exit
A1(config)#vlan 101
A1(config-vlan)#name UserGroupA
A1(config-vlan)#exit
A1(config)#vlan 102
A1(config-vlan)#name UserGroupB
A1(config-vlan)#exit
A1(config)#vlan 999
A1(config-vlan)#name NATIVE
A1(config-vlan)#exit
A1(config)#interface vlan 100
A1(config-if)#ip address 10.0.100.3 255.255.255.0
A1(config-if)#ipv6 address fe80::a1:1 link-local
A1(config-if)#ipv6 address 2001:db8:100:100::1/64
A1(config-if)#no shutdown
A1(config-if)#exit
A1(config)#interface range e1/2-3, e2/0-3, e3/0-3
A1(config-if-range)#shutdown
A1(config-if-range)#exit
A1(config)#
```

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PARTE 3: CONFIGURAR LOS PROTOCOLOS DE ENRUTAMIENTO

En esta parte, debe configurar los protocolos de enrutamiento IPv4 e IPv6. Al final de esta parte, la red debería estar completamente convergente. Los pings de IPv4 e IPv6 a la interfaz Loop back 0 desde D1 y D2 deberían ser exitosos.

Nota: Los pings desde los hosts no tendrán éxito porque sus puertas de enlace predeterminadas apuntan a la dirección HSRP que se habilitará en la Parte 4.

Las tareas de configuración son las siguientes:

Tarea#	Tarea	Especificación
3.1	En la "Red de la Compañía" (es decir, R1, R3, D1, y D2), configure single-área OSPFv2 en área 0.	<p>Use OSPF Process ID 4 y asigne los siguientes router-IDs:</p> <ul style="list-style-type: none">• R1: 0.0.4.1• R3: 0.0.4.3• D1: 0.0.4.131• D2: 0.0.4.132 <p>En R1, R3, D1, y D2, anuncie todas las redes directamente conectadas / VLANs en Área 0.</p> <ul style="list-style-type: none">• En R1, no publique la red R1 – R2.• En R1, propague una ruta por defecto. Note que la ruta por defecto deberá ser provista por BGP. <p>Deshabilite las publicaciones OSPFv2 en:</p> <ul style="list-style-type: none">• D1: todas las interfaces excepto G1/0/11• D2: todas las interfaces excepto G1/0/11

3.2	En la “Red de la Compañía” (es decir, R1, R3, D1, y D2), configure classic single-área OSPFv3 en área 0.	<p>Use OSPF Process ID 6 y asigne los siguientes router - IDs:</p> <ul style="list-style-type: none"> • R1: 0.0.6.1 • R3: 0.0.6.3 • D1: 0.0.6.131 • D2: 0.0.6.132 <p>En R1, R3, D1, y D2, anuncie todas las redes directamente conectadas / VLANs en Área 0.</p> <ul style="list-style-type: none"> • En R1, no publique la red R1 – R2. • On R1, propague una ruta por defecto. Note que la ruta por defecto deberá ser provista por BGP. <p>Deshabilite las publicaciones OSPFv3 en:</p> <ul style="list-style-type: none"> • D1: todas las interfaces excepto G1/0/11 • D2: todas las interfaces excepto G1/0/11
-----	--	--

Tabla 3_Tabla 1 protocolos de enrutamiento

Ilustración 14_configuración R1



```
Router(config)#hostname R1
R1(config)#ipv6 unicast-routing
R1(config)#no ip domain lookup
R1(config)#banner motd # R1, ENCOR Skills Assessment, Scenario 1 #
R1(config)#line con 0
R1(config-line)#exec-timeout 0 0
R1(config-line)#logging synchronous
R1(config-line)#exit
R1(config)#interface g0/0
R1(config-if)#ip address 209.165.200.225 255.255.255.224
R1(config-if)#ipv6 address fe80::1:1 link-local
R1(config-if)#ipv6 address 2001:db8:200::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface g1/0
R1(config-if)#ip address 10.0.10.1 255.255.255.0
R1(config-if)#ipv6 address fe80::1:2 link-local
R1(config-if)#ipv6 address 2001:db8:100:1010::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface s2/0
R1(config-if)#ip address 10.0.13.1 255.255.255.0
R1(config-if)#ipv6 address fe80::1:3 link-local
R1(config-if)#ipv6 address 2001:db8:100:1013::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
*Nov 30 02:21:22.091: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Nov 30 02:21:22.723: %LINK-3-UPDOWN: Interface GigabitEthernet1/0, changed state to up
*Nov 30 02:21:23.091: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
*Nov 30 02:21:23.379: %LINK-3-UPDOWN: Interface Serial2/0, changed state to up
R1(config)#
*Nov 30 02:21:23.723: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0, changed state to up
*Nov 30 02:21:24.395: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
R1(config)#
*Nov 30 02:22:13.235: %CDP-4-DUPLEX_MISMATCH: duplex mismatch discovered on GigabitEthernet1/0 (not half duplex), with D1 Gi
gabitEthernet3/2 (half duplex).
R1(config)#
```

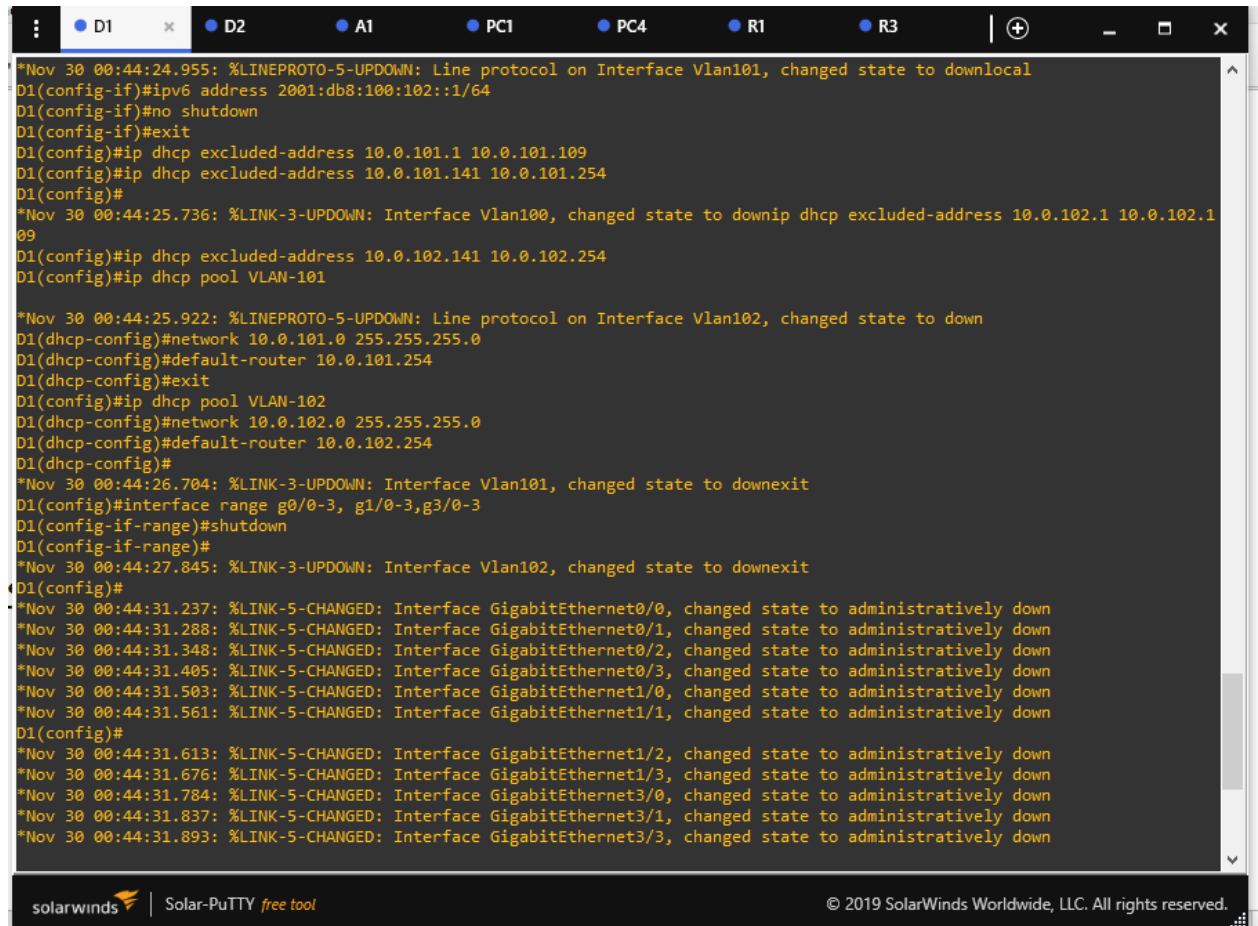
Ilustración 15_ Configuración R3



```
Cisco IOS Software, 7200 Software (C7200-ADVENTERPRISEK9-M), Version 15.2(4)M7, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Thu 25-Sep-14 10:36 by prod_rel_team
*Nov 30 02:24:19.999: %SNMP-5-COLDSTART: SNMP agent on host Router is undergoing a cold start
*Nov 30 02:24:21.115: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Nov 30 02:24:21.119: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Nov 30 02:24:42.427: %SYS-3-CPUHOG: Task is running for (2036)msecs, more than (2000)msecs (1/1),process = Crypto CA.
-Traceback= 0x64A79DA4z 0x64F1D748z 0x64F1D4FCz 0x64F1D900z 0x64A5B360z 0x64A71958z 0x64A7118Cz 0x64A83D90z 0x64A83EFCz 0x64
A72238z 0x64A723B0z 0x64A5BDACz 0x64A56ABCz 0x64A56B3Cz 0x64A56518z 0x64F1D748z
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#ipv6 unicast-routing
R3(config)#no ip domain lookup
R3(config)#banner motd # R3, ENCOR Skills Assessment, Scenario 1 #
R3(config)#line con 0
R3(config-line)#exec-timeout 0 0
R3(config-line)#logging synchronous
R3(config-line)#exit
R3(config)#interface g1/0
R3(config-if)#ip address 10.0.11.1 255.255.255.0
R3(config-if)#ipv6 address fe80::3:2 link-local
R3(config-if)#ipv6 address 2001:db8:100:1011::1/64
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#interface s2/0
R3(config-if)#ip address 10.0.13.3 255.255.255.0
R3(config-if)#ipv6 address fe80::3:3 link-local
R3(config-if)#ipv6 address 2001:db8:100:1010::2/64
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#
*Nov 30 02:25:25.219: %LINK-3-UPDOWN: Interface GigabitEthernet1/0, changed state to up
*Nov 30 02:25:26.219: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0, changed state to up
R3(config)#
```

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Ilustración 16_Configuración D1



```

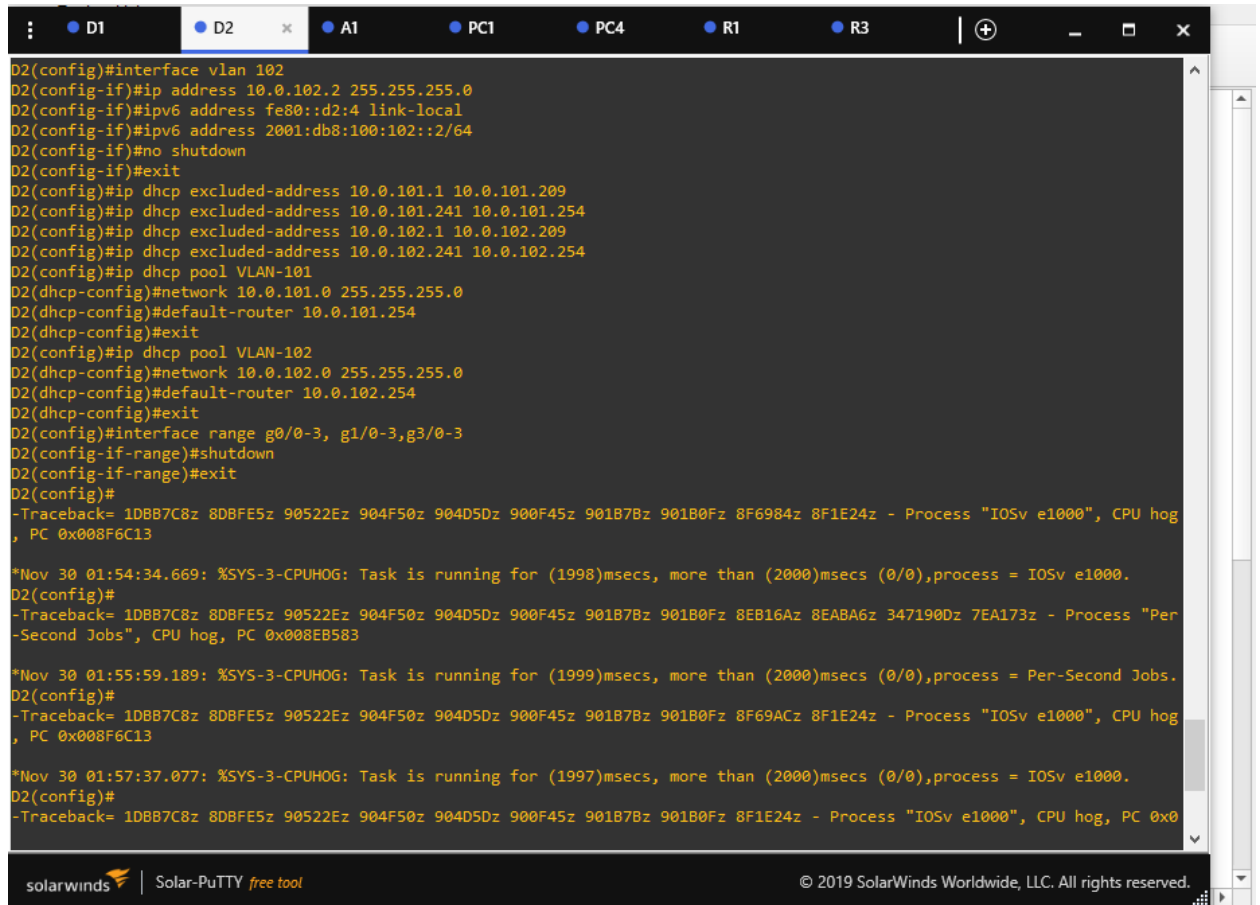
D1
D2
A1
PC1
PC4
R1
R3
*Nov 30 00:44:24.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan101, changed state to downlocal
D1(config-if)#ipv6 address 2001:db8:100:102::1/64
D1(config-if)#no shutdown
D1(config-if)#exit
D1(config)#ip dhcp excluded-address 10.0.101.1 10.0.101.109
D1(config)#ip dhcp excluded-address 10.0.101.141 10.0.101.254
D1(config)#
*Nov 30 00:44:25.736: %LINK-3-UPDOWN: Interface Vlan100, changed state to downip dhcp excluded-address 10.0.102.1 10.0.102.1
09
D1(config)#ip dhcp excluded-address 10.0.102.141 10.0.102.254
D1(config)#ip dhcp pool VLAN-101

*Nov 30 00:44:25.922: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan102, changed state to down
D1(dhcp-config)#network 10.0.101.0 255.255.255.0
D1(dhcp-config)#default-router 10.0.101.254
D1(dhcp-config)#exit
D1(config)#ip dhcp pool VLAN-102
D1(dhcp-config)#network 10.0.102.0 255.255.255.0
D1(dhcp-config)#default-router 10.0.102.254
D1(dhcp-config)#

*Nov 30 00:44:26.704: %LINK-3-UPDOWN: Interface Vlan101, changed state to downexit
D1(config)#interface range g0/0-3, g1/0-3,g3/0-3
D1(config-if-range)#shutdown
D1(config-if-range)#

*Nov 30 00:44:27.845: %LINK-3-UPDOWN: Interface Vlan102, changed state to downexit
D1(config)#
*Nov 30 00:44:31.237: %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to administratively down
*Nov 30 00:44:31.288: %LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down
*Nov 30 00:44:31.348: %LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to administratively down
*Nov 30 00:44:31.405: %LINK-5-CHANGED: Interface GigabitEthernet0/3, changed state to administratively down
*Nov 30 00:44:31.503: %LINK-5-CHANGED: Interface GigabitEthernet1/0, changed state to administratively down
*Nov 30 00:44:31.561: %LINK-5-CHANGED: Interface GigabitEthernet1/1, changed state to administratively down
D1(config)#
*Nov 30 00:44:31.613: %LINK-5-CHANGED: Interface GigabitEthernet1/2, changed state to administratively down
*Nov 30 00:44:31.676: %LINK-5-CHANGED: Interface GigabitEthernet1/3, changed state to administratively down
*Nov 30 00:44:31.784: %LINK-5-CHANGED: Interface GigabitEthernet3/0, changed state to administratively down
*Nov 30 00:44:31.837: %LINK-5-CHANGED: Interface GigabitEthernet3/1, changed state to administratively down
*Nov 30 00:44:31.893: %LINK-5-CHANGED: Interface GigabitEthernet3/3, changed state to administratively down
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```

Ilustración 17_Configuración en D2



```
D2(config)#interface vlan 102
D2(config-if)#ip address 10.0.102.2 255.255.255.0
D2(config-if)#ipv6 address fe80::d2:4 link-local
D2(config-if)#ipv6 address 2001:db8:100:102::2/64
D2(config-if)#no shutdown
D2(config-if)#exit
D2(config)#ip dhcp excluded-address 10.0.101.1 10.0.101.209
D2(config)#ip dhcp excluded-address 10.0.101.241 10.0.101.254
D2(config)#ip dhcp excluded-address 10.0.102.1 10.0.102.209
D2(config)#ip dhcp excluded-address 10.0.102.241 10.0.102.254
D2(config)#ip dhcp pool VLAN-101
D2(dhcp-config)#network 10.0.101.0 255.255.255.0
D2(dhcp-config)#default-router 10.0.101.254
D2(dhcp-config)#exit
D2(config)#ip dhcp pool VLAN-102
D2(dhcp-config)#network 10.0.102.0 255.255.255.0
D2(dhcp-config)#default-router 10.0.102.254
D2(dhcp-config)#exit
D2(config)#interface range g0/0-3, g1/0-3, g3/0-3
D2(config-if-range)#shutdown
D2(config-if-range)#exit
D2(config)#
-Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8F6984z 8F1E24z - Process "IOSv e1000", CPU hog
, PC 0x008F6C13

*Nov 30 01:54:34.669: %SYS-3-CPUHOG: Task is running for (1998)msecs, more than (2000)msecs (0/0),process = IOSv e1000.
D2(config)#
-Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8EB16Az 8EABA6z 347190Dz 7EA173z - Process "Per
-Second Jobs", CPU hog, PC 0x008EB583

*Nov 30 01:55:59.189: %SYS-3-CPUHOG: Task is running for (1999)msecs, more than (2000)msecs (0/0),process = Per-Second Jobs.
D2(config)#
-Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8F69ACz 8F1E24z - Process "IOSv e1000", CPU hog
, PC 0x008F6C13

*Nov 30 01:57:37.077: %SYS-3-CPUHOG: Task is running for (1997)msecs, more than (2000)msecs (0/0),process = IOSv e1000.
D2(config)#
-Traceback= 1DBB7C8z 8DBFE5z 90522Ez 904F50z 904D5Dz 900F45z 901B7Bz 901B0Fz 8F1E24z - Process "IOSv e1000", CPU hog, PC 0x0
```

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CONCLUSIONES

Podemos concluir que las redes de comunicación y/o telecomunicaciones hoy por hoy son una pieza fundamental en la interconexión, logrando con ello llegar a lugares que antes se consideraban inalcanzables, es por ello que al momento de poner en práctica lo aprendido en este diplomado, no se puede dejar de lado el proceso social que esto puede traer consigo.

Por otro lado, cabe resaltar que la configuración de los ROUTERS mediante el protocolo BGP, permite una comunicación fácil y rápida entre cada uno de los involucrados en el proceso, logrando que la interacción entre ellos sea excelente, de igual manera el protocolo de VTP, nos permite una administración entre la VLAN y los SWITCH, estableciendo diferentes características de acuerdo a los dispositivos de red y las topologías de cada uno

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