

Módulo 4 Ejercicio 1

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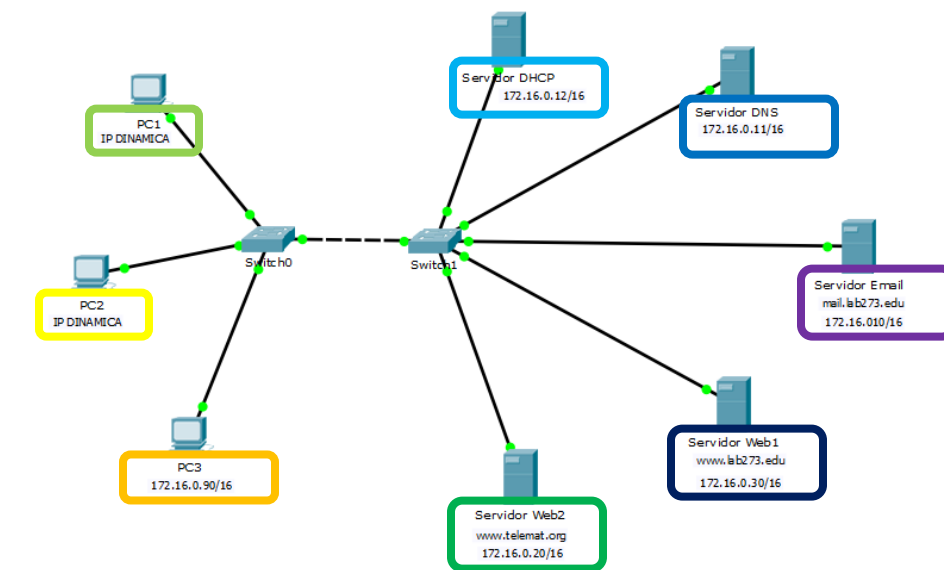
Requisito:

Tener operable la solución al ejercicio planteado para la semana (Servicios de Red).

Trabajo a realizar:

Realice los siguientes ejercicios y redacte un informe con sus respuestas y comentarios.

Solucion de la implementacion en Packet Tracer usando la siguiente Topologia



Servidor DHCP (172.16.0.12/16)

Servidor DNS(172.16.0.11/16)

Servidor Email (172.16.0.10/16)

Servidor Web1(172.16.0.30)

Servidor Web2(172.16.0.20/16)

PC1 Y PC2 con IP DINAMICA

PC3 IP ESTATICA (172.16.0.90/16)

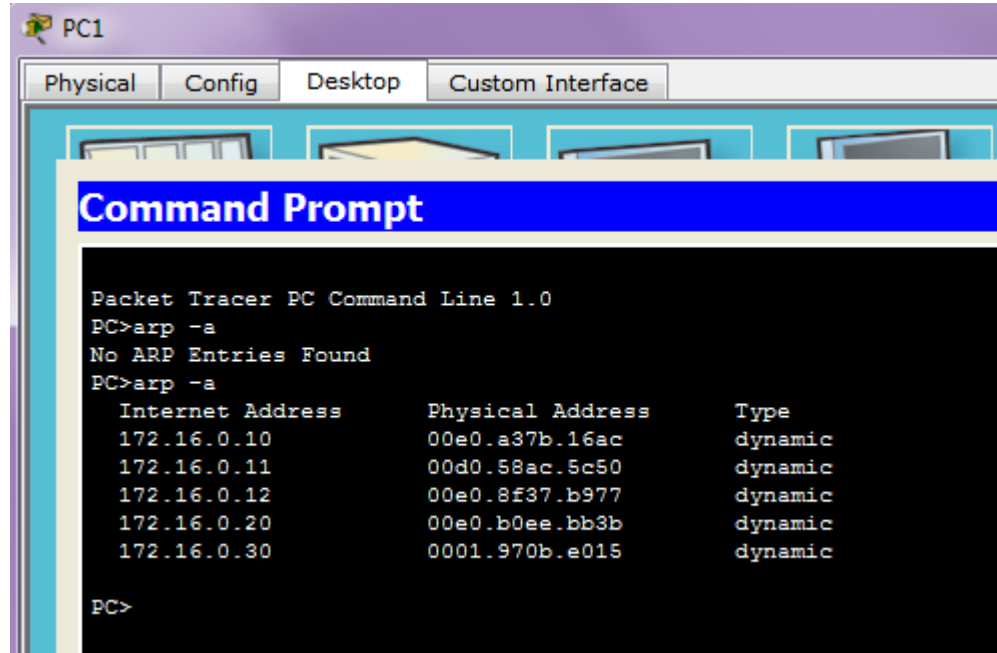
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	Successful	PC1	Servidor DHCP	ICMP	■	0.000	N	0	(edit)	(delete)
●	Successful	PC1	Servidor DNS	ICMP	■	0.000	N	1	(edit)	(delete)
●	Successful	PC1	Servidor Email	ICMP	■	0.000	N	2	(edit)	(delete)
●	Successful	PC1	Servidor Web1	ICMP	■	0.000	N	3	(edit)	(delete)
●	Successful	PC1	Servidor Web2	ICMP	■	0.000	N	4	(edit)	(delete)
●	Successful	PC2	Servidor DHCP	ICMP	■	0.000	N	5	(edit)	(delete)
●	Successful	PC2	Servidor DNS	ICMP	■	0.000	N	6	(edit)	(delete)
●	Successful	PC2	Servidor Email	ICMP	■	0.000	N	7	(edit)	(delete)
●	Successful	PC2	Servidor Web2	ICMP	■	0.000	N	8	(edit)	(delete)
●	Successful	PC3	Servidor DHCP	ICMP	■	0.000	N	9	(edit)	(delete)
●	Successful	PC3	Servidor DNS	ICMP	■	0.000	N	10	(edit)	(delete)
●	Successful	PC3	Servidor Web1	ICMP	■	0.000	N	11	(edit)	(delete)
●	Successful	PC3	Servidor Web2	ICMP	■	0.000	N	12	(edit)	(delete)
●	Successful	PC3	Servidor Email	ICMP	■	0.000	N	13	(edit)	(delete)

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Parte 1: Examinando tablas de ARP**a) Ingrese a PC0 y borre la tabla ARP**

Despues entramos a la PC1. Damos A **Desktop> Command Prompt**

Ejecutamos el comando arp-a para ver las direcciones destino que se tiene almacenada



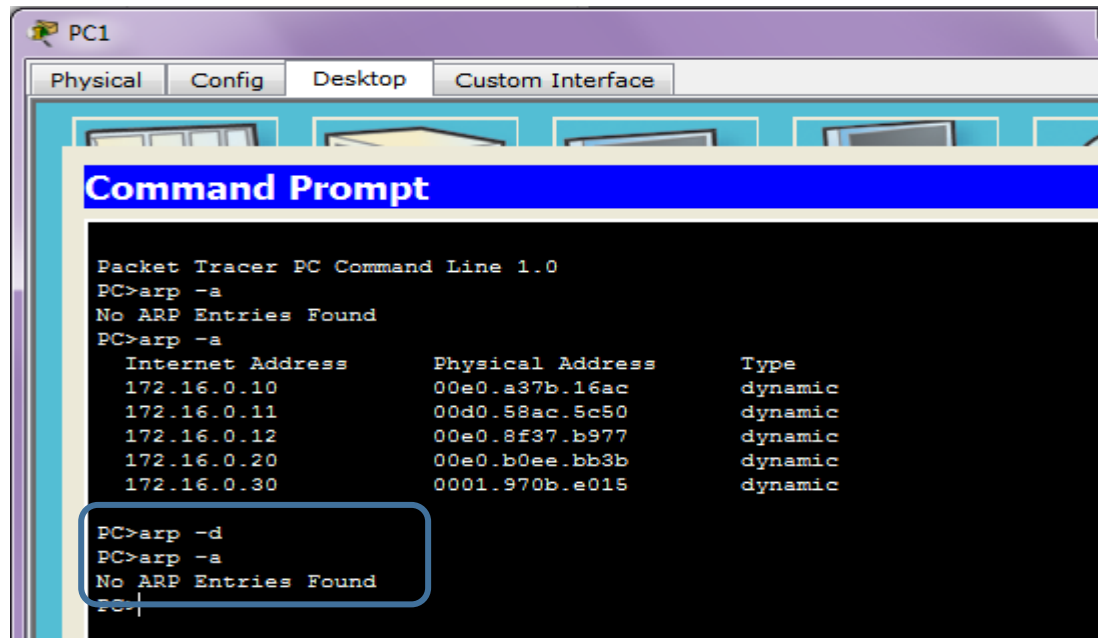
PC1

Physical Config Desktop Custom Interface

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>arp -a
Internet Address      Physical Address      Type
172.16.0.10           00e0.a37b.16ac        dynamic
172.16.0.11           00d0.58ac.5c50        dynamic
172.16.0.12           00e0.8f37.b977        dynamic
172.16.0.20           00e0.b0ee.bb3b        dynamic
172.16.0.30           0001.970b.e015        dynamic
PC>
```

Posteriormente introducimos el comando arp -d para borrar la tabla ARP.



PC1

Physical Config Desktop Custom Interface

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>arp -a
Internet Address      Physical Address      Type
172.16.0.10           00e0.a37b.16ac        dynamic
172.16.0.11           00d0.58ac.5c50        dynamic
172.16.0.12           00e0.8f37.b977        dynamic
172.16.0.20           00e0.b0ee.bb3b        dynamic
172.16.0.30           0001.970b.e015        dynamic
PC>arp -d
PC>arp -a
No ARP Entries Found
PC>
```

Como vemos al ejecutar de nuevo el comando arp-a nos muestra la tabla vacia.

b) Haga ping al servidor de correo: ping mail.lab273.edu

Al hacer ping al servidor de correo, tomamos en cuenta la direccion IP del mismo, el cual es 172.16.0.10 desde del PC1 damos A **Desktop> Command Prompt**

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```
PC>ping 172.16.0.10

Pinging 172.16.0.10 with 32 bytes of data:

Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128

Ping statistics for 172.16.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

c) Obtenga la tabla ARP actualizada. ¿A qué dirección IP corresponde la entrada de la dirección MAC

Obtemos la tabla ARP actualizada con el comando arp -a el cual nos muestra el cual nos muestra en el cuadro verde la dirección IP (Servidor email) y la dirección mac en el cuadro amarillo

```
PC>ping 172.16.0.10

Pinging 172.16.0.10 with 32 bytes of data:

Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128
Reply from 172.16.0.10: bytes=32 time=0ms TTL=128

Ping statistics for 172.16.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>cls
Invalid Command.

PC>clear
Invalid Command.

PC>arp -a
Internet Address      Physical Address      Type
172.16.0.10          00e0.a37b.16ac       dynamic
```

d) ¿Cuándo un host emite una solicitud de ARP?

Cuando no conoce la dirección MAC del receptor

Parte 2: Examinando tabla de direcciones MAC en los switches

a) Genere tráfico adicional para completar la tabla de direcciones MAC de los switches

Generamos tráfico de las distintas pc's y servidores con desde Desktop> Command Prompt con el ping. Para después examinar las direcciones MAC de los Switches

The image displays six screenshots of the Packet Tracer Command Prompt interface, arranged in a 3x2 grid. Each screenshot shows the results of a series of ping commands from different devices in a network simulation.

- Top Left (PC1):** Shows ping results for 172.16.0.12, 172.16.0.11, and 172.16.0.10. All pings are successful with 0% loss.
- Top Right (PC1):** Shows ping results for 172.16.0.10, 172.16.0.30, and 172.16.0.20. All pings are successful with 0% loss.
- Middle Left (PC2):** Shows ping results for 172.16.0.12 and 172.16.0.11. All pings are successful with 0% loss.
- Middle Right (PC3):** Shows ping results for 172.16.0.12 and 172.16.0.11. All pings are successful with 0% loss.
- Bottom Left (Servidor DHCP):** Shows ping results for 172.16.0.90 and 172.16.0.12. All pings are successful with 0% loss.
- Bottom Right (Servidor Email):** Shows ping results for 172.16.0.90 and 172.16.0.20. All pings are successful with 0% loss.

b) Examine la tabla de direcciones MAC en los switches.

Haga clic en Switch0 y, a continuación, en la ficha CLI. Introduzca el comando show mac-address-table.

```

Switch#en
Switch##show mac address-table
^
% Invalid input detected at '^' marker.

Switch#en
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
----    -
1       000b.be56.b702    DYNAMIC   Fa0/4
1       0030.f262.8cb0    DYNAMIC   Fa0/2
1       00d0.5883.ddc9    DYNAMIC   Fa0/3
1       00d0.58ac.5c50    DYNAMIC   Fa0/4
1       00e0.8f37.b977    DYNAMIC   Fa0/4
Switch#

```

Haga clic en Switch1 y, a continuación, en la ficha CLI. Introduzca el comando show mac-address-table.

Switch1

Physical Config CLI

IOS Command Line Interface

```

% Invalid input detected at '^' marker.

Switch#en
Switch#show mac address-table
^
% Invalid input detected at '^' marker.

Switch#en
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
----    -
1       0003.e4c5.2704    DYNAMIC   Fa0/2
Switch#en
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
----    -
1       0003.e4c5.2704    DYNAMIC   Fa0/2
1       00d0.5883.ddc9    DYNAMIC   Fa0/2
1       00e0.8f37.b977    DYNAMIC   Fa0/1
1       00e0.a37b.16ac    DYNAMIC   Fa0/4
1       00e0.b0ee.bb3b    DYNAMIC   Fa0/6
Switch#

```

c) Analice la información obtenida. ¿Por qué hay dos direcciones MAC asociadas a un puerto?

Porque ambos dispositivos se conectan en un puerto a través del punto de acceso.