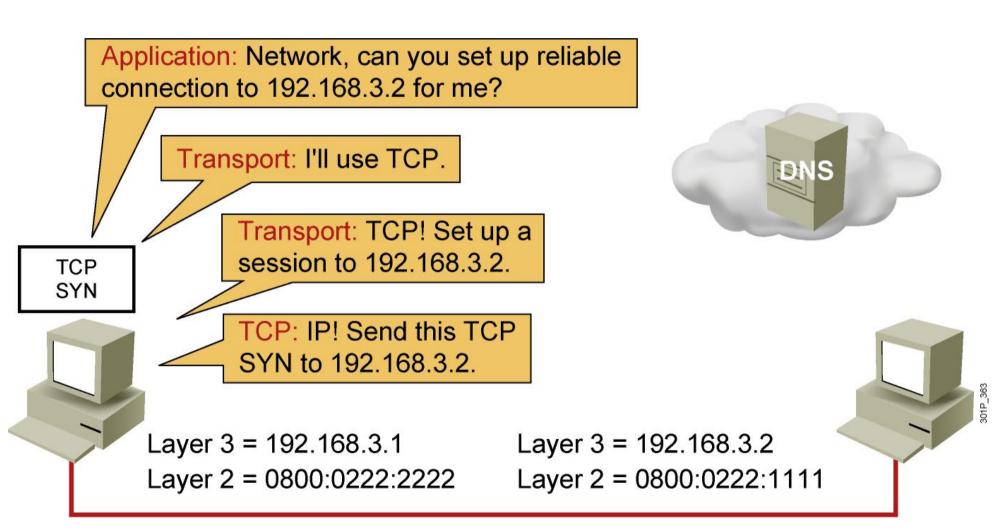
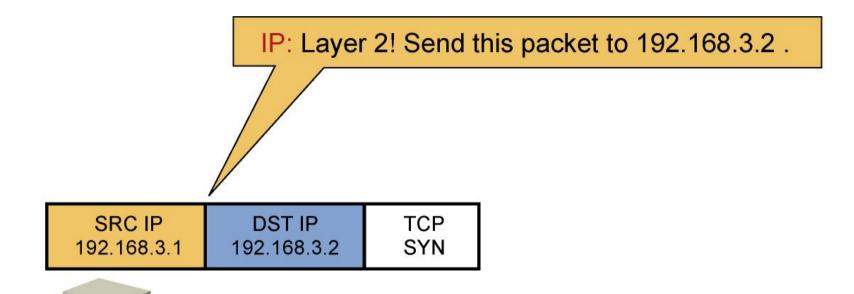
- 1. TCP 기반의 데이터 전송과정 (Host-to-Host Packet Delivery)
- 2. UDP 기반의 데이터 전송 과정 (Network to network Delivery)

1. TCP 기반의 데이터 전송과정

Host-to-Host Packet Delivery (1 of 22)



Host-to-Host Packet Delivery (2 of 22)





Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.2

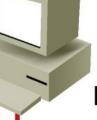


Host-to-Host Packet Delivery (3 of 22)

Layer 2: ARP, do you have a mapping for 192.168.3.2?

ARP: Is 192.168.3.2 in my ARP table? No, I guess Layer 2 will have to put the packet in the parking lot until I do an ARP.

SRC IP 192.168.3.1 DST IP 192.168.3.2 TCP SYN



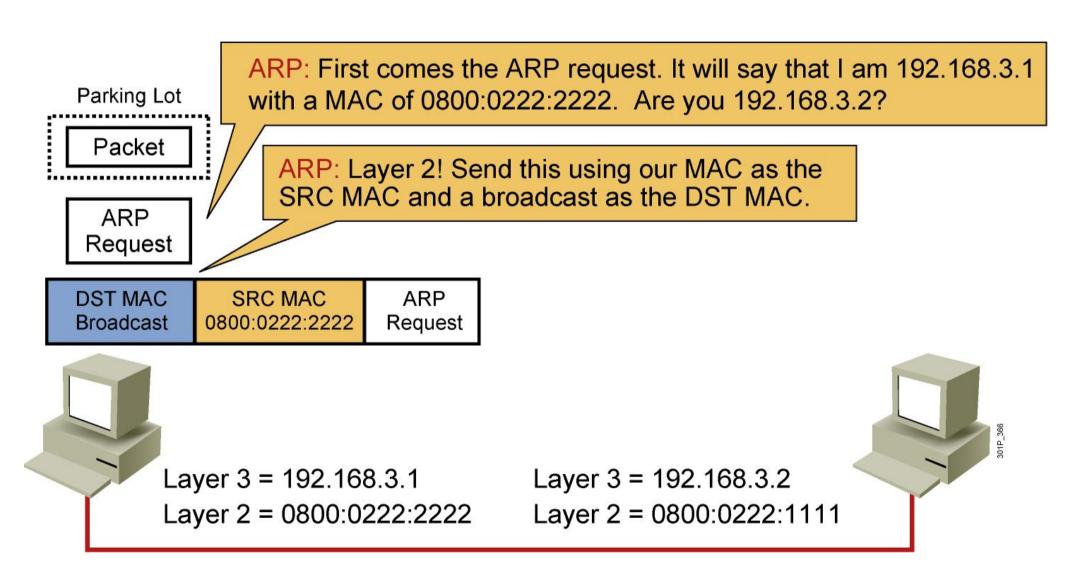
Layer 3 = 192.168.3.1

Layer 2 = 0800:0222:2222

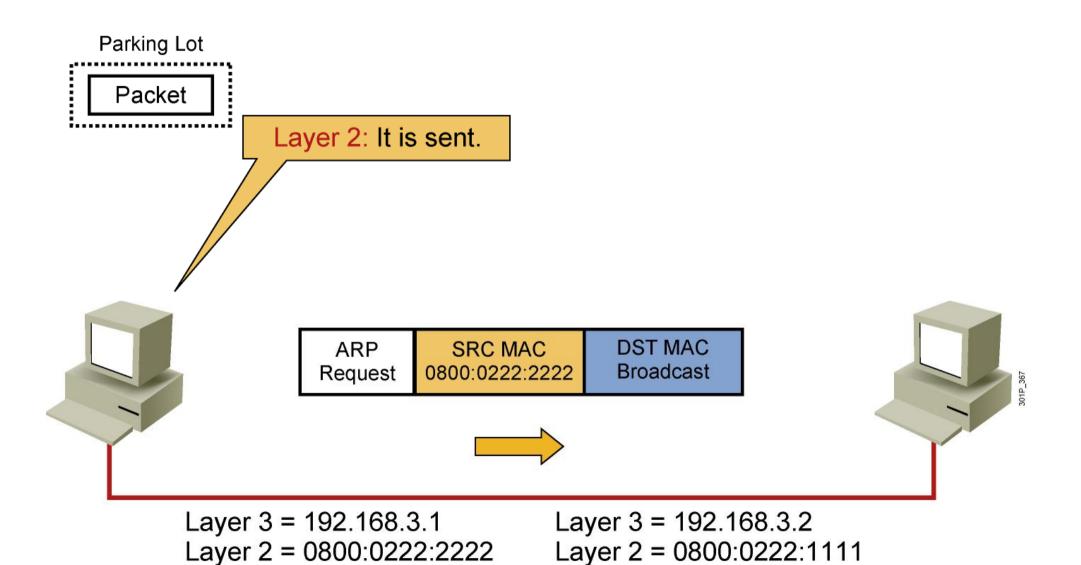
Layer 3 = 192.168.3.2



Host-to-Host Packet Delivery (4 of 22)

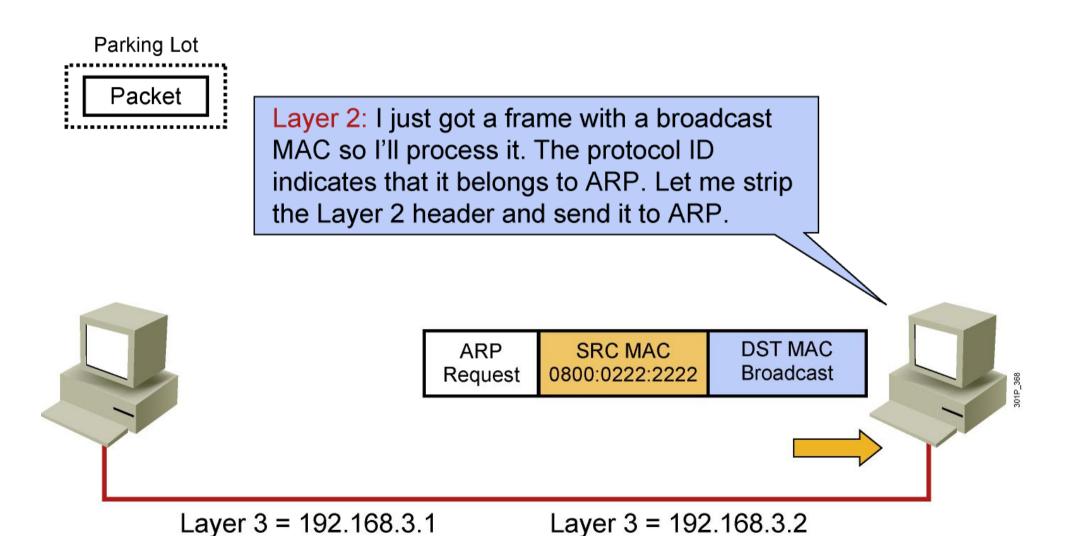


Host-to-Host Packet Delivery (5 of 22)

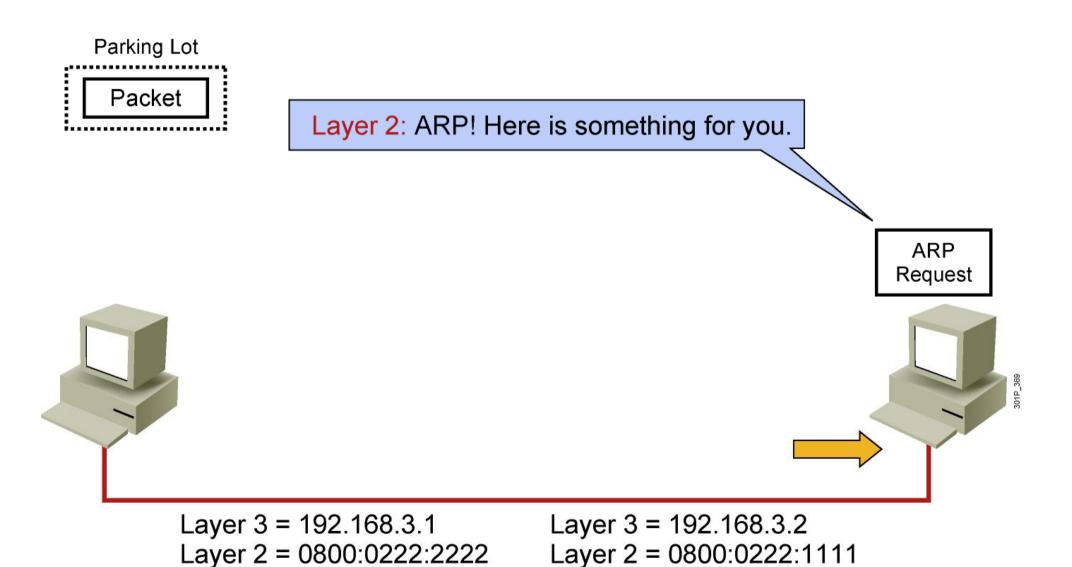


Host-to-Host Packet Delivery (6 of 22)

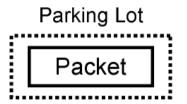
Layer 2 = 0800:0222:2222



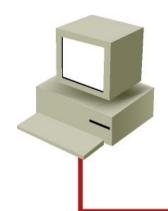
Host-to-Host Packet Delivery (7 of 22)



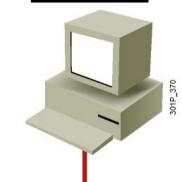
Host-to-Host Packet Delivery (8 of 22)



ARP: I just got an ARP request from 192.168.3.1. Let me add its IP and MAC to my ARP table. Now I can respond.



ARP Request

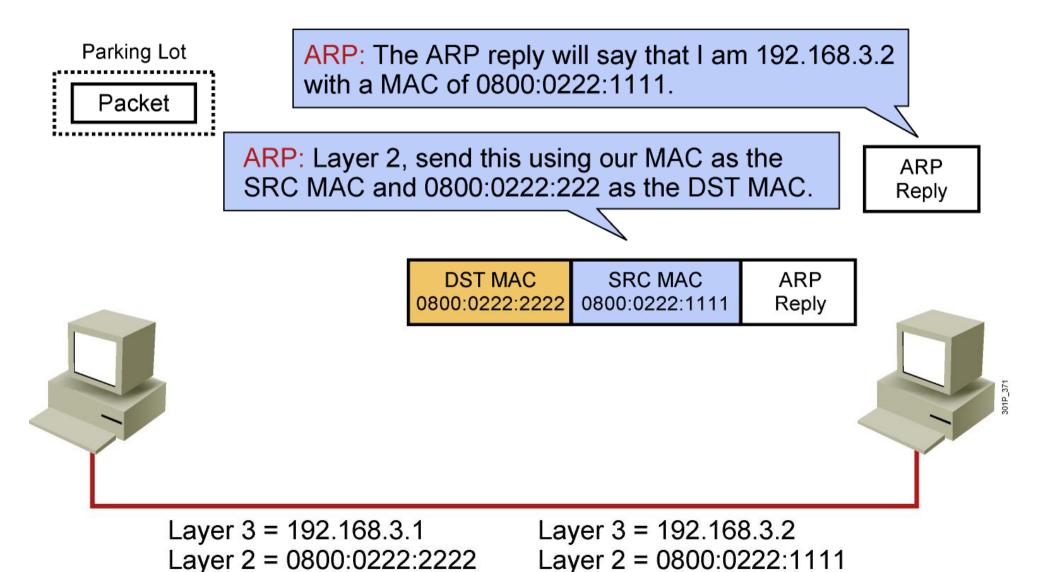


Layer 3 = 192.168.3.1

Layer 2 = 0800:0222:2222

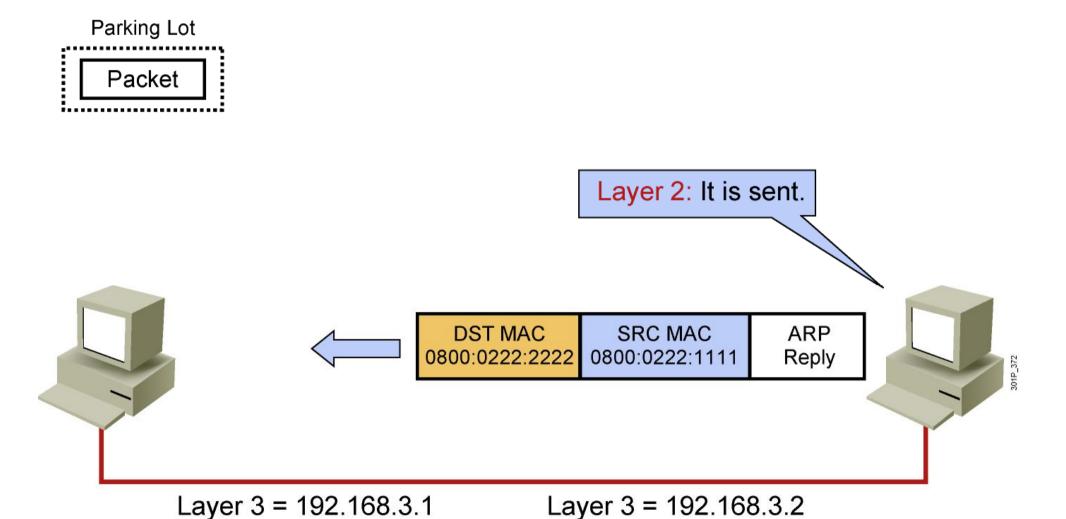
Layer 3 = 192.168.3.2

Host-to-Host Packet Delivery (9 of 22)



Host-to-Host Packet Delivery (10 of 22)

Layer 2 = 0800:0222:2222

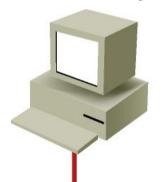


Host-to-Host Packet Delivery (11 of 22)

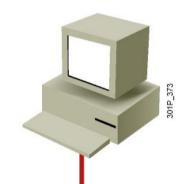
Parking Lot

Packet

Layer 2: I just got a frame with my MAC so I'll process it. The protocol ID indicates that it belongs to ARP. Let me strip the Layer 2 header and send it to ARP.



DST MAC	SRC MAC	ARP
0800:0222:2222	0800:0222:1111	Reply

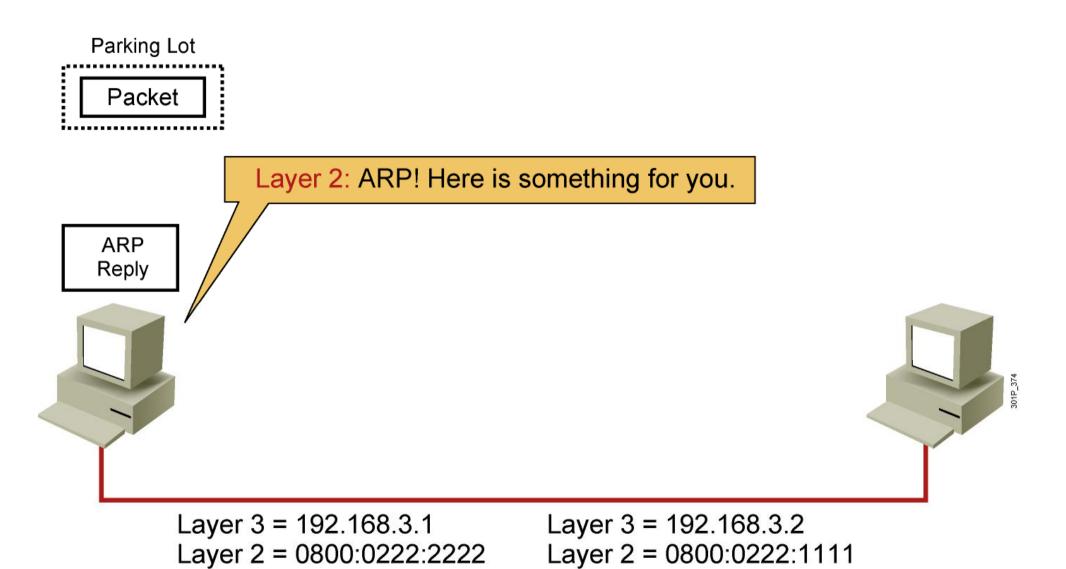


Layer 3 = 192.168.3.1

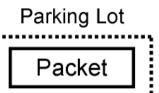
Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.2

Host-to-Host Packet Delivery (12 of 22)



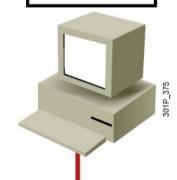
Host-to-Host Packet Delivery (13 of 22)



ARP: I just got an ARP reply from 192.168.3.2. Let me add its IP and MAC to my ARP table.

ARP: Layer 2! I have 192.168.3.2 mapped to 0800:0222:1111.



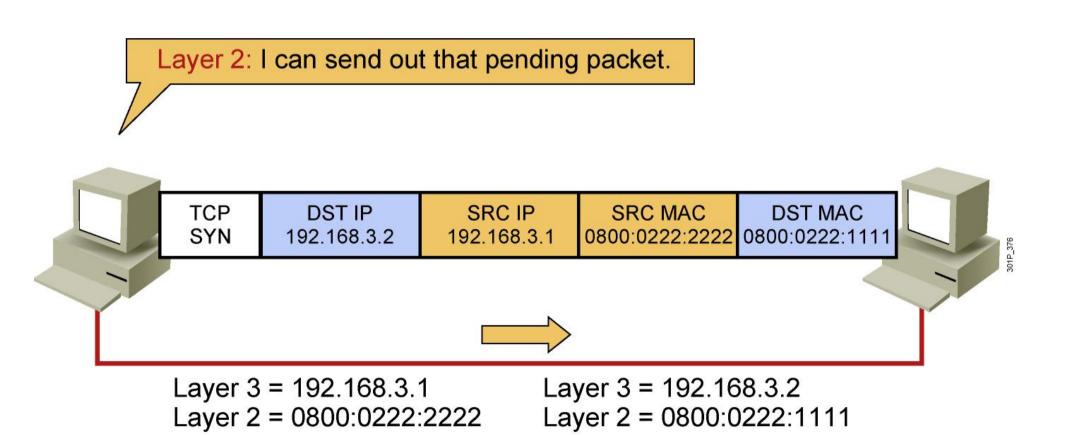


Layer 3 = 192.168.3.1

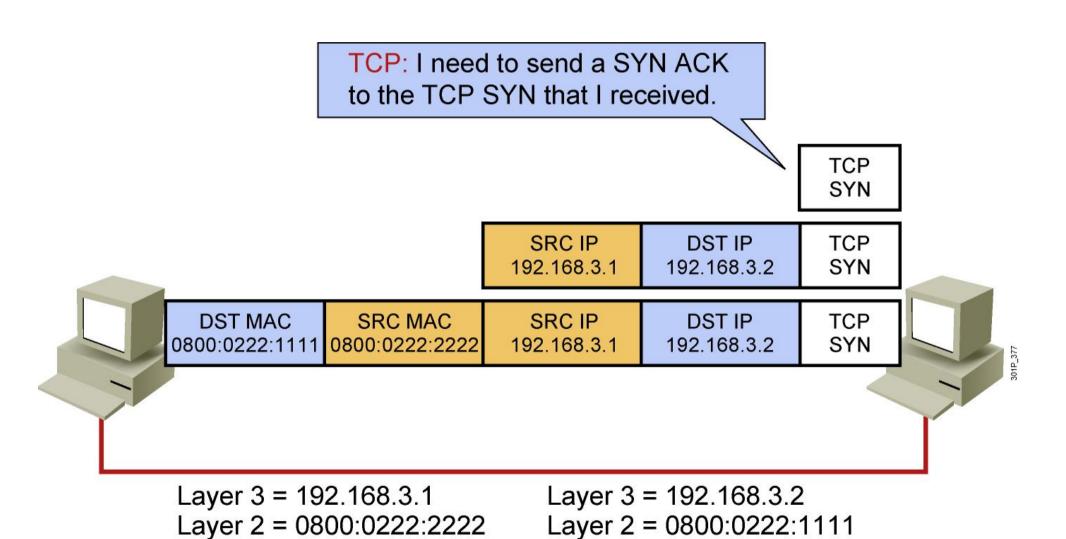
Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.2

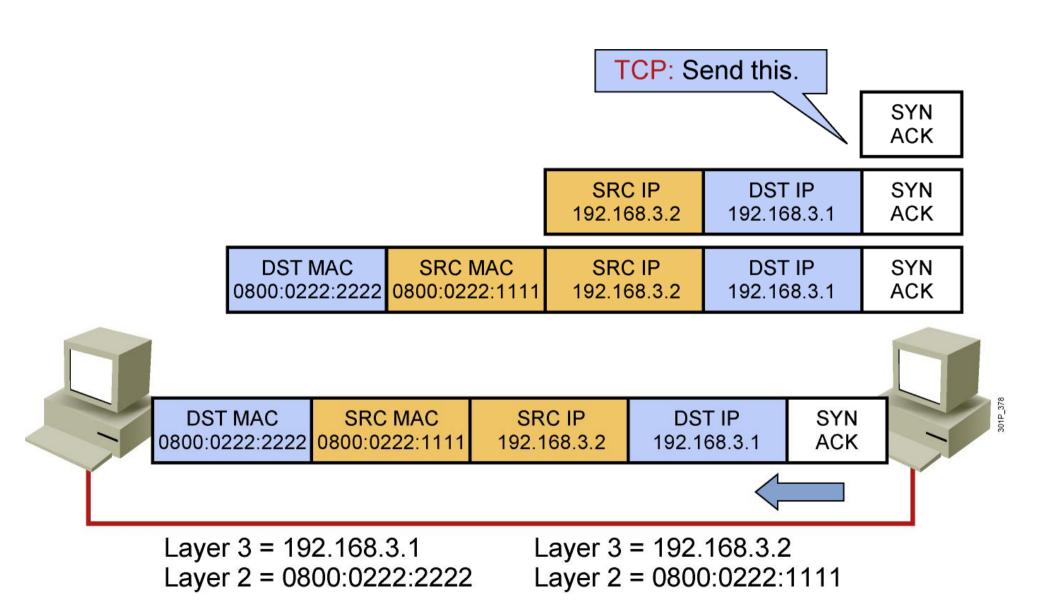
Host-to-Host Packet Delivery (14 of 22)



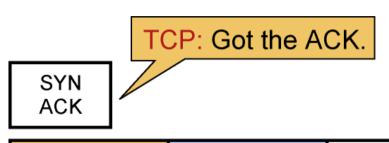
Host-to-Host Packet Delivery (15 of 22)



Host-to-Host Packet Delivery (16 of 22)

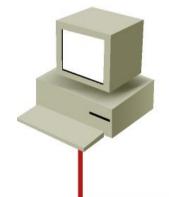


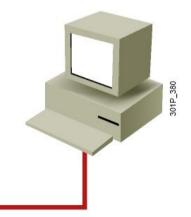
Host-to-Host Packet Delivery (17 of 22)



SRC IP	DST IP	SYN
192.168.3.2	192.168.3.1	ACK

DST MAC	SRC MAC	SRC IP	DST IP	SYN
0800:0222:2222	0800:0222:1111	192.168.3.2	192.168.3.1	ACK





Layer 3 = 192.168.3.1

Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.2

Host-to-Host Packet Delivery (18 of 22)

TCP: I need to let the other end know I got the SYN ACK to complete the session establishment. **TCP ACK** SRC IP DST IP **TCP** 192.168.3.1 192.168.3.2 **ACK** SRC IP **DST MAC SRC MAC DST IP** TCP 0800:0222:1111 0800:0222:2222 192.168.3.1 192.168.3.2 ACK **TCP** DST IP SRC IP SRC MAC **DST MAC ACK** 192.168.3.2 192.168.3.1 0800:0222:2222 0800:0222:1111

Layer 3 = 192.168.3.1

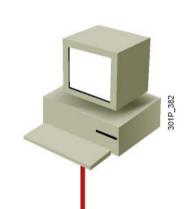
Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.2

Host-to-Host Packet Delivery (19 of 22)

Layer 4: OK, Application, I have your session set up.

Application: OK, I'll send you some data.

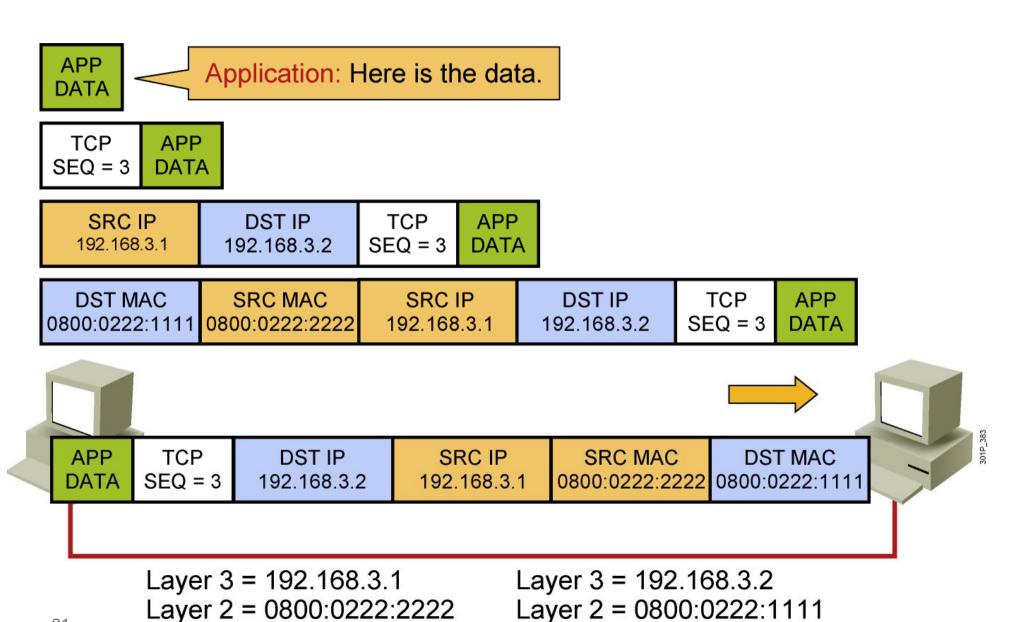


Layer 3 = 192.168.3.1

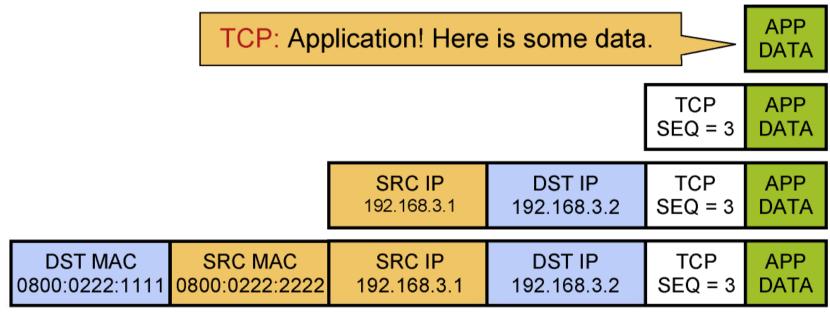
Layer 2 = 0800:0222:2222

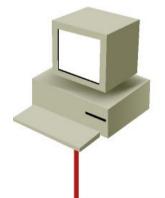
Layer 3 = 192.168.3.2

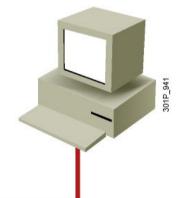
Host-to-Host Packet Delivery (20 of 22)



Host-to-Host Packet Delivery (21 of 22)







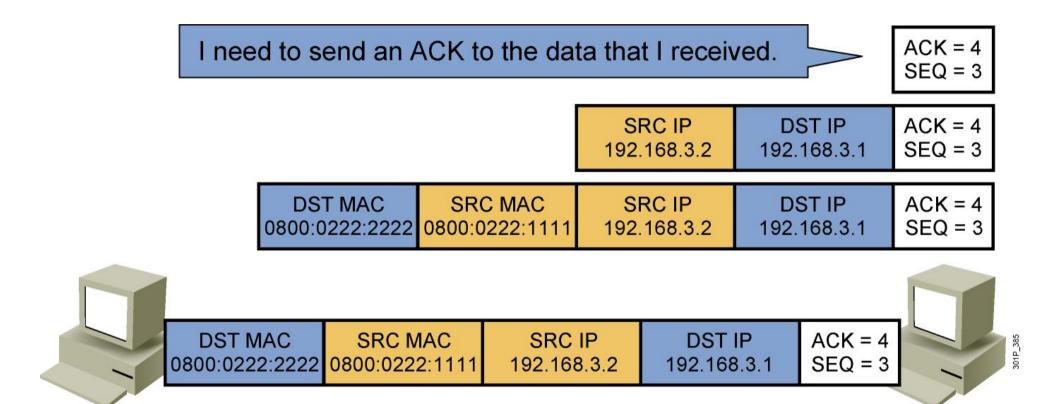
Layer 2 = 0800:0222:2222

Layer 3 = 192.168.3.1

Layer 2 = 0800:0222:1111

Layer 3 = 192.168.3.2

Host-to-Host Packet Delivery (22 of 22)



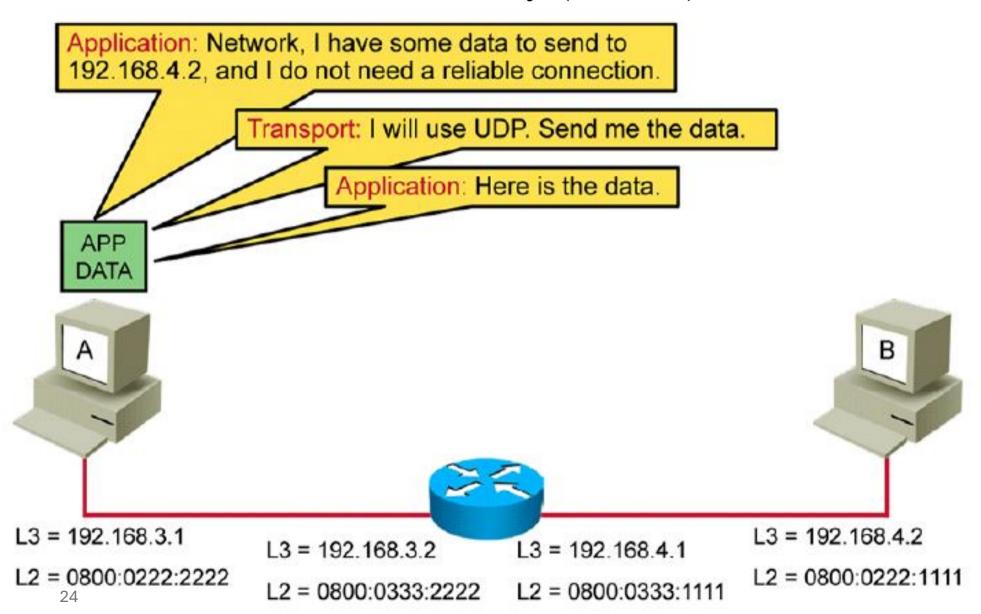
Layer 3 = 192.168.3.1

Layer 2 = 0800:0222:2222

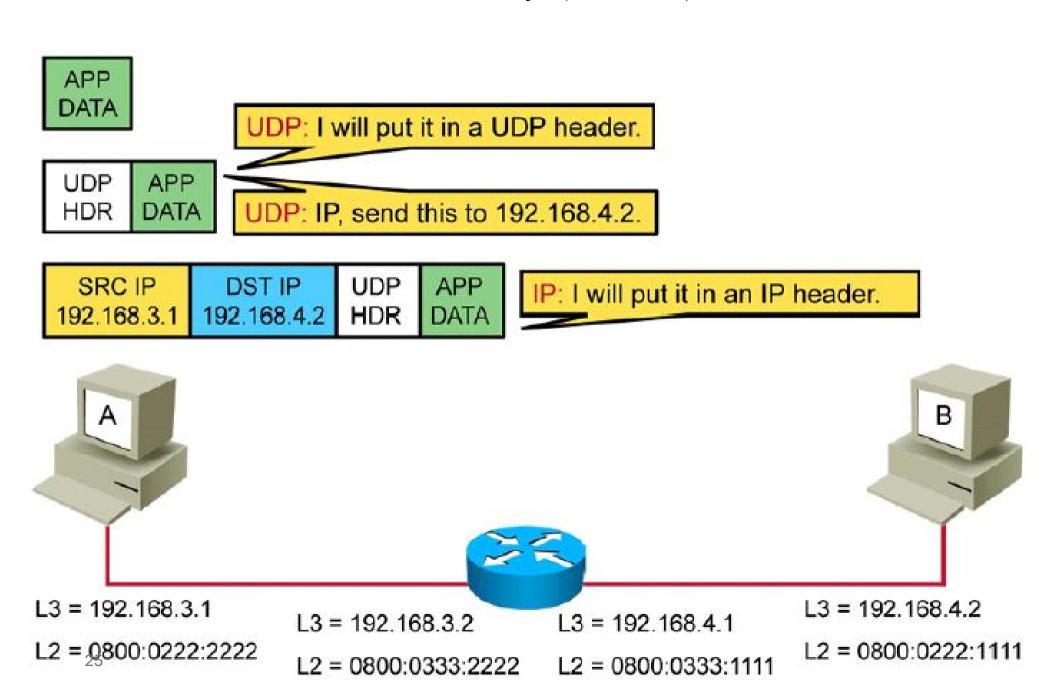
Layer 3 = 192.168.3.2

2. UDP 기반의 데이터 전송 과정

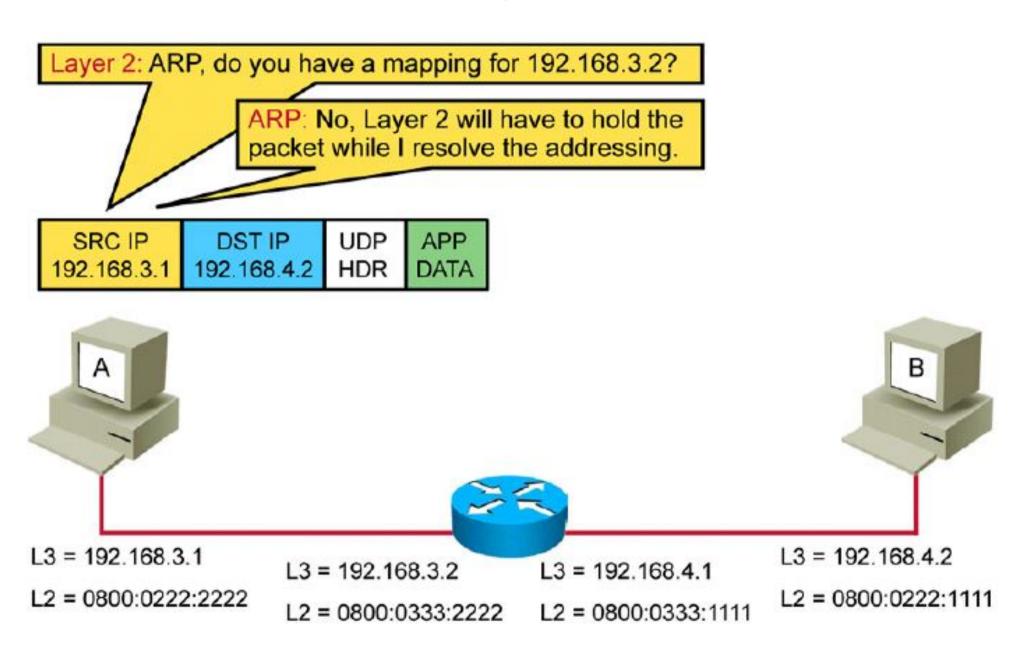
Network to network Delivery (1 of 17)



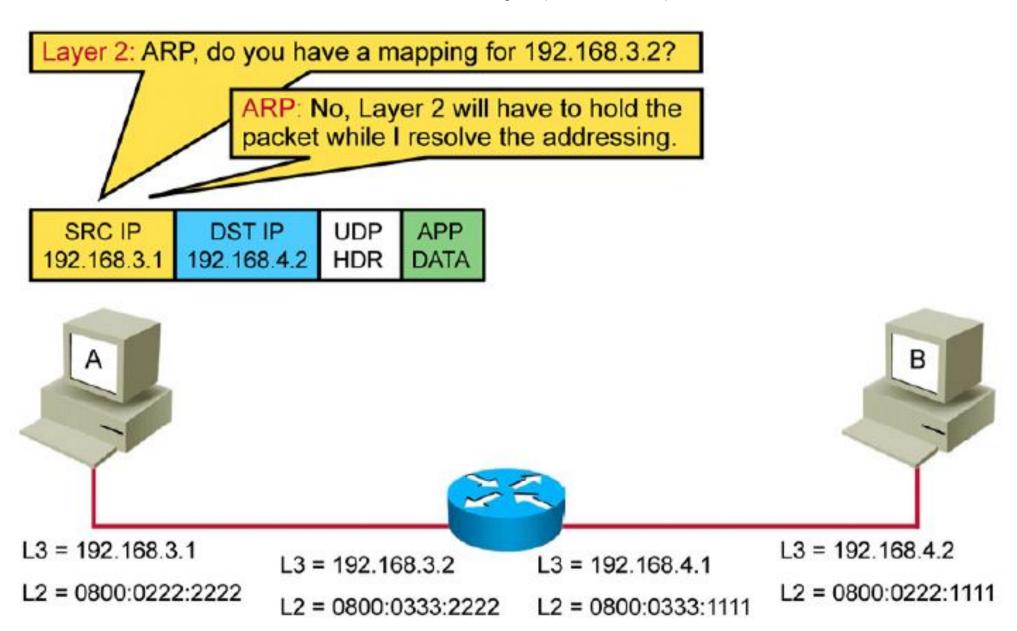
Network to network Delivery (2 of 17)



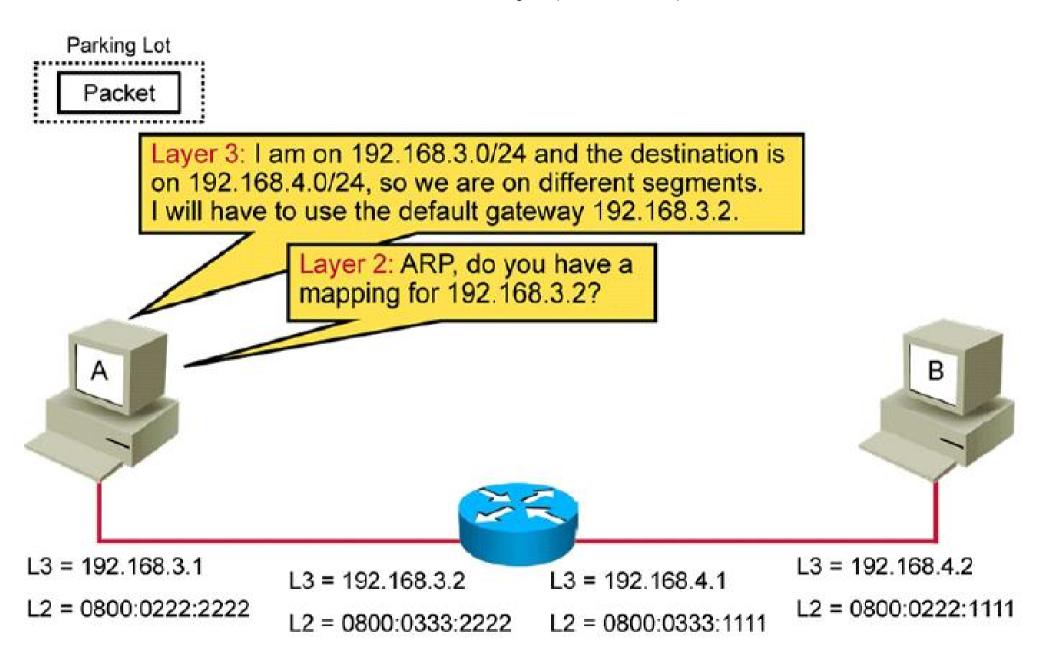
Network to network Delivery (3 of 17)



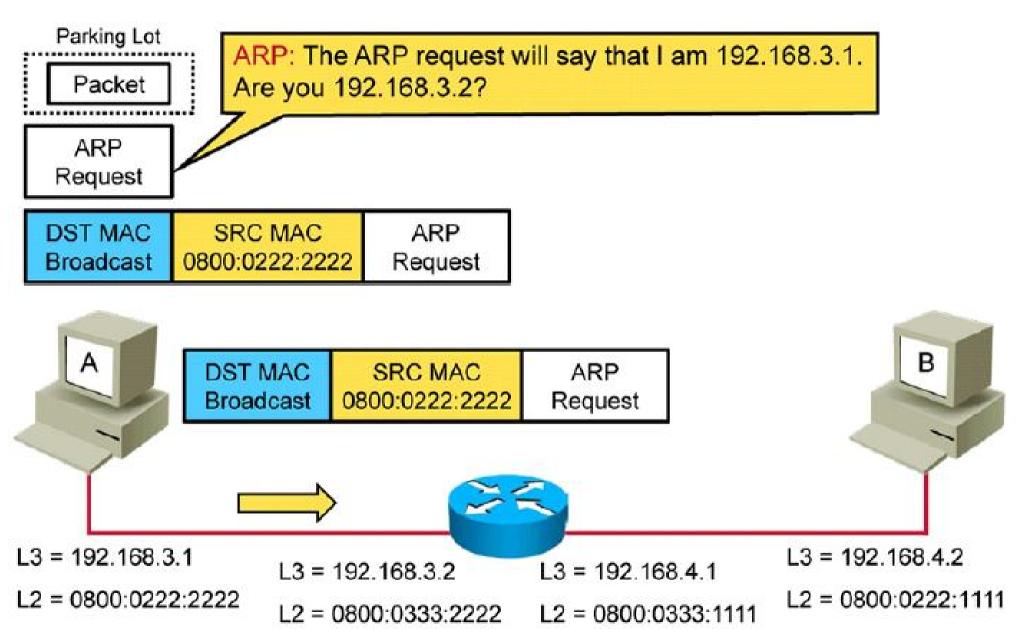
Network to network Delivery (4 of 17)



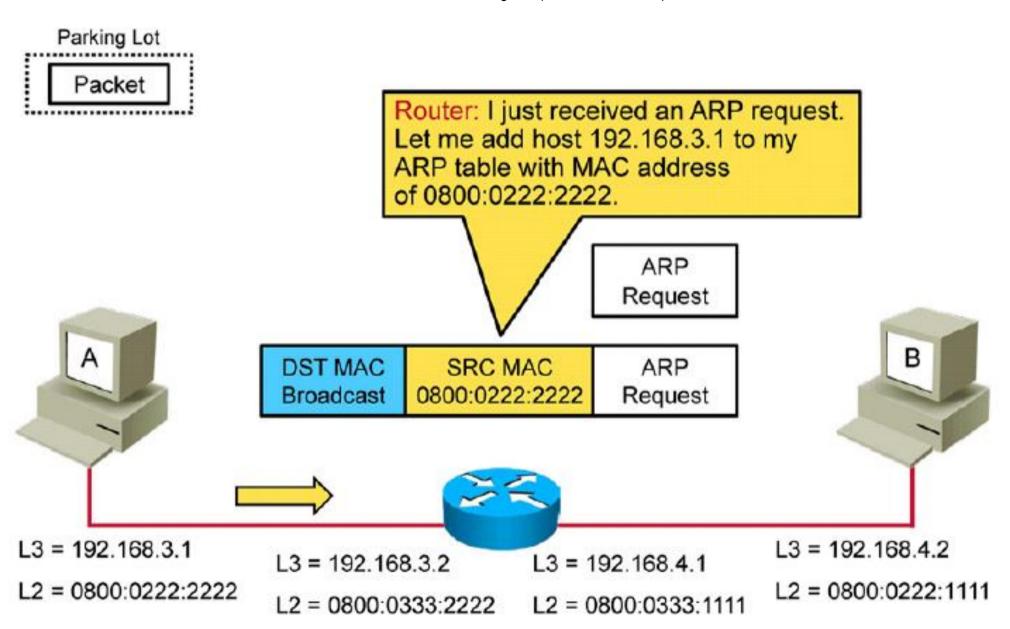
Network to network Delivery (5 of 17)



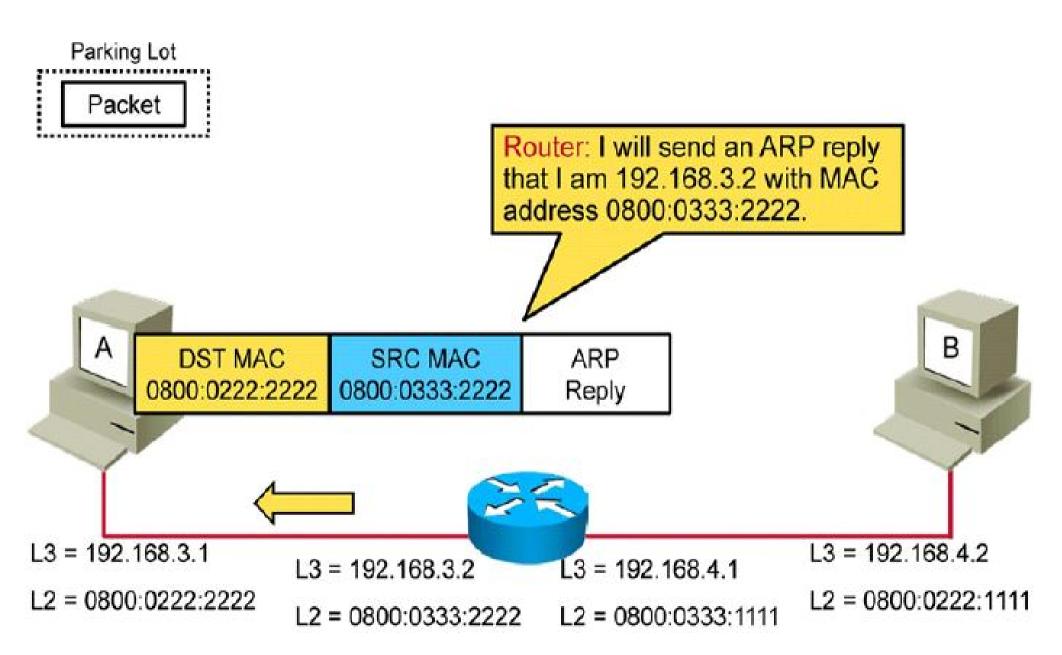
Network to network Delivery (6 of 17)



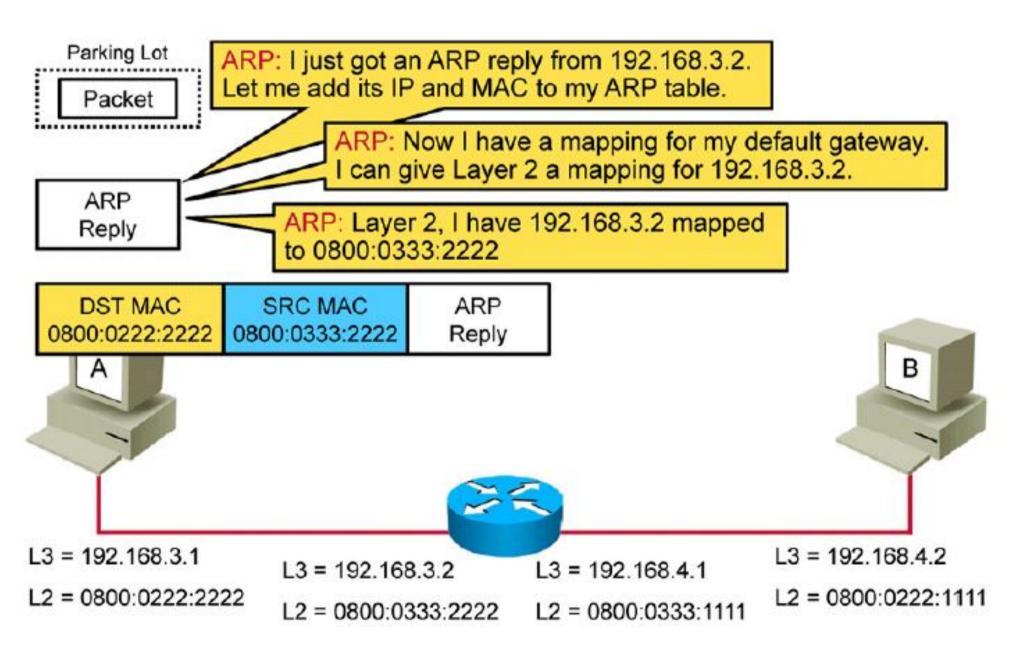
Network to network Delivery (7 of 17)



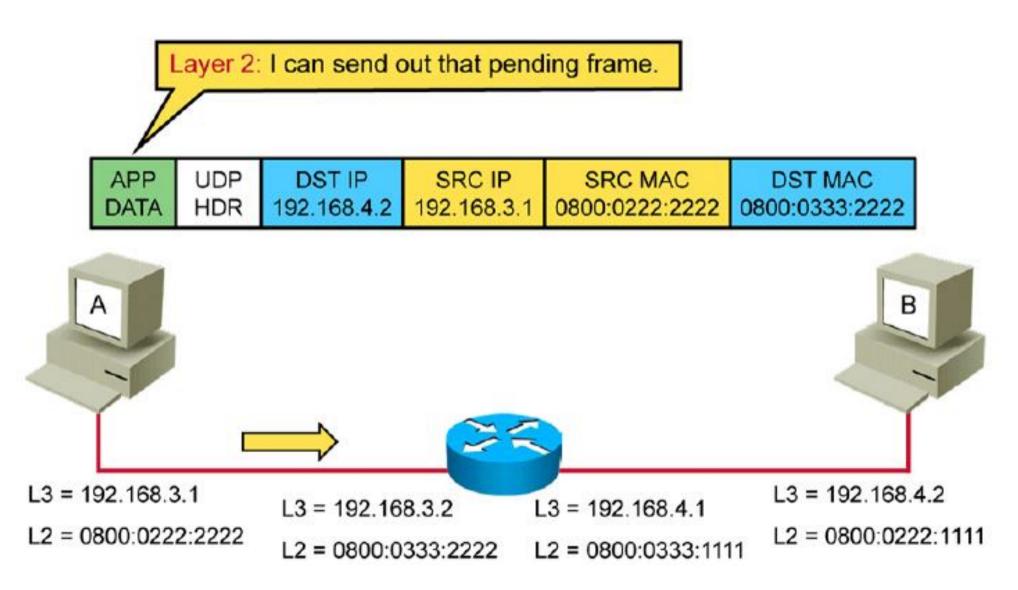
Network to network Delivery (8 of 17)



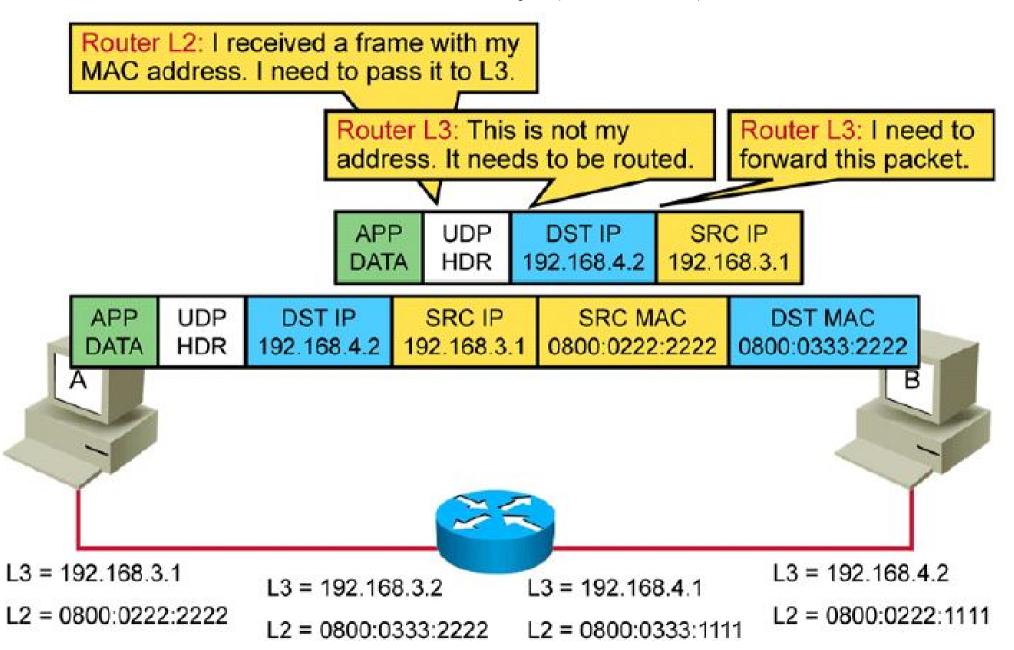
Network to network Delivery (9 of 17)



Network to network Delivery (10 of 17)

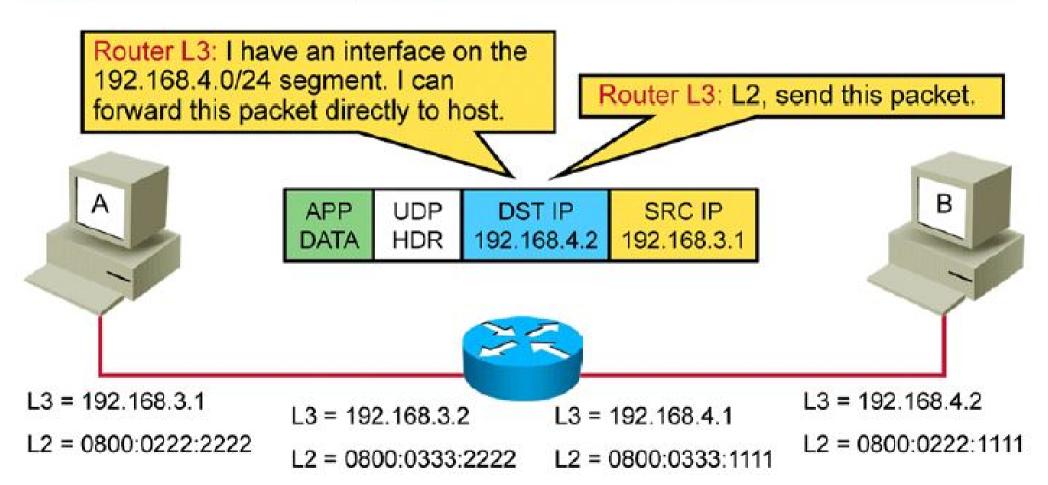


Network to network Delivery (11 of 17)

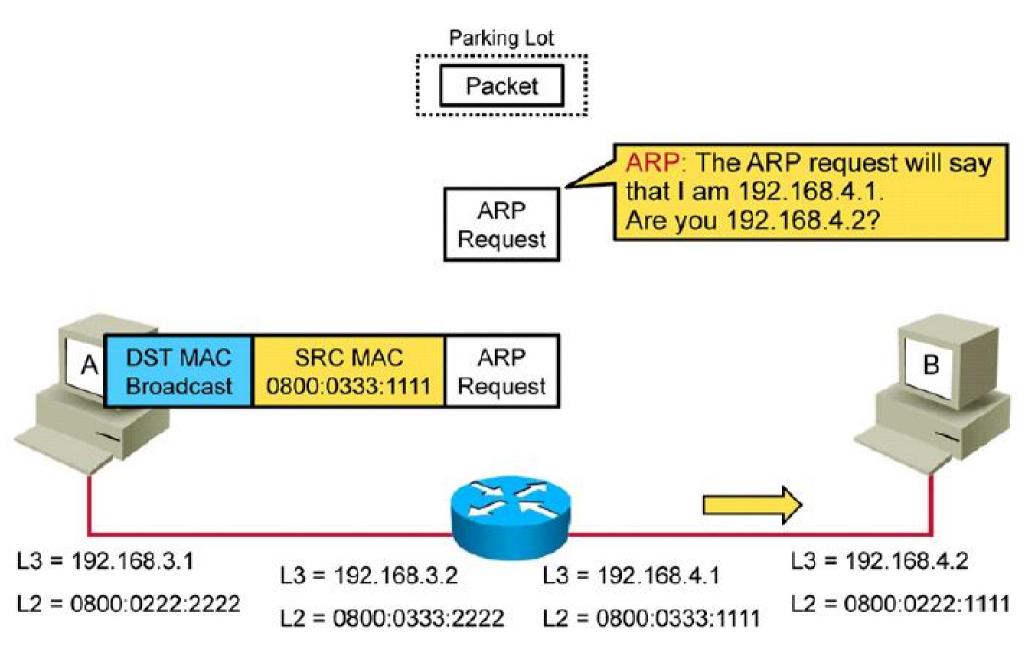


Network to network Delivery (12 of 17)

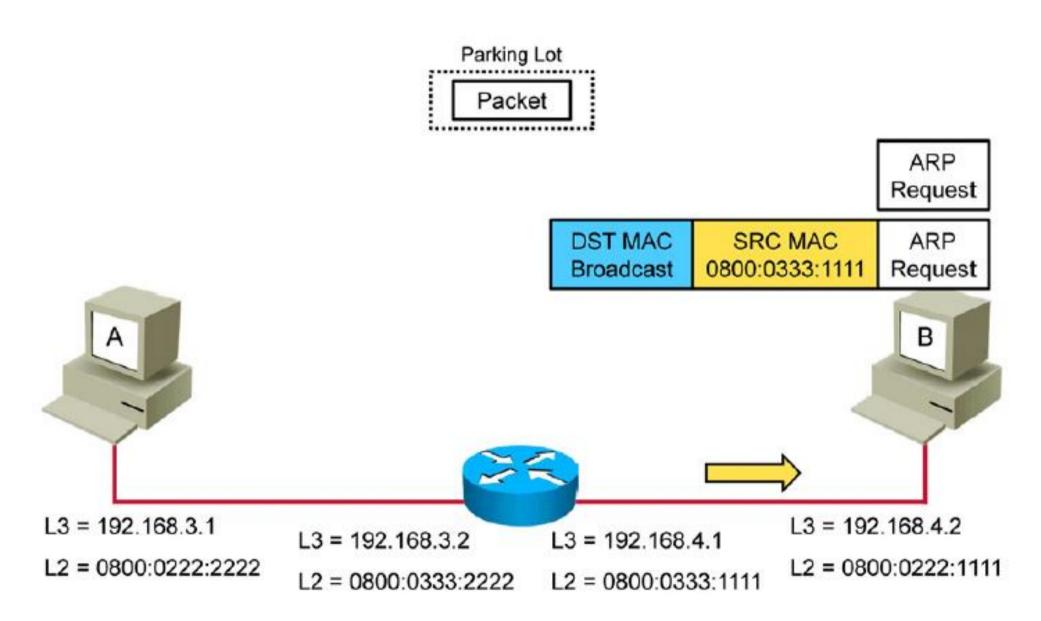
Destination	Next Hop	Interface	
192.168.3.0/24	Connected	Gi 0/0	
192.168.4.0/24	Connected	Gi 0/1	



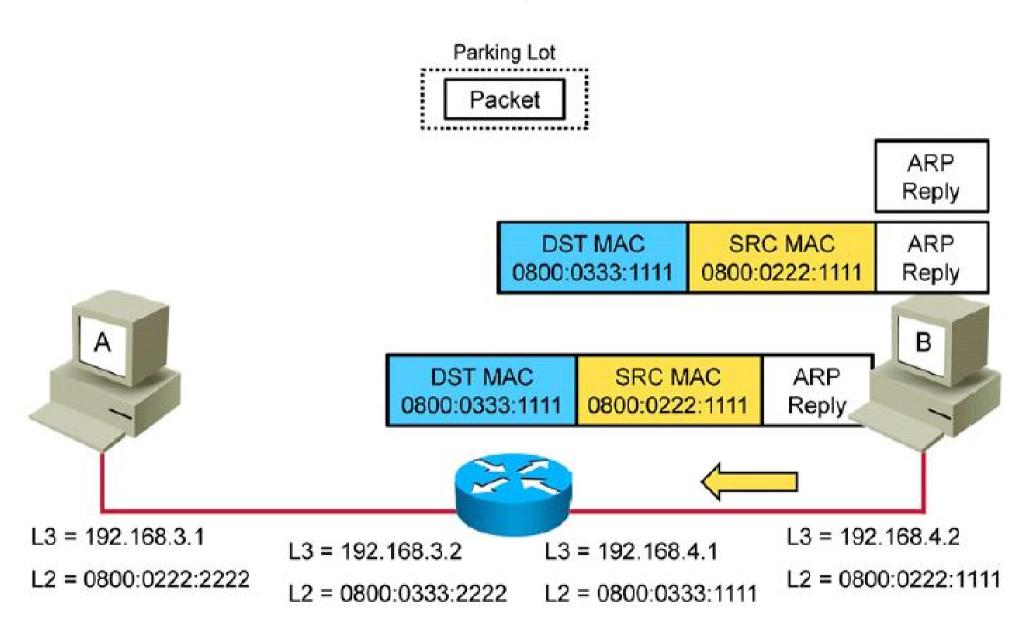
Network to network Delivery (13 of 17)



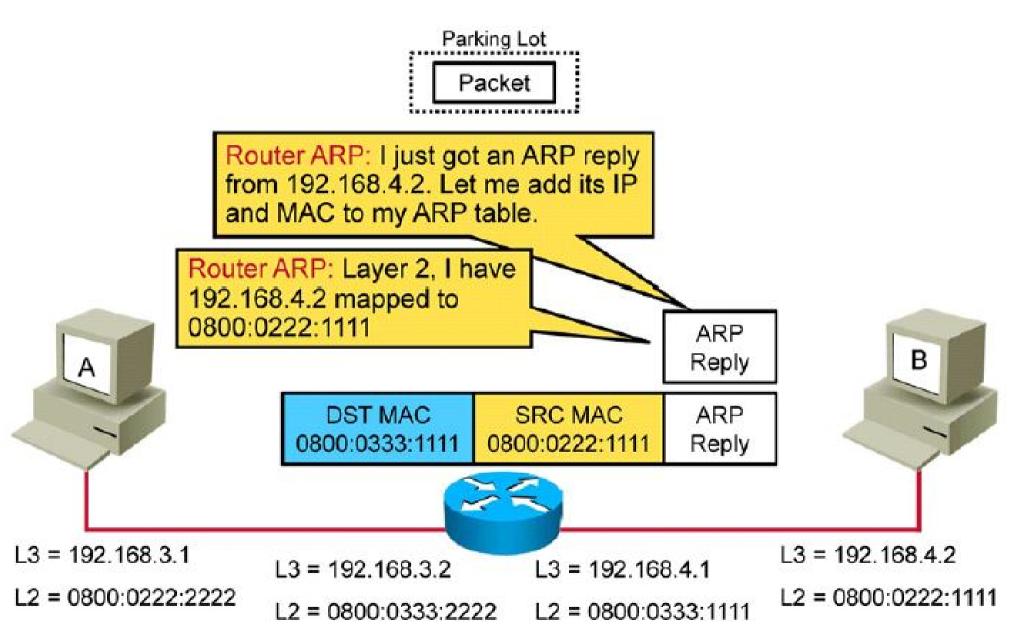
Network to network Delivery (14 of 17)



Network to network Delivery (15 of 17)



Network to network Delivery (16 of 17)



Network to network Delivery (17 of 17)

