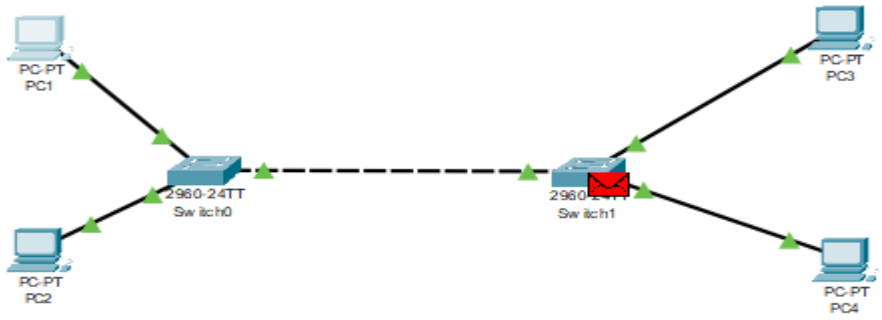
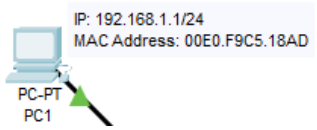
Understanding ARP Requests and Mac Address using Cisco Packet Tracer

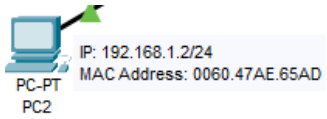


Using a simple network connection of four pc's connected to a separate switches(cisco catalyst 2690)



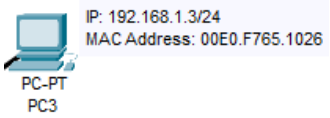
PC1 was assigned an IP of 192.168.1.1/24

With a MAC address of: 00E0.F9C5.18AD



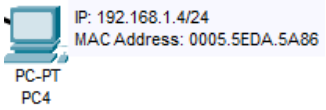
PC2 was assigned an IP of 192.168.1.2/24

With a MAC address of: 0060.47AE.65AD



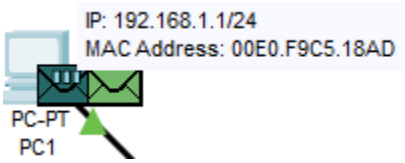
PC3 was assigned an IP of 192.168.1.3/24

With a MAC address of: 00E0.F765.1026



PC4 was assigned an IP of 192.168.1.4/24

With a MAC address of: 0005.5EDA.5A86



PC1 pinged the IP 192.168.1.4 (PC4)

```
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:
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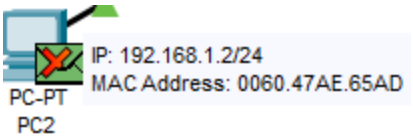
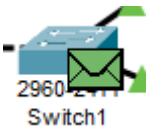
SW1 received the data:

Sw1 Mac Address table	
MAC	Interface
.65AD	F0/0

ARP Request happens: sends to all host of the network.



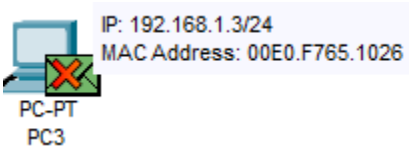


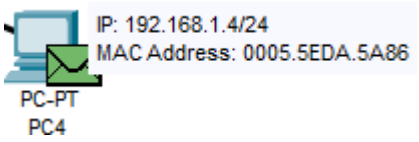
Data was sent to PC2 but failed due to unmatching destination values

Was also sent to sw2

SW2 MAC address table	
.65AD	F0/2

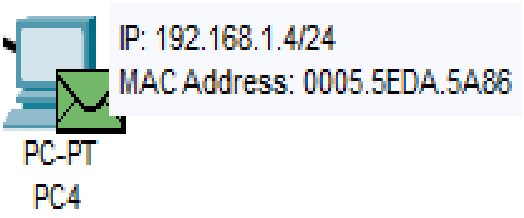
Since the MAC address is a broadcast it sends it to all host.





Both PC3 And PC4 received the request. PC3 ignores the frame since the destination IP address doesn't match what's on the Frame. However PC4 recognizes the destination Address does match its own IP address. After that PC4 replies with the ARP Reply.

Here you can see the reply consisting of:



Src: 192.168.1.4

Dstn:192.168.1.1

Src MAC: .5A86

Dstn MAC:18AD

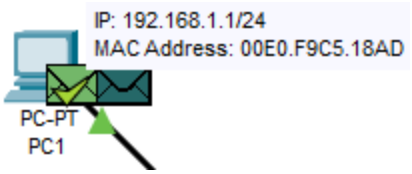
Here PC4 forward the reply to SW2 in which SW2 saves the MAC address on its table

SW2 MAC address table	
.65AD	F0/2
.5A86	F0/0

Since this is a unicast frame since it has a destination from its table it is now a Known Unicast Framework which it does not flood host anymore and in this case it forwards it to its intended host.

Switch one receives the frame and updates its MAC address table.

Sw1 Mac Address table	
MAC	Interface
.65AD	F0/0
.5A86	F0/2



Lastly PC1 receives the frame completing the process.

Vlan	Mac Address	Type
1	0005.5eda.5a86	DYNAMIC
1	00d0.97d1.db01	DYNAMIC
1	00e0.f765.1026	DYNAMIC
1	00e0.f9c5.18ad	DYNAMIC

Switch 1 MAC address table using command

Sw1# show mac address-table

Vlan	Mac Address	Type
1	0005.5eda.5a86	DYNAMIC
1	000a.41bb.8703	DYNAMIC
1	00e0.f765.1026	DYNAMIC
1	00e0.f9c5.18ad	DYNAMIC

Switch 2 MAC address table using command

Sw2#show mac address-table