INSTITUTO TECNOLOGICO DE SALINA CRUZ

REDES DE COMPUTADORAS

**PRACTICA** No.1.

UNIDAD 5.

REALIZADA POR: SANCHEZ SANTIAGO NOE

LUGAR Y FECHA: SALINA CRUZ OAXACA A 15 DE MAYO DE 2015.

DOCENTE: ROMÁN NÁJERA SUSANA MÓNICA.

SEMESTRE Y GRUPO: 6E.

CARRERA: ING. EN TECNOLOGÍAS DE LA INFORMACIÓN Y DE LAS COMUNICACIONES

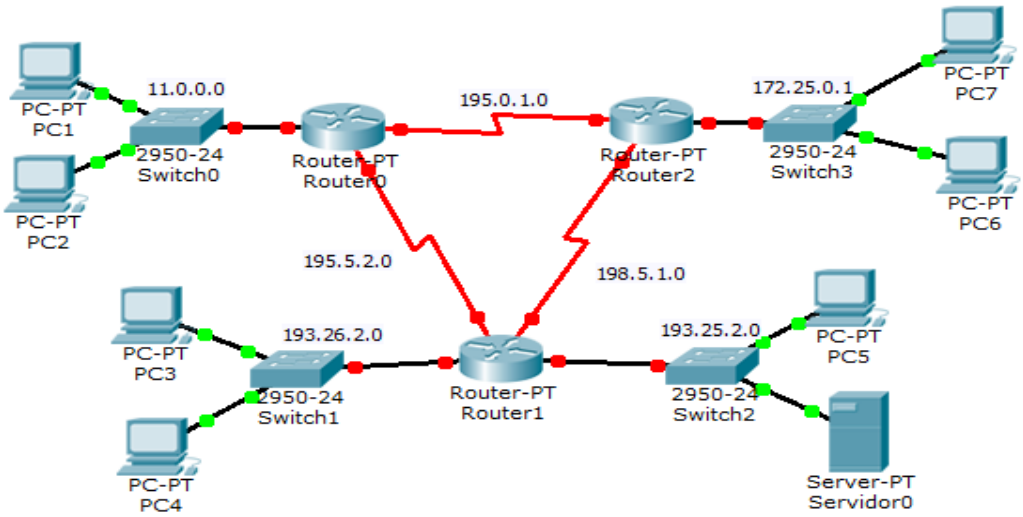
OBJETIVO: conocer a realizar la configuración del protocolo OSPF Y conocer características propias del protocolo entre ellas la distancia administrativa, la ruta más larga, etc.

INSTRUCCIONES: a partir de la topología mostrada realizar la tabla de enrutamiento y en base a ello realizar la configuración básica y configuración del protocolo OSPF.

MATERIALES:

Software packet tracer.

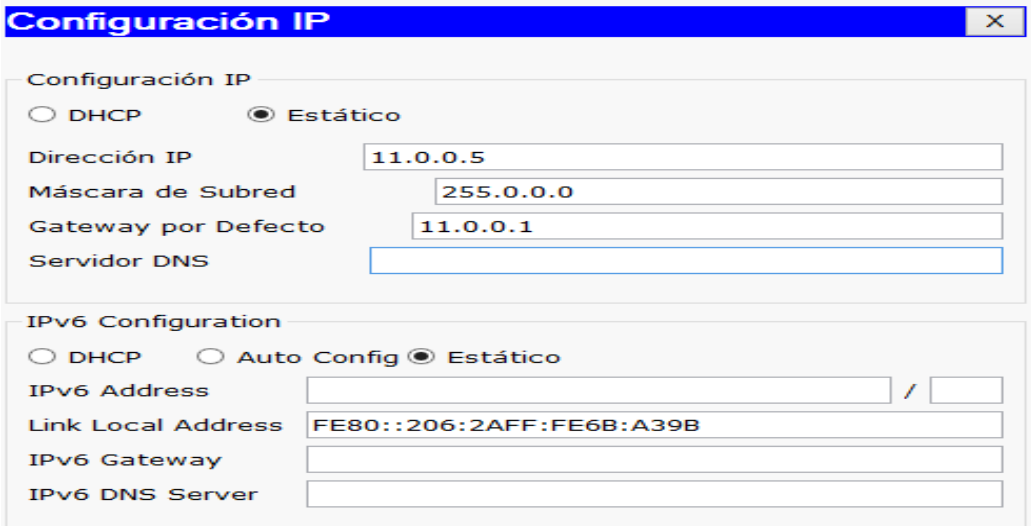
Computadora

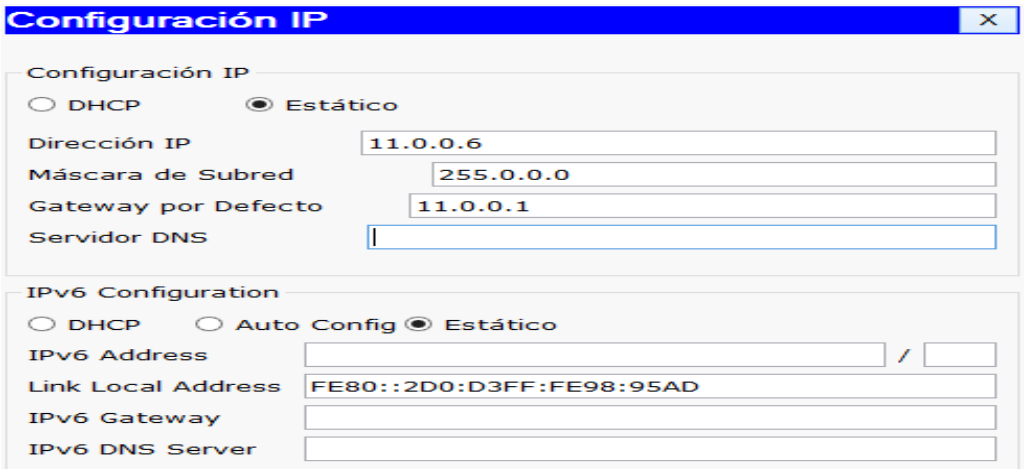


1.- creación de la tabla de enrutamiento.

| | INTERFAZ | DIRECCION IP | MASCARA DE SUBRED | GATEWAY POR DEFECTO |
|---|---|---|---|---|
| **UNISTMO** | fa0/0 | 11.0.0.1 | 255.0.0.0 | n/a |
| | S2/0 | 195.5.2.1 | 255.255.255.0 | n/a |
| | S3/0 | 195.0.1.1 | 255.255.255.0 | n/a |
| **UMAR** | Fa0/0 | 193.26.2.1 | 255.255.255.0 | n/a |
| | Fa1/0 | 193.25.2.1 | 255.255.255.0 | n/a |
| | S2/0 | 195.5.2.2 | 255.255.255.0 | n/a |
| | S3/0 | 195.5.1.1 | 255.255.255.0 | n/a |
| **UNSIJ** | Fa0/0 | 172.25.0.1 | 255.255.0.0 | n/a |
| | S2/0 | 195.5.1.2 | 255.255.255.0 | n/a |
| | S3/0 | 195.0.1.2 | 255.255.255.0 | n/a |
| **PC1** | NIC | 11.0.0.5 | 255.0.0.0 | 11.0.0.1 |
| **PC2** | NIC | 11.0.0.6 | 255.0.0.0 | 11.0.0.1 |
| **PC3** | NIC | 193.26.2.5 | 255.255.0.0 | 193.26.2.1 |
| **PC4** | NIC | 193.26.2.6 | 255.255.0.0 | 193.26.2.1 |
| **SERV0** | NIC | 193.25.2.5 | 255.255.0.0 | 193.25.2.1 |
| **PC5** | NIC | 193.25.2.6 | 255.255.0.0 | 193.25.2.1 |
| **PC6** | NIC | 172.25.0.5 | 255.255.255.0 | 172.25.0.1 |
| **PC7** | NIC | 172.25.0.6 | 255.255.255.0 | 172.25.0.1 |

Asignamos direcciones ip a las pc.






2.- realizamos la configuracion basica de los routers.

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname UNISTMO
UNISTMO(config)#enable password 123
UNISTMO(config)#banner motd "*** En hora buena, bienvenido ***"
UNISTMO(config)#interface fa0/0
UNISTMO(config-if)#ip address 11.0.0.1
% Incomplete command.
UNISTMO(config-if)#ip address 11.0.0.1 255.0.0.0
UNISTMO(config-if)#no shut

UNISTMO(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

UNISTMO(config-if)#exit
UNISTMO(config)#interface s2/0
UNISTMO(config-if)#ip address 195.5.2.1 255.255.255.0
UNISTMO(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
UNISTMO(config-if)#exit
```

```
UMAR(config)#interface fa1/0
UMAR(config-if)#ip address 193.25.2.1 255.255.255.0
UMAR(config-if)#no shut

UMAR(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state t
o up

UMAR(config-if)#exit
UMAR(config)#interface s2/0
UMAR(config-if)#ip address 195.5.2.2 255.255.255.0
UMAR(config-if)#no shut

UMAR(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

UMAR(config-if)#exit
UMAR(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

UMAR(config)#interface s3/0
UMAR(config-if)#ip address 195.5.1.1 255.255.255.0
UMAR(config-if)#no shut
```

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname UMAR
UMAR(config)#enable password 234
UMAR(config)#banner motd "*** En hora buena, bienvenido noe sanchez santiago ***
"
UMAR(config)#interface fa0/0
UMAR(config-if)#ip address 193.26.2.1 255.255.255.0
UMAR(config-if)#no shut

UMAR(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

UMAR(config-if)#exit
```

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname UNSIJ
UNSIJ(config)#enable password 345
UNSIJ(config)#banner motd "*** bienvenido noe ***"
UNSIJ(config)#interface fa0/0
UNSIJ(config-if)#ip address 172.25.0.1 255.255.0.0
UNSIJ(config-if)#no shut

UNSIJ(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

UNSIJ(config-if)#exit
UNSIJ(config)#interface s2/0
UNSIJ(config-if)#ip address 195.5.1.2 255.255.255.0
UNSIJ(config-if)#no shut

UNSIJ(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

UNSIJ(config-if)#exit
```

```
UNSIJ(config)#interface s3/0
UNSIJ(config-if)#ip address 195.0.1.2 255.255.255.0
UNSIJ(config-if)#no shut

UNSIJ(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

UNSIJ(config-if)#exit
UNSIJ(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```

3.- realizar la configuración del protocolo OSPF.

```
*** En hora buena, bienvenido ***

UNISTMO>enable
Password:
UNISTMO#config t
Enter configuration commands, one per line.  End with CNTL/Z.
UNISTMO(config)#router ospf 1
UNISTMO(config-router)#network 195.5.2.0 255.255.255.0 area 0
UNISTMO(config-router)#network 195.0.1.0 255.255.255.0 area 0
UNISTMO(config-router)#end
UNISTMO#
%SYS-5-CONFIG_I: Configured from console by console

UNISTMO#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
UNISTMO#
```

Ahora para visualizar las direcciones ip asociadas al router haremos uso del comando “show ip route”.

```
*** En hora buena, bienvenido ***

UNISTMO>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    11.0.0.0/8 is directly connected, FastEthernet0/0
C    195.0.1.0/24 is directly connected, Serial3/0
C    195.5.2.0/24 is directly connected, Serial2/0
UNISTMO>

*** En hora buena, bienvenido noe sanchez santiago ***

UMAR>enable
Password:
UMAR#config t
Enter configuration commands, one per line.  End with CNTL/Z.
UMAR(config)#router ospf 1
UMAR(config-router)#network 195.5.2.0 255.255.255.0  area 0
UMAR(config-router)#network 195.5.2.0 255.255.255.0  area 0
UMAR(config-router)#network 195.5.1.0 255.255.255.0  area 0

UMAR(config-router)#end
UMAR#
%SYS-5-CONFIG_I: Configured from console by console

UMAR#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

```
UMAR#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    11.0.0.0/8 [110/65] via 195.5.2.1, 00:02:45, Serial2/0
C    193.25.2.0/24 is directly connected, FastEthernet1/0
C    193.26.2.0/24 is directly connected, FastEthernet0/0
O    195.0.1.0/24 [110/128] via 195.5.2.1, 00:02:45, Serial2/0
C    195.5.1.0/24 is directly connected, Serial3/0
C    195.5.2.0/24 is directly connected, Serial2/0
UMAR#
```

```
*** bienvenido noe ***

UNSIJ>
UNSIJ>enable
Password:
UNSIJ#config t
Enter configuration commands, one per line.  End with CNTL/Z.
UNSIJ(config)#router ospf 1
UNSIJ(config-router)#network 195.5.1.0 255.255.255.0 area 0
UNSIJ(config-router)#network 195.0.1.2 255.255.255.0 area 0
UNSIJ(config-router)#end
UNSIJ#
%SYS-5-CONFIG_I: Configured from console by console

UNSIJ#copy ru
02:28:44: %OSPF-5-ADJCHG: Process 1, Nbr 195.5.2.1 on Serial3/0 from LOADING to
FULL, Loading Done
UNSIJ#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

```
*** bienvenido noe ***

UNSIJ>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    11.0.0.0/8 [110/65] via 195.0.1.1, 00:01:24, Serial3/0
C    172.25.0.0/16 is directly connected, FastEthernet0/0
C    195.0.1.0/24 is directly connected, Serial3/0
C    195.5.1.0/24 is directly connected, Serial2/0
O    195.5.2.0/24 [110/128] via 195.5.1.1, 00:01:24, Serial2/0
                  [110/128] via 195.0.1.1, 00:01:24, Serial3/0
```

Verificacion y resolucion de problemas con el comando “show ip protocols”

```
UMAR>show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 195.5.2.2
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    195.5.2.0 0.0.0.255 area 0
    195.5.1.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    195.5.1.2            110      00:21:37
    195.5.2.1            110      00:21:37
    195.5.2.2            110      00:21:37
  Distance: (default is 110)
```

Realizamos ping con el switch.

PC1

```
PC>ping 11.0.0.1

Pinging 11.0.0.1 with 32 bytes of data:

Reply from 11.0.0.1: bytes=32 time=0ms TTL=255
Reply from 11.0.0.1: bytes=32 time=1ms TTL=255
Reply from 11.0.0.1: bytes=32 time=1ms TTL=255
Reply from 11.0.0.1: bytes=32 time=0ms TTL=255

Ping statistics for 11.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

SERV0

```
Packet Tracer SERVER Command Line 1.0
SERVER>ping 193.25.2.1

Pinging 193.25.2.1 with 32 bytes of data:

Reply from 193.25.2.1: bytes=32 time=1ms TTL=255
Reply from 193.25.2.1: bytes=32 time=0ms TTL=255
Reply from 193.25.2.1: bytes=32 time=0ms TTL=255
Reply from 193.25.2.1: bytes=32 time=0ms TTL=255

Ping statistics for 193.25.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

SERVER>
```

Ahora verificamos si existe conexión con los routers. Tratamos de enviar mensajes de un router a otro y en la parte inferior de nuestra área de trabajo de packet visualizaremos lo siguiente.

| Último Estado | Disparo | Origen | Destino | Tipo | Color | Tiempo (seg) | Periodo |
|---|---|---|---|---|---|---|---|
| Exitoso | | UMAR | UNSIJ | ICMP | | 0.000 | N |
| Exitoso | | UMAR | UNISTMO | ICMP | | 0.000 | N |
| Exitoso | | PC5 | UMAR | ICMP | | 0.000 | N |

Conclusión:

En esta práctica creamos nuestra tabla de enrutamiento, posteriormente asignamos direcciones ip a nuestras pc, después realizamos la configuración básica de cada router una vez que terminamos procedemos con la configuración del protocolo de enrutamiento al finalizar verificamos las ip relacionadas con el router, también verificamos si existe conexión de las pc al switch al que están conectadas y al router.