



Lecture (02) Introduction to networks 2

By:

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Computer Networks

The TCP/IP Protocol Architecture

Overview

TCP/IP defines a large collection of protocols that allow computers to communicate.

these protocols inside document called Requests For Comments (RFCs).



The TCP/IP Protocol Architecture

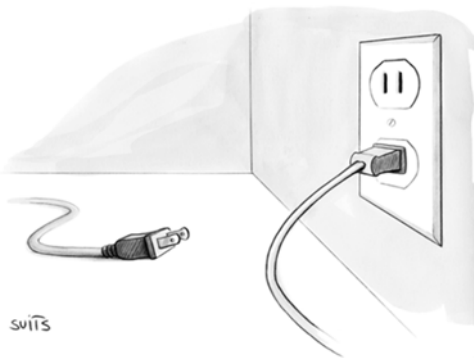
(2)

An easy comparison can be made between telephones and computers that use TCP/IP.

you can buy a phone from one of a dozen different vendors.

When you get home, you plug the phone in to the wall socket, and it works.

The phone vendors know the standards for phones in their country and build their phones to match those standards.



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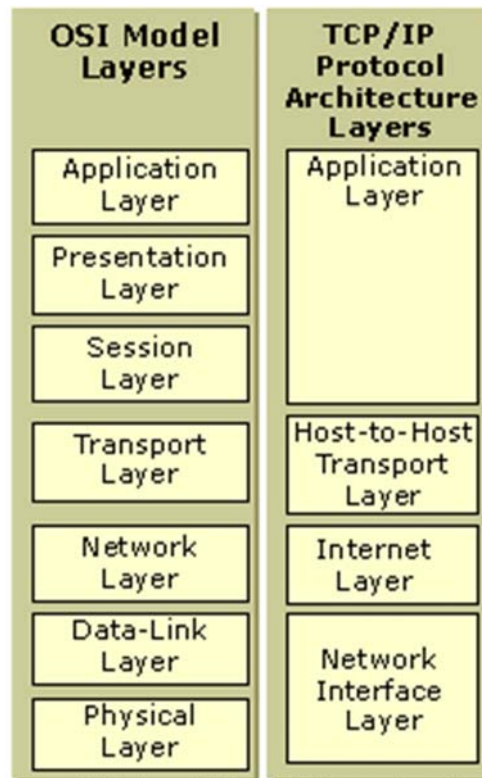
The TCP/IP Protocol Architecture

(3)

Similarly, a computer that implements the standard networking protocols defined by TCP/IP can communicate with other computers that also use the TCP/IP standards.

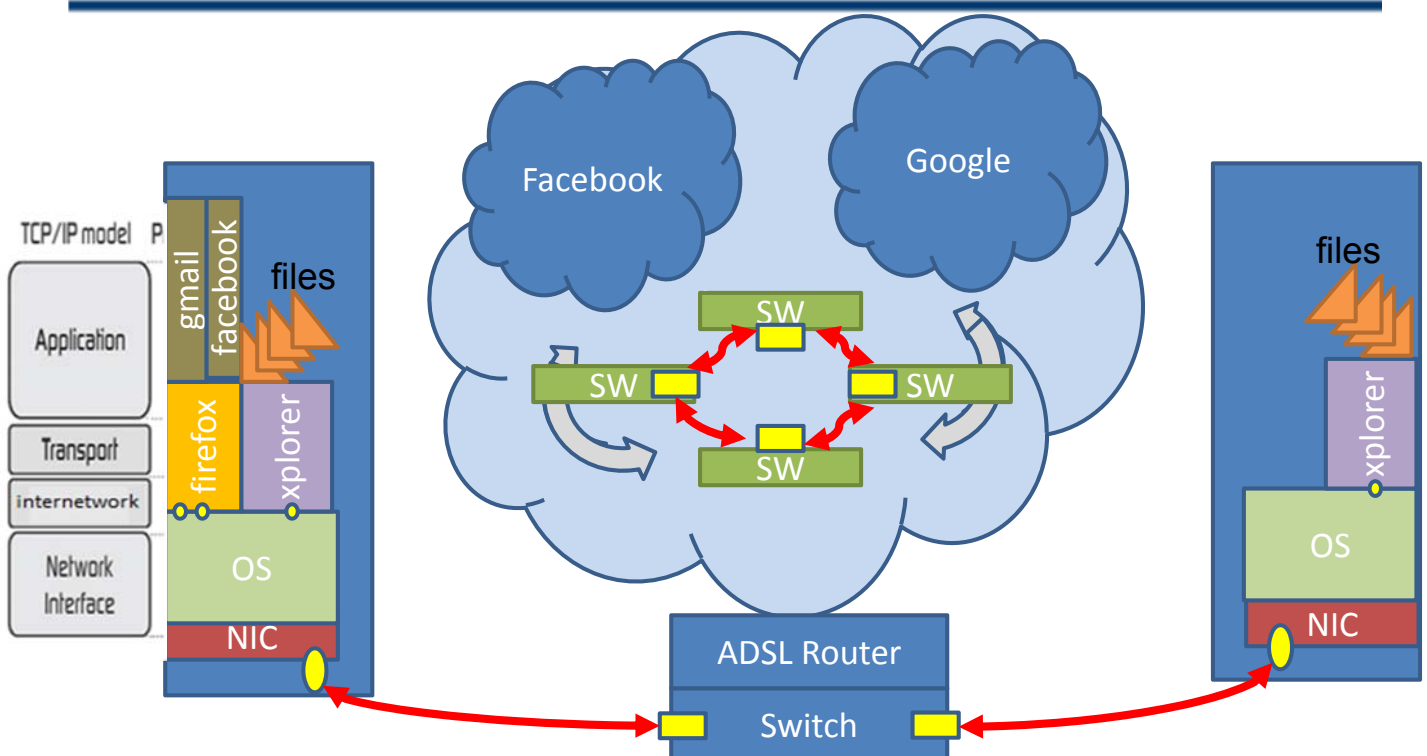


The TCP/IP Protocol Architecture (4)

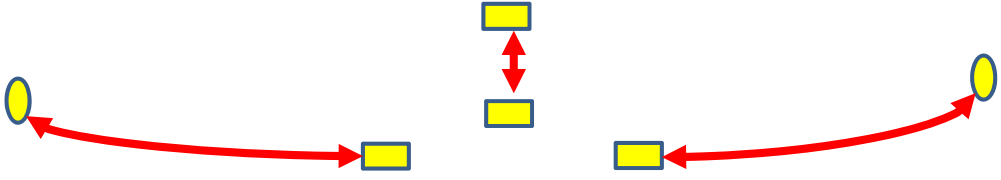
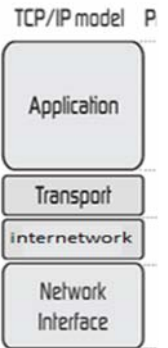


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Discovering your home network 2



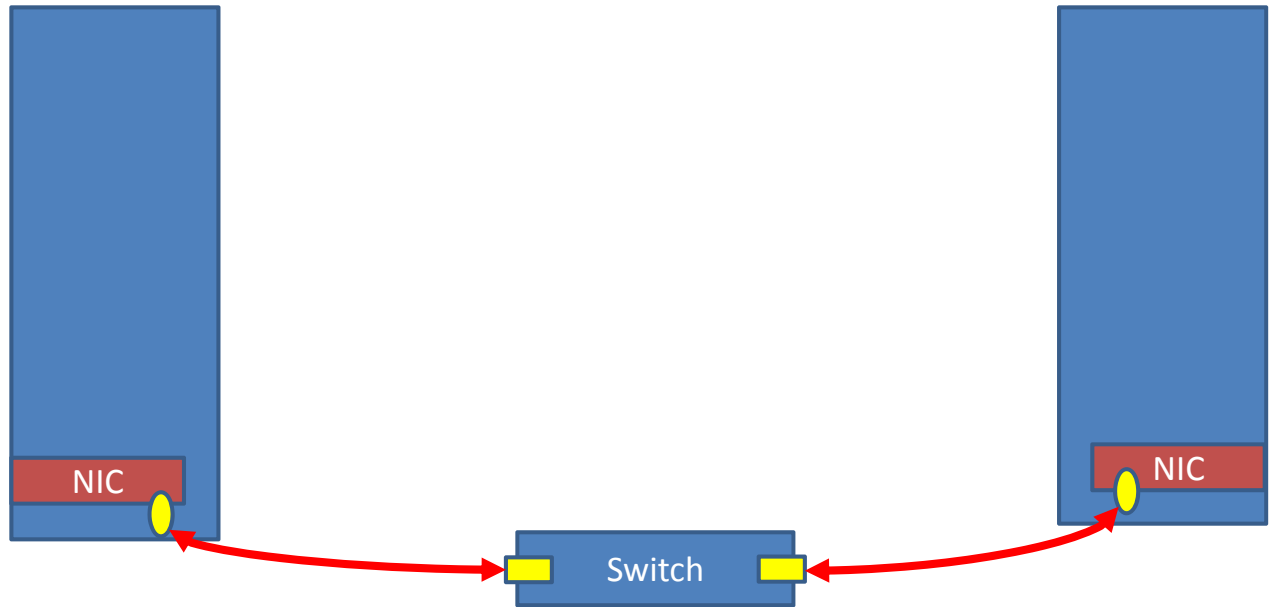
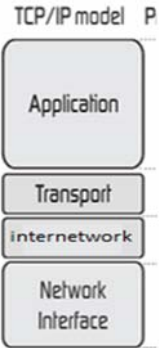
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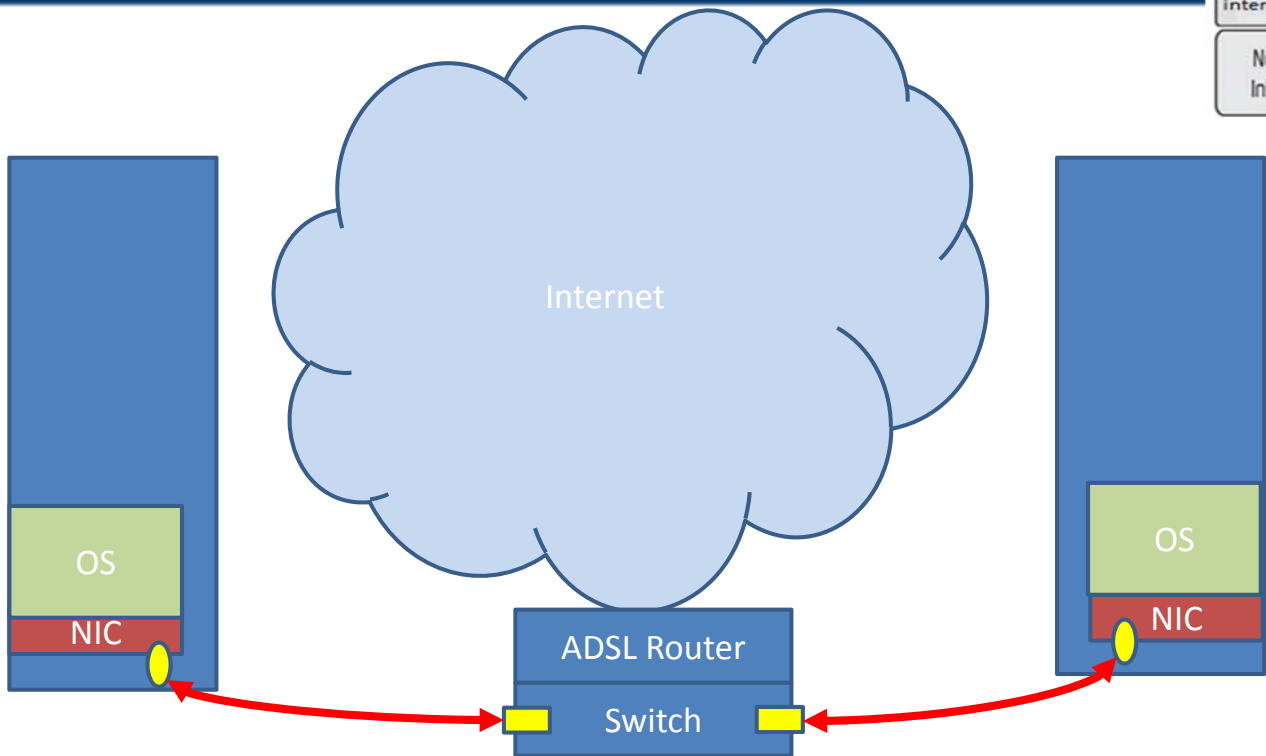
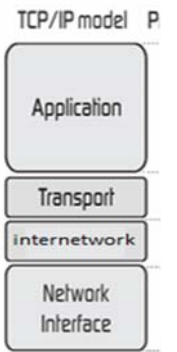
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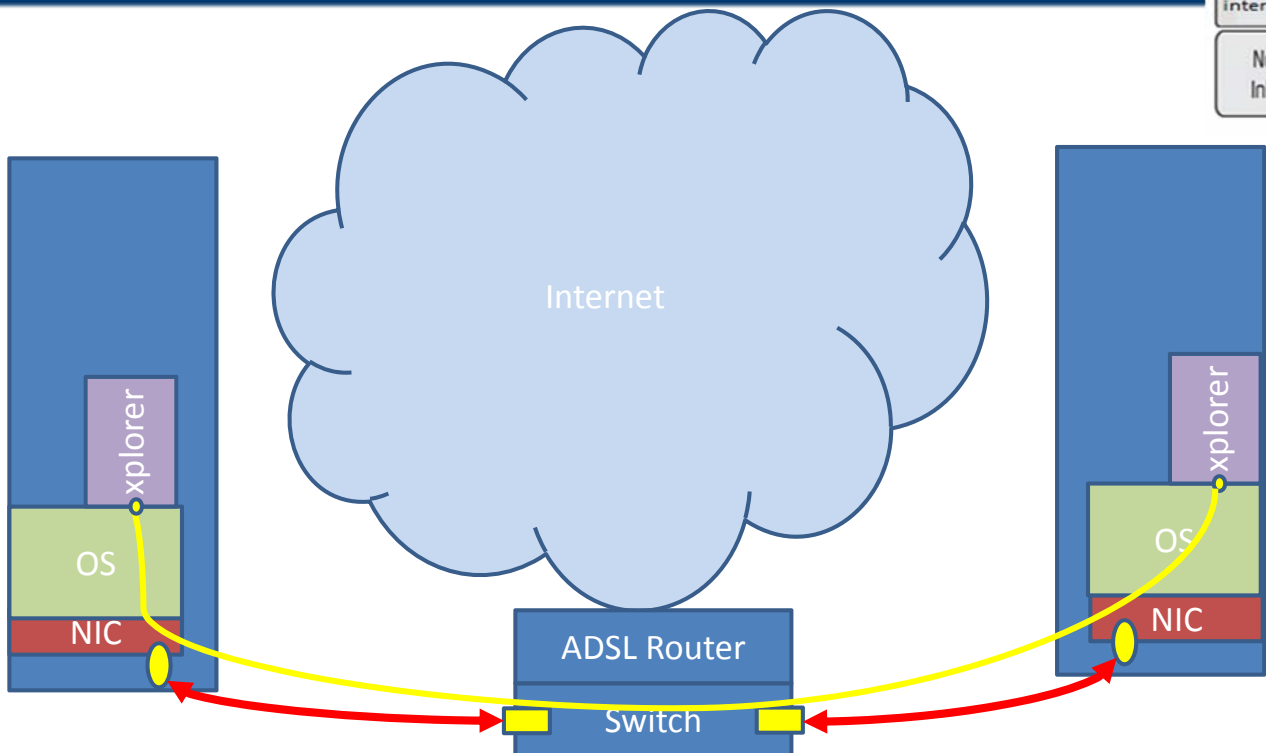
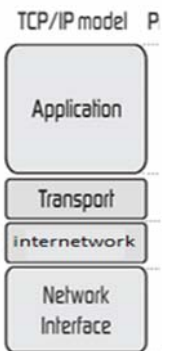
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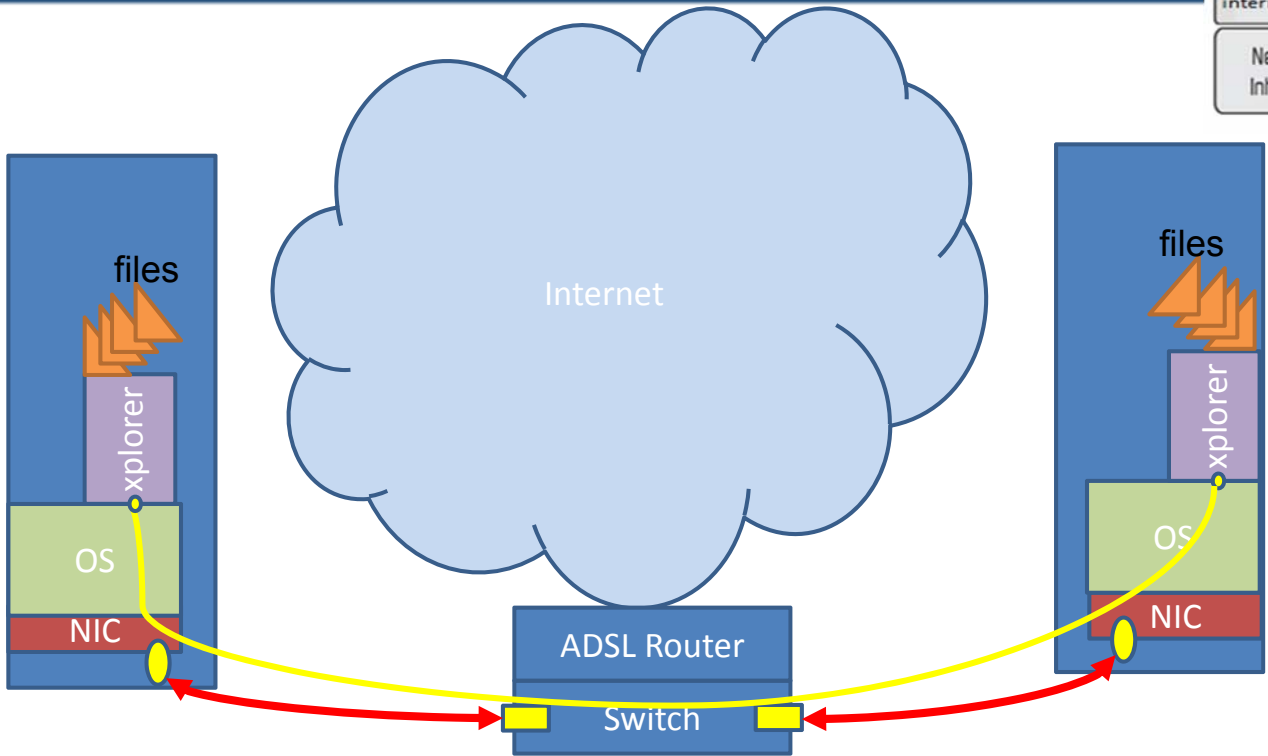


10

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5.1

TCP/IP model P

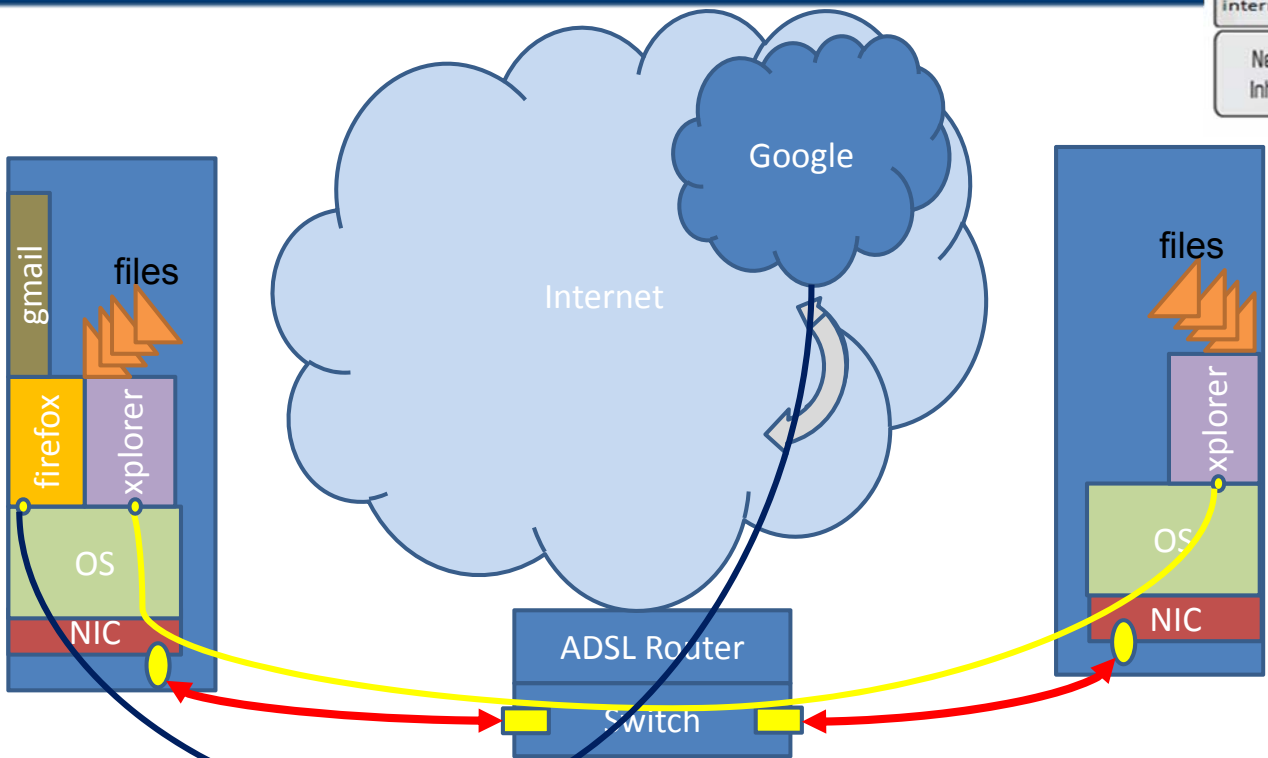


11

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5.2

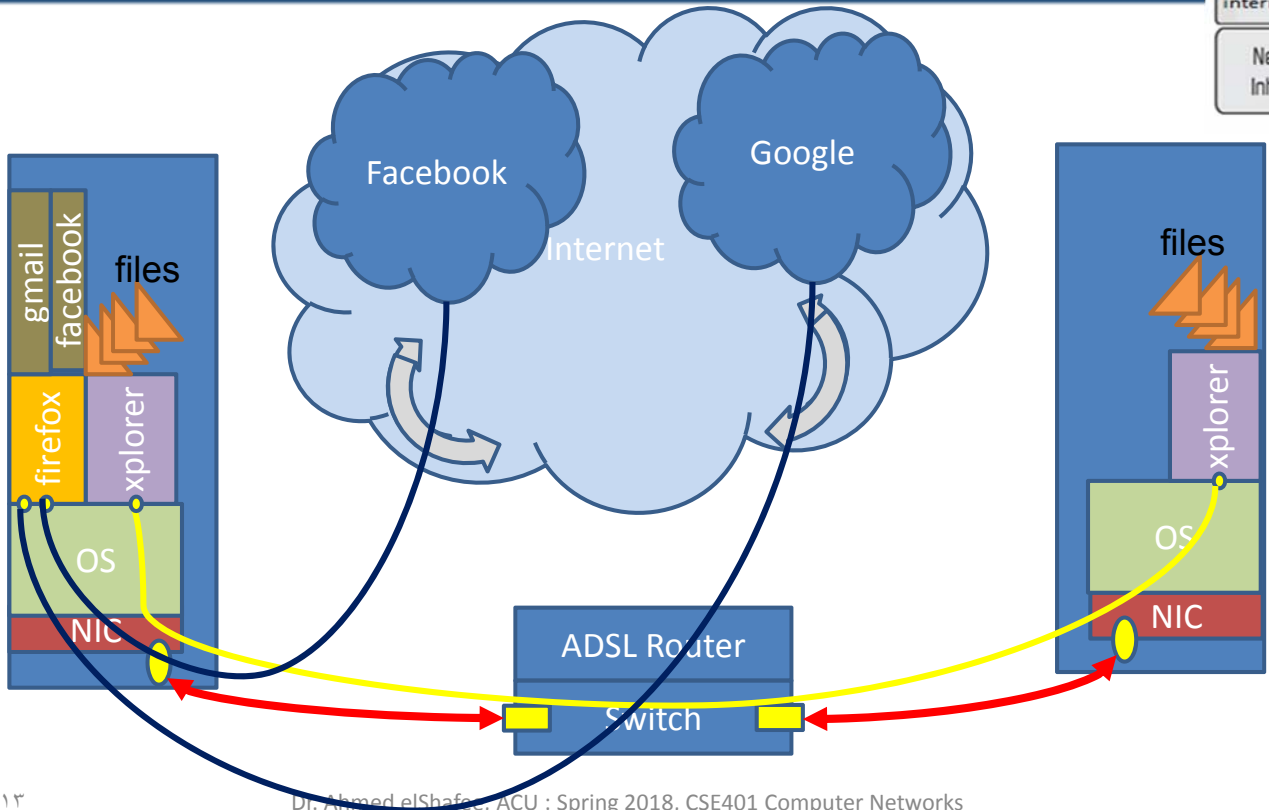
TCP/IP model P



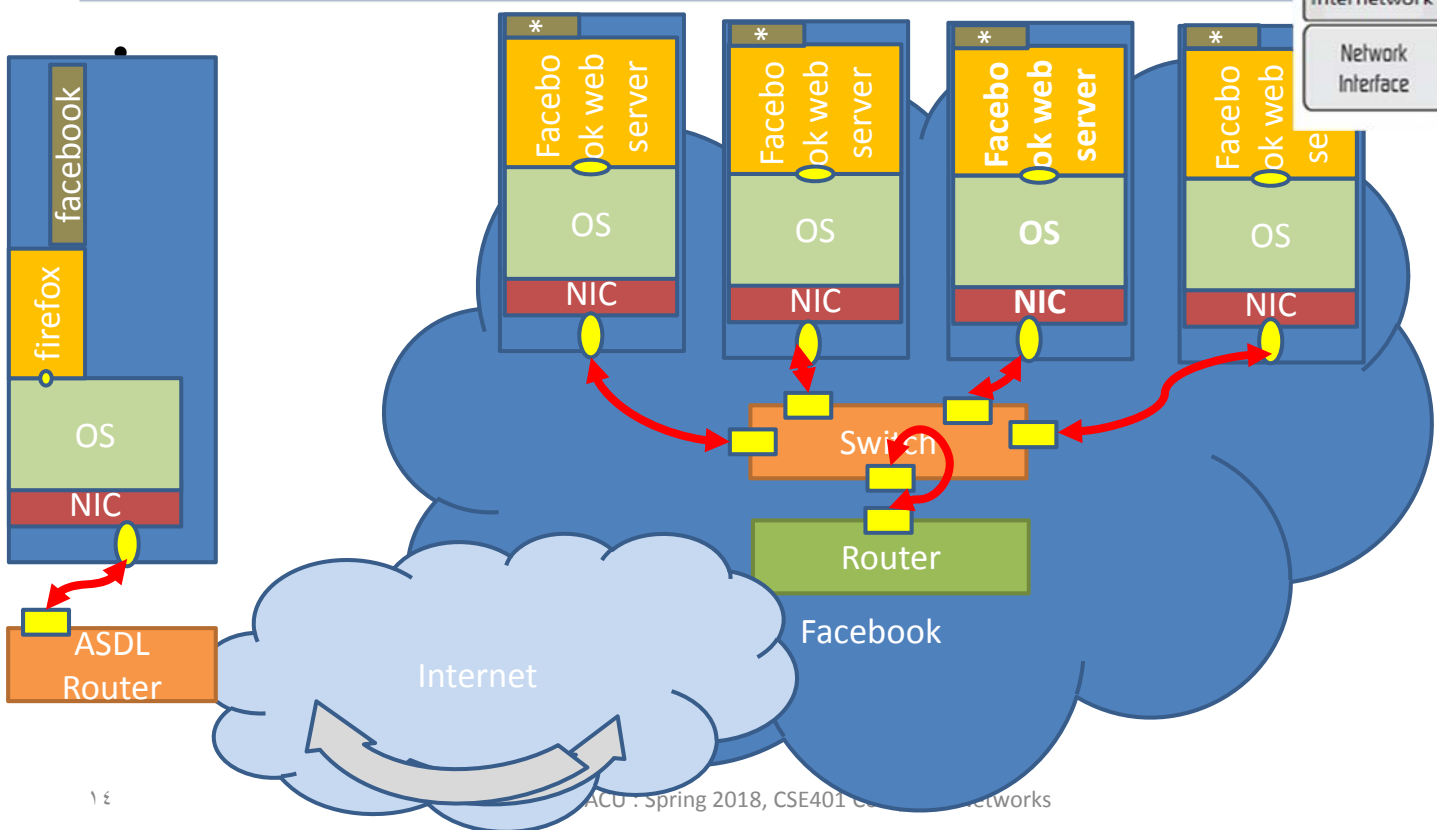
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5.3

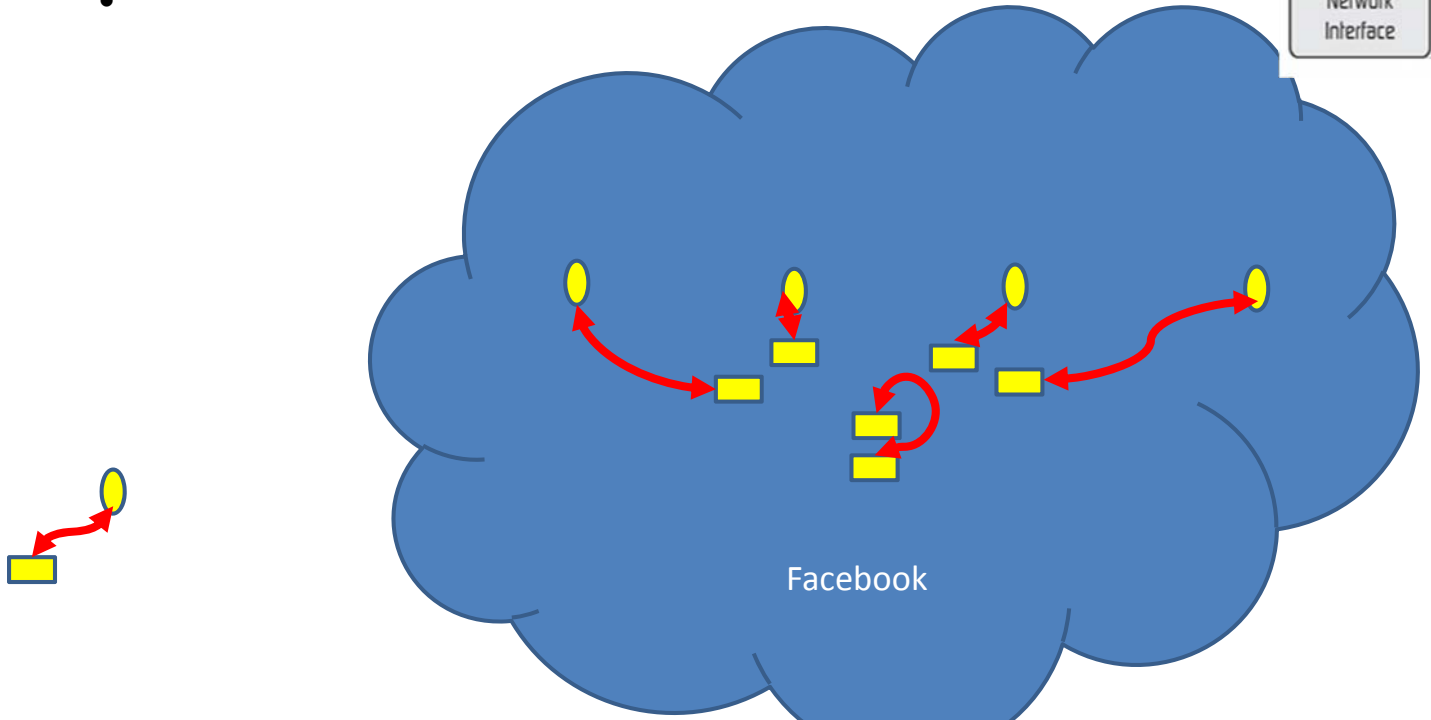


Server side Vs. Client side



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TCP/IP model P

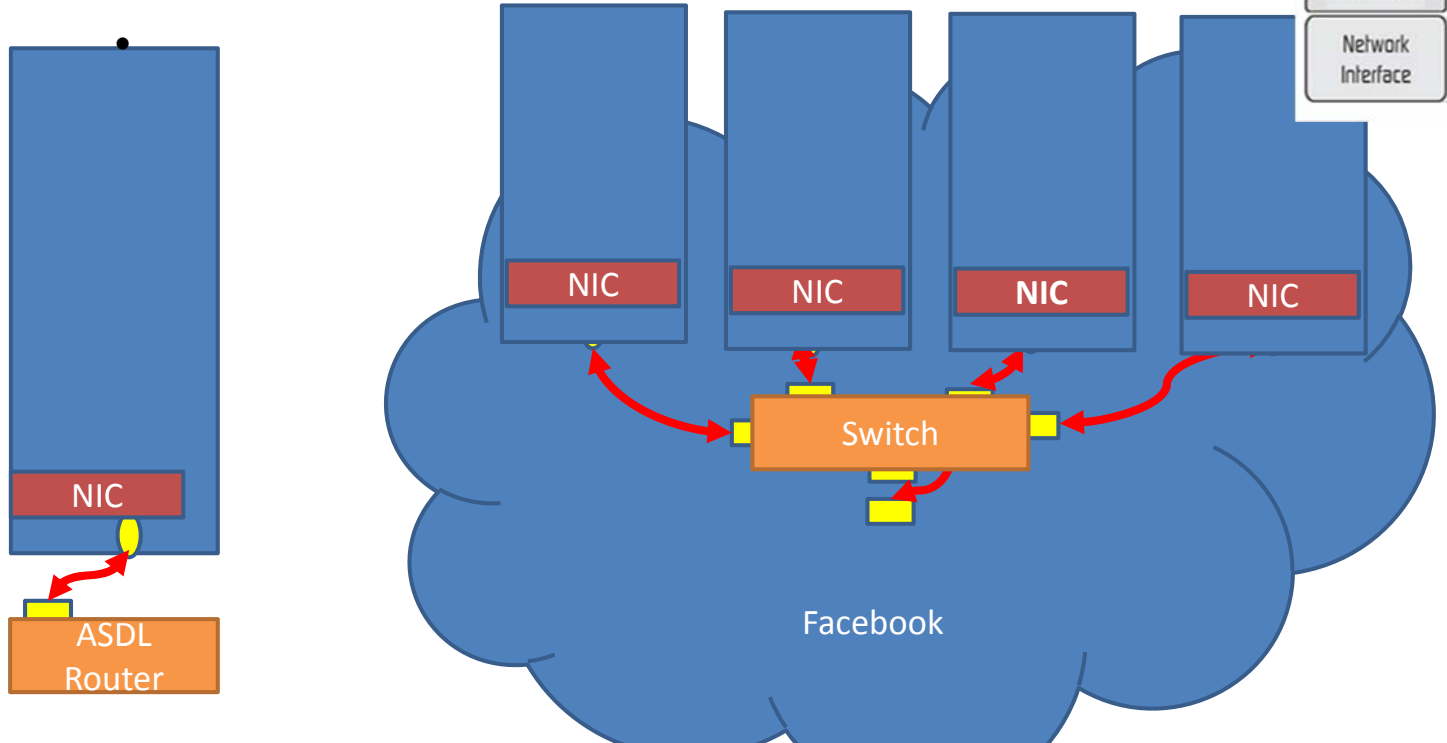


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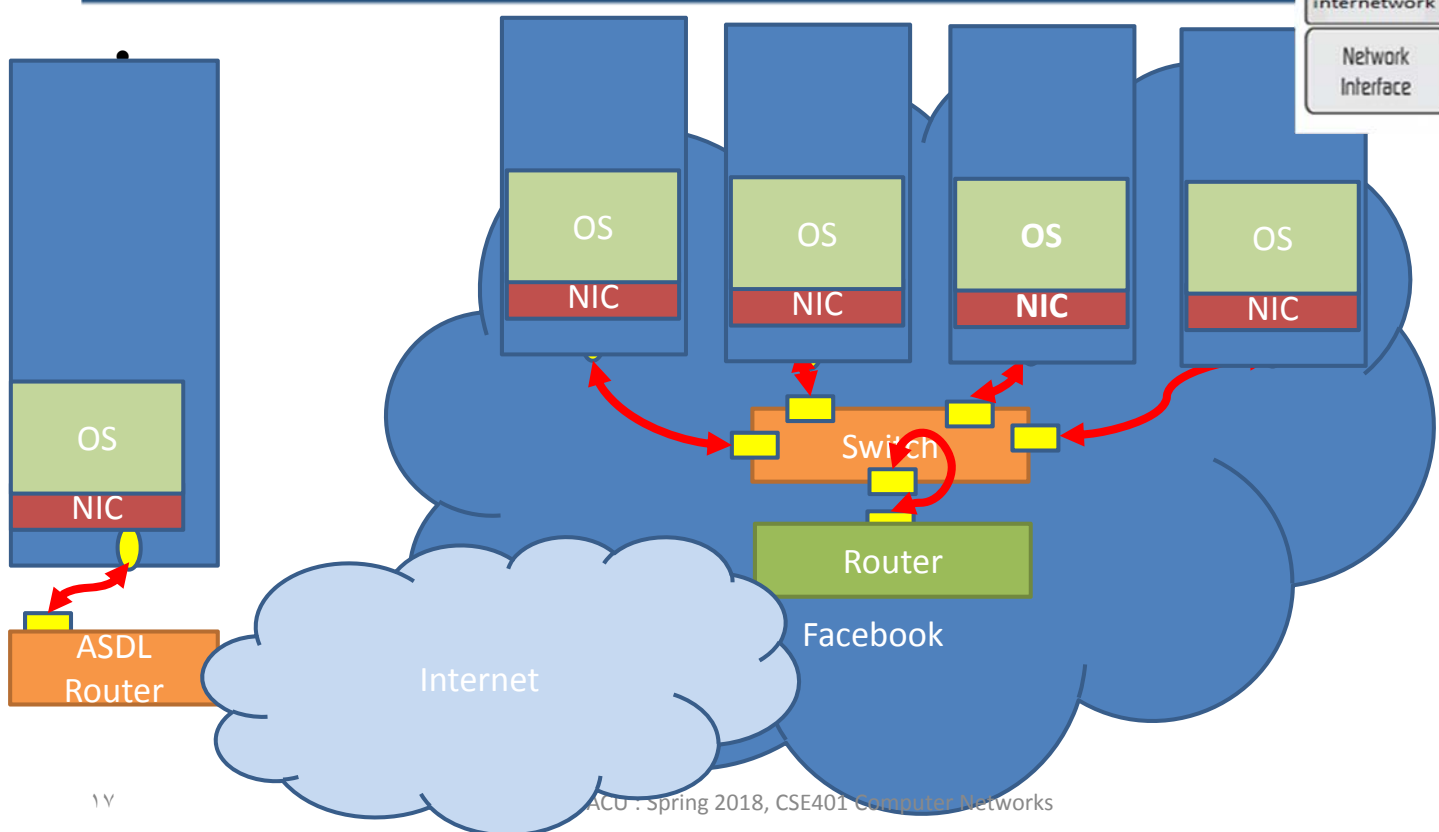
TCP/IP model P



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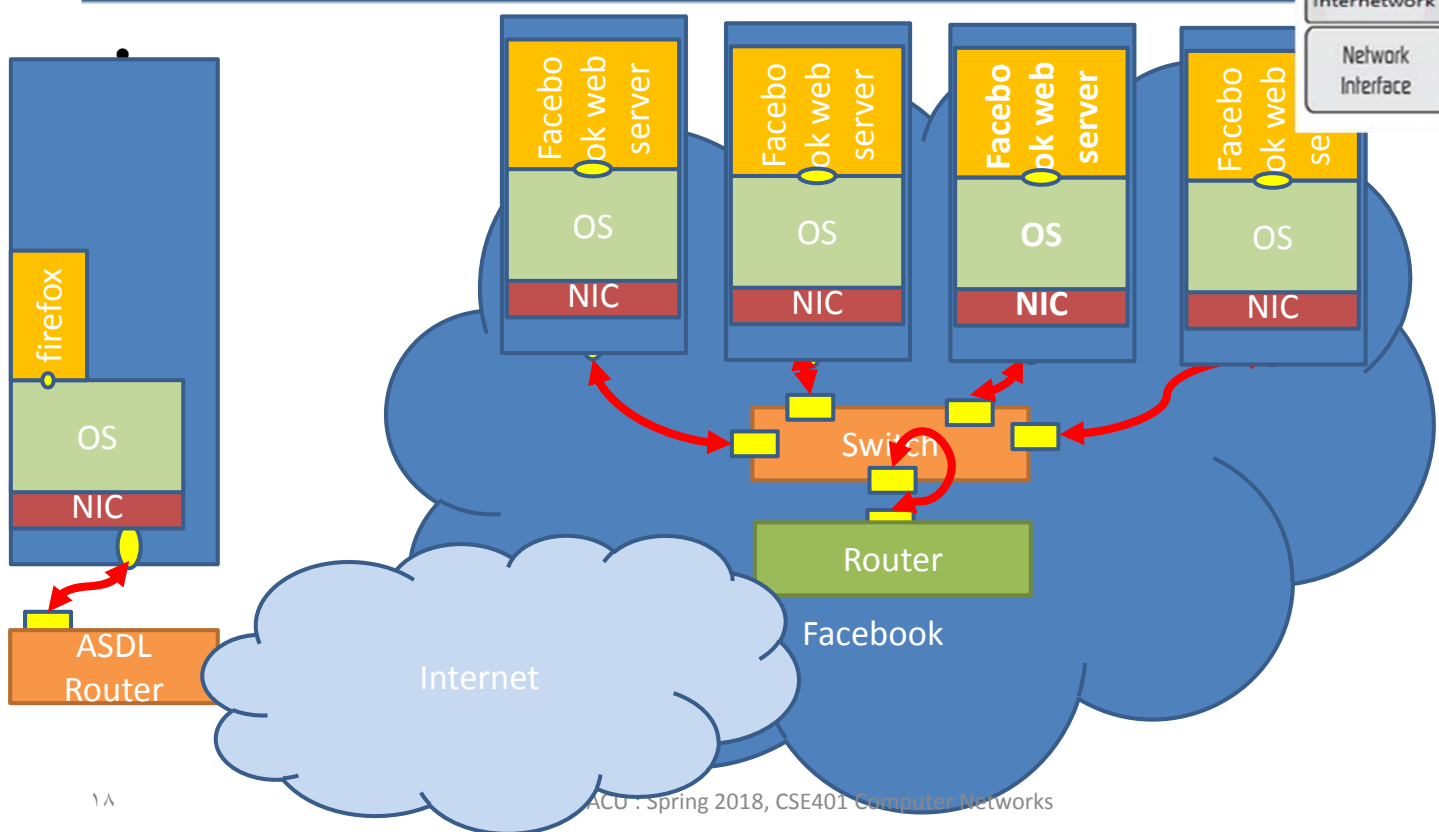
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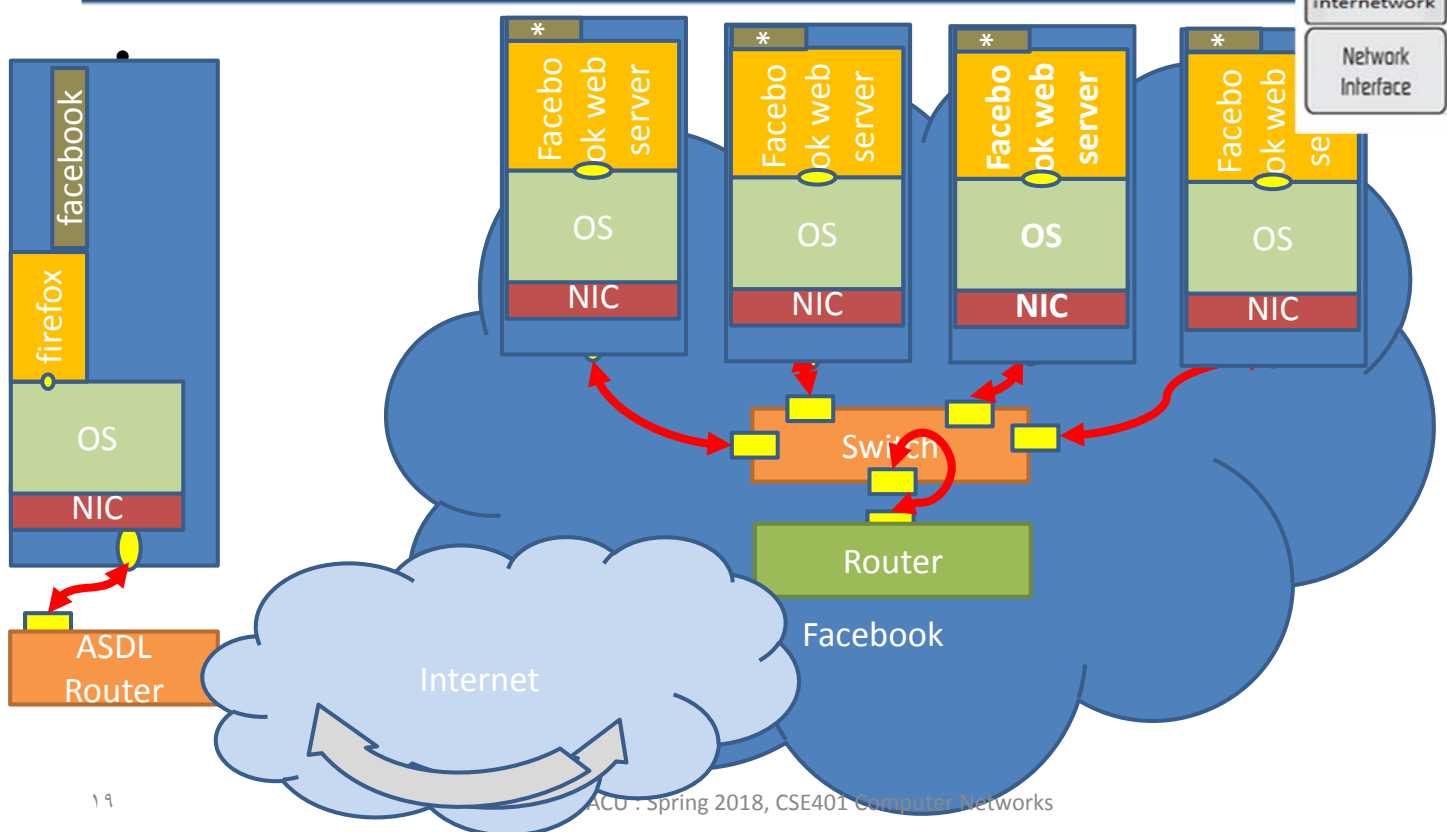
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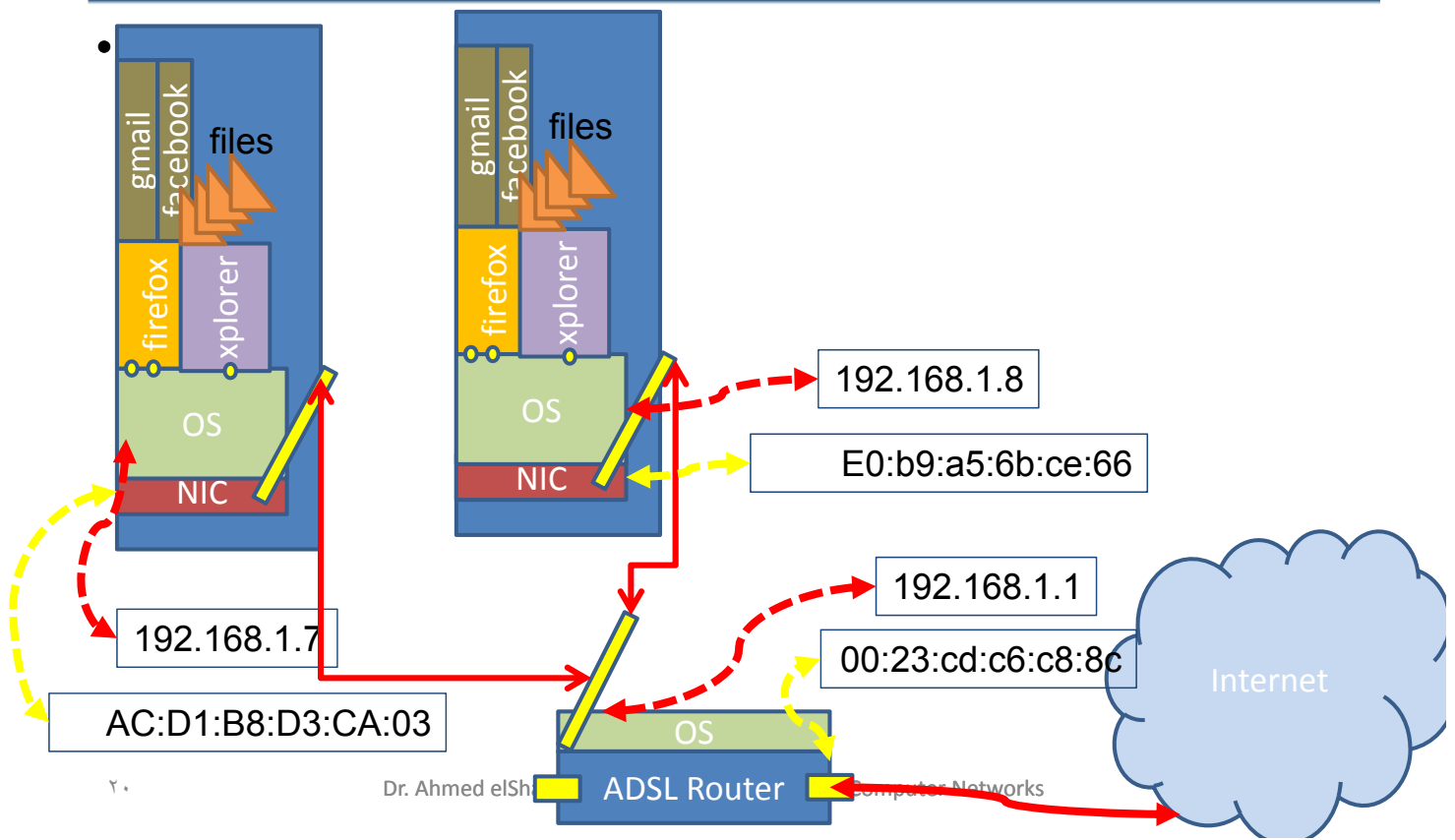
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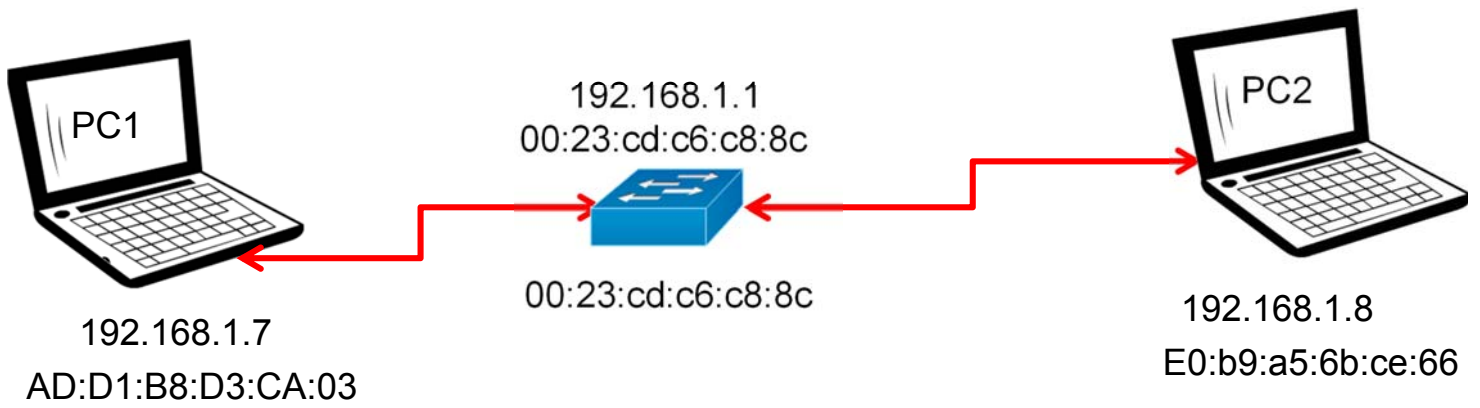
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Packets trip inside your home LAN

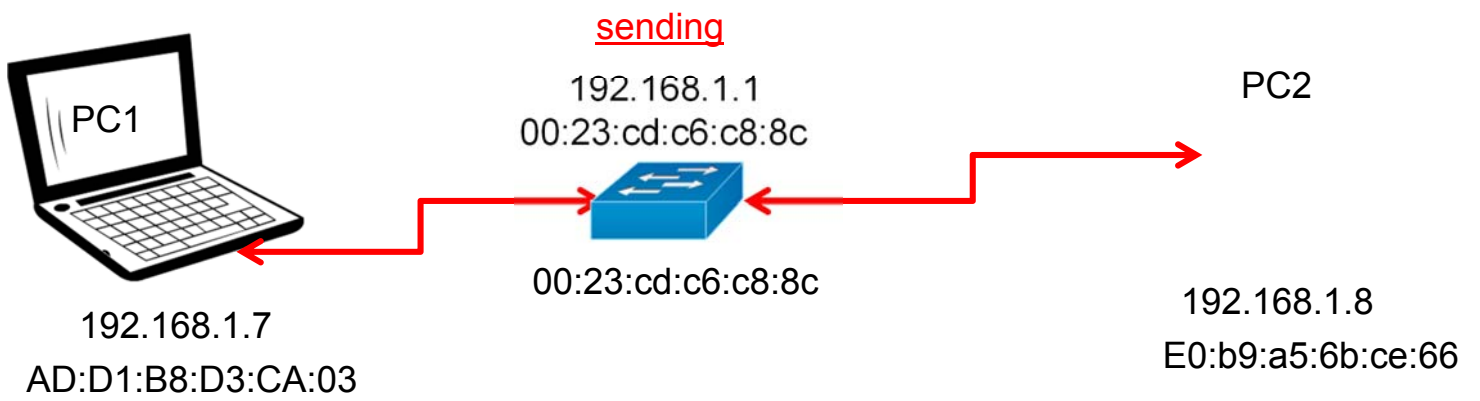


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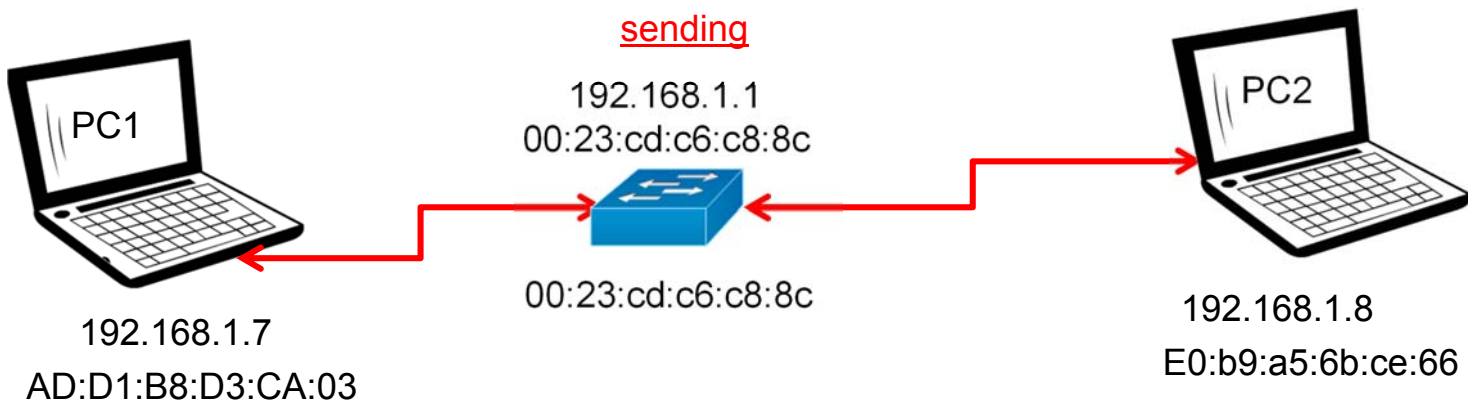
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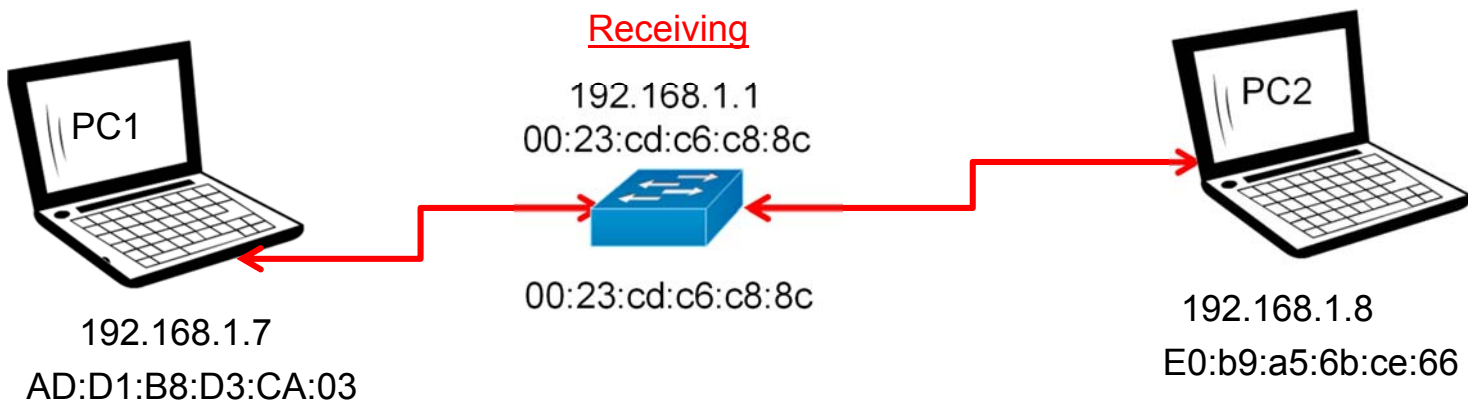
Source device	Destination device		data
	IP	MAC	
Source Address			
Destination Address			



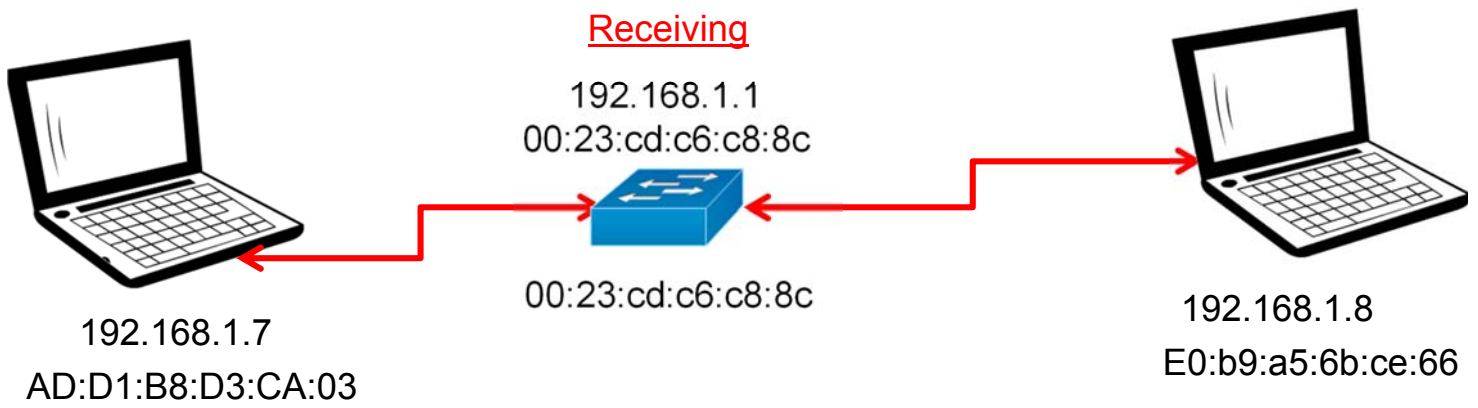
Source device	PC1	Destination device	PC2	data
	IP	MAC		
Source Address	192.168.1.7	AD:D1:B8:D3:CA:03		
Destination Address	192.168.1.8	E0:b9:a5:6b:ce:66		



Source device	Router	Destination device	PC2
	IP	MAC	data
Source Address	192.168.1.7	AD:D1:B8:D3:CA:03	
Destination Address	192.168.1.8	E0:b9:a5:6b:ce:66	

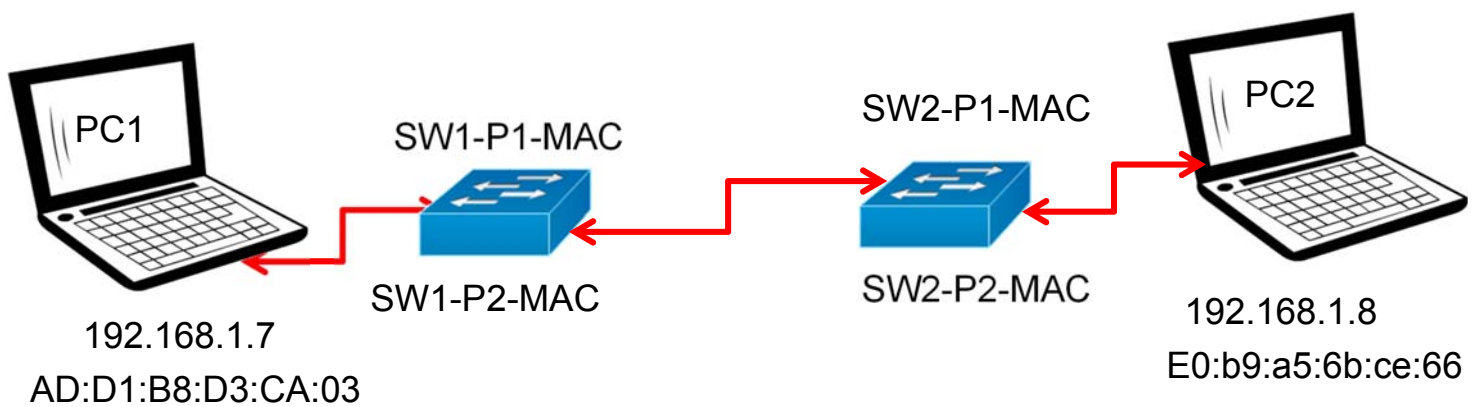


Source device	PC2	Destination device	Router
	IP	MAC	data
Source Address	192.168.1.8	E0:b9:a5:6b:ce:66	
Destination Address	192.168.1.7	AD:D1:B8:D3:CA:03	

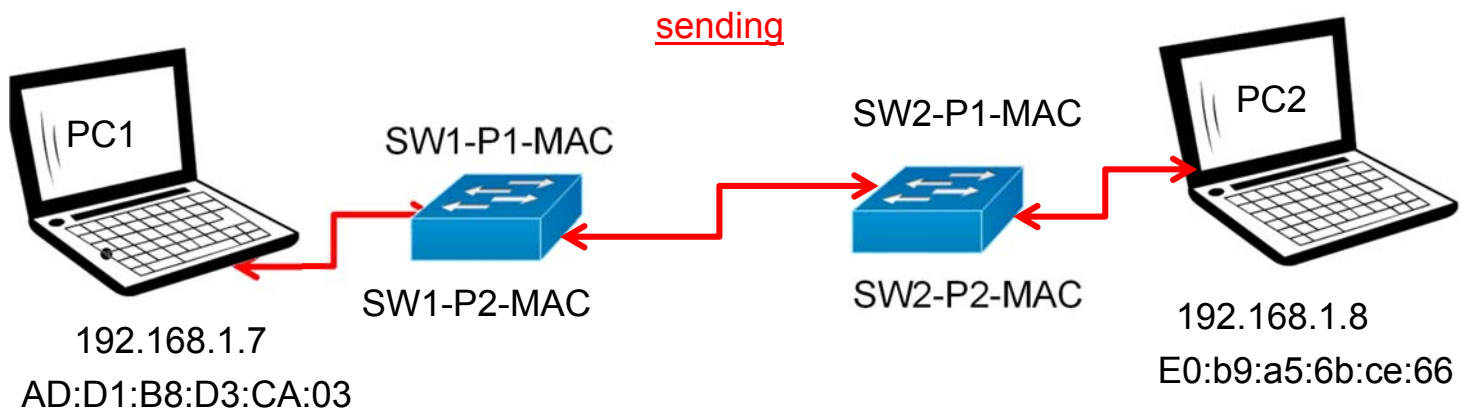


Source device	Router	Destination device	PC1
	IP	MAC	data
Source Address	192.168.1.8	E0:b9:a5:6b:ce:66	
Destination Address	192.168.1.7	AD:D1:B8:D3:CA:03	

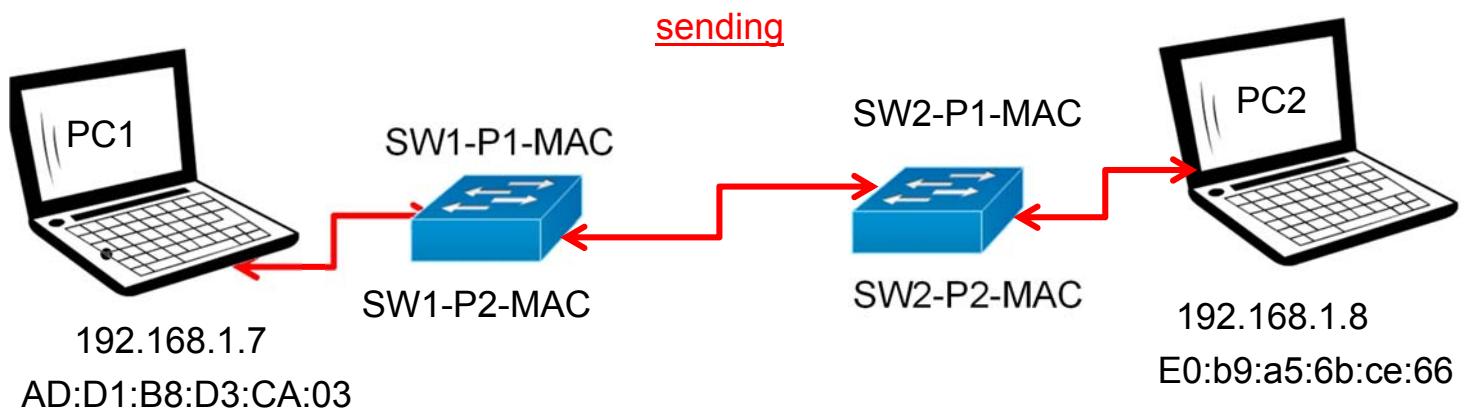
Packets trip inside your enterprise LAN



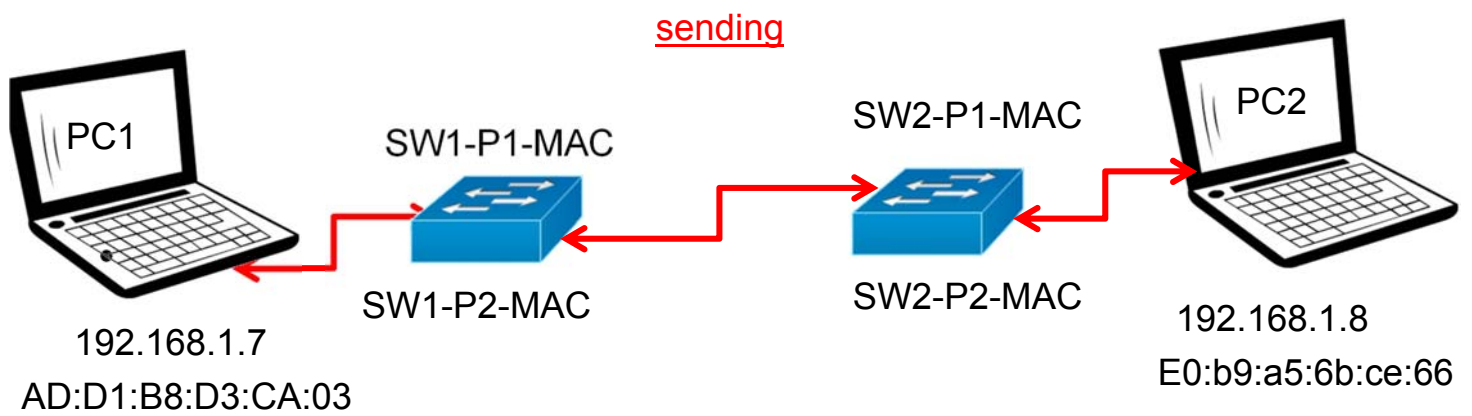
Source device	IP	MAC	data
Source Address			
Destination Address			



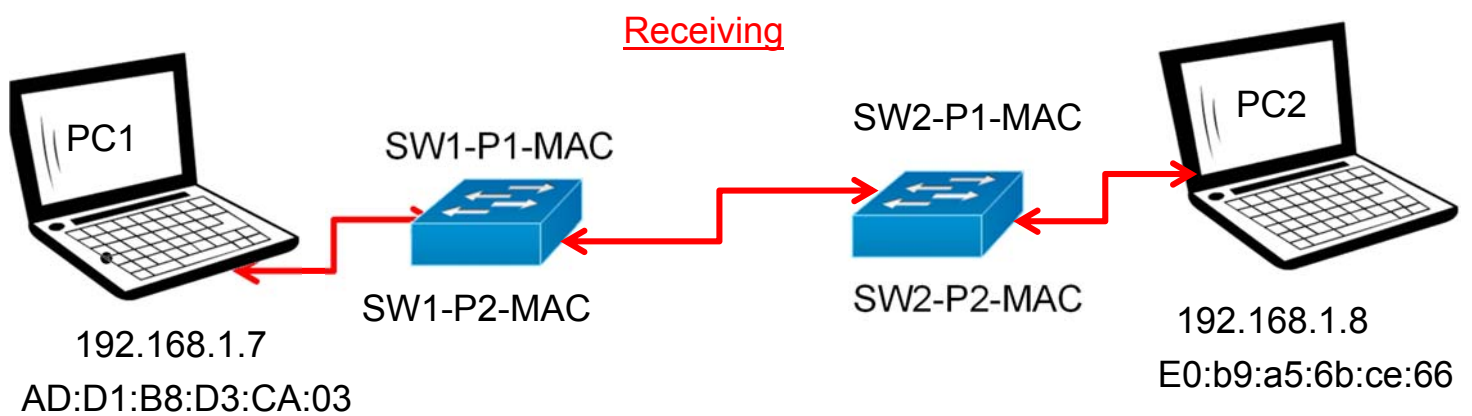
Source device	PC1	Destination device	SW1
	IP	MAC	data
Source Address	192.168.1.7	AD:D1:B8:D3:CA:03	
Destination Address	192.168.1.8	E0:b9:a5:6b:ce:66	



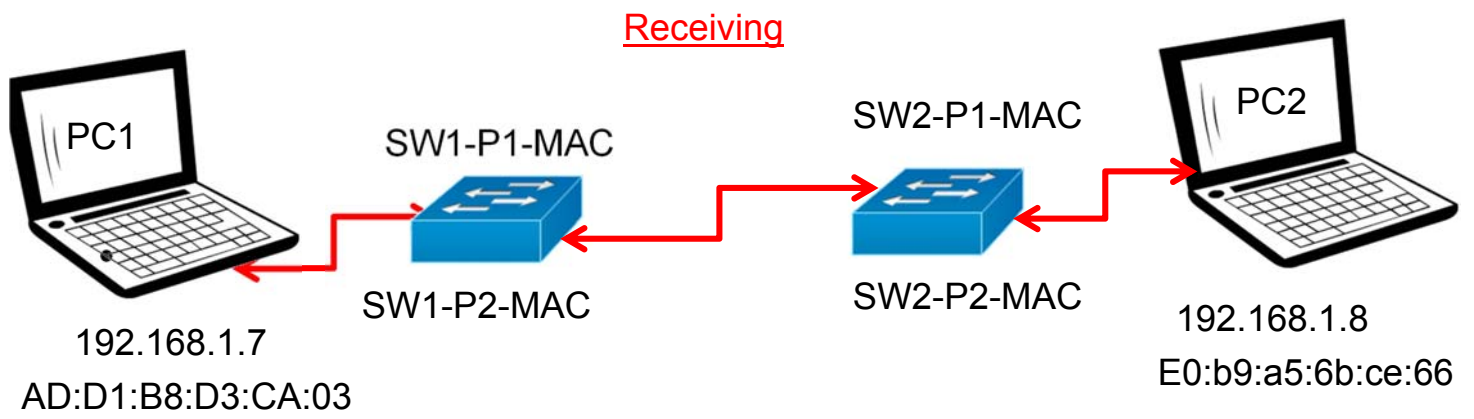
Source device	SW1	Destination device	SW2
	IP	MAC	data
Source Address	192.168.1.7	AD:D1:B8:D3:CA:03	
Destination Address	192.168.1.8	E0:b9:a5:6b:ce:66	



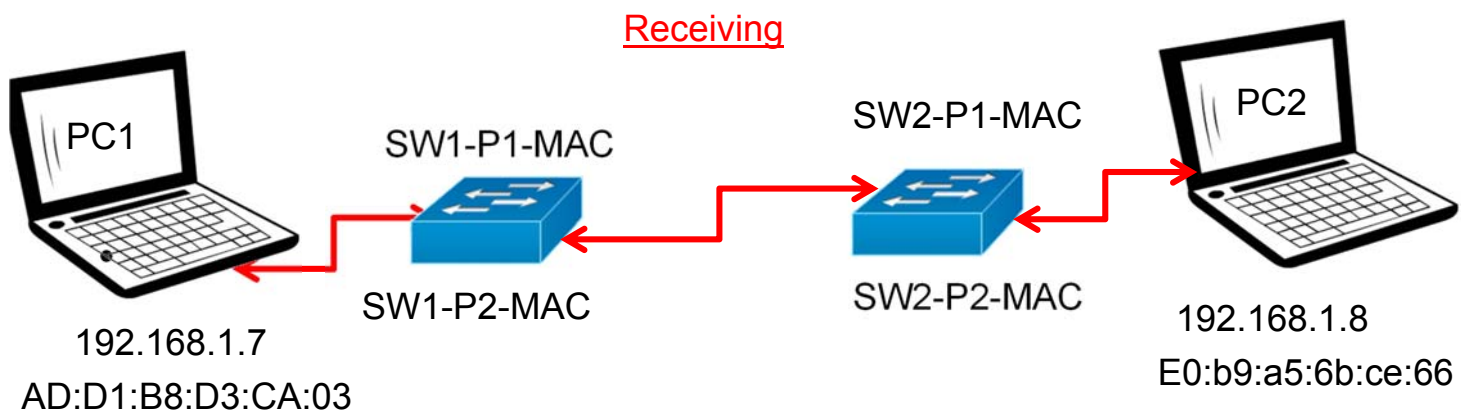
Source device	SW2	Destination device	PC2
	IP	MAC	data
Source Address	192.168.1.7	AD:D1:B8:D3:CA:03	
Destination Address	192.168.1.8	E0:b9:a5:6b:ce:66	



Source device	PC2	Destination device	SW2
	IP	MAC	data
Source Address	192.168.1.8	E0:b9:a5:6b:ce:66	
Destination Address	192.168.1.7	AD:D1:B8:D3:CA:03	

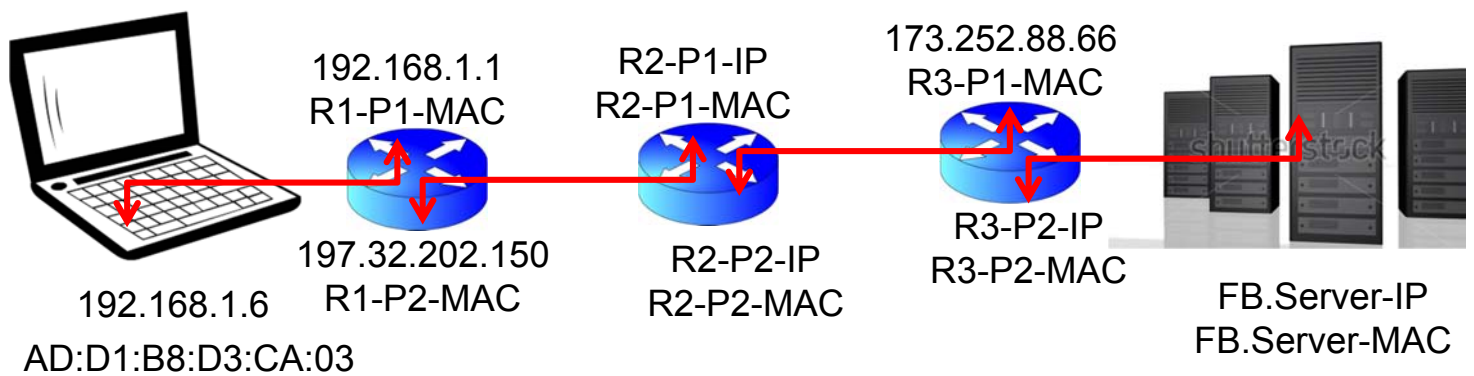


Source device	sw2	Destination device	sw1
	IP	MAC	data
Source Address	192.168.1.8	E0:b9:a5:6b:ce:66	
Destination Address	192.168.1.7	AD:D1:B8:D3:CA:03	



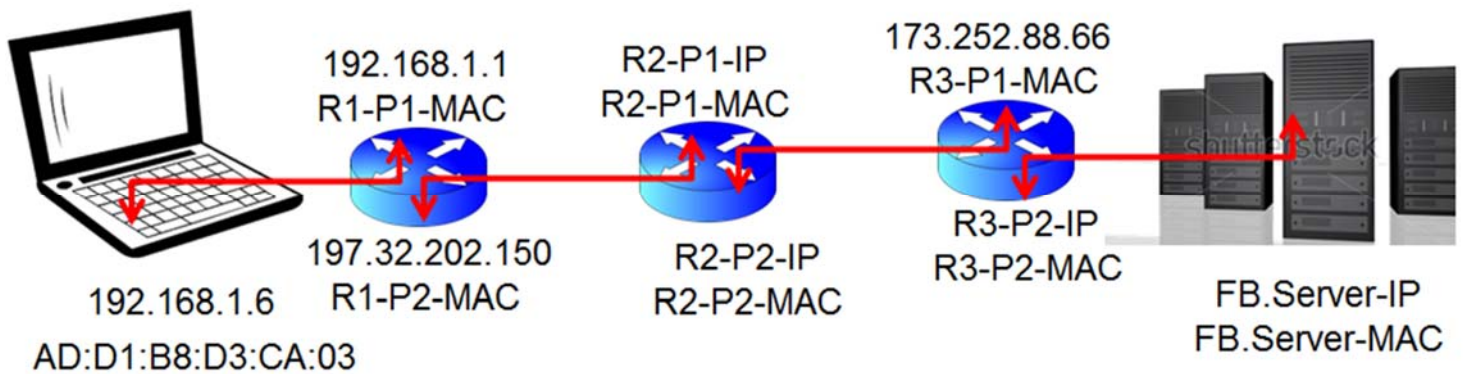
Source device	sw1	Destination device	pc1
	IP	MAC	data
Source Address	192.168.1.8	E0:b9:a5:6b:ce:66	
Destination Address	192.168.1.7	AD:D1:B8:D3:CA:03	

Discovering internet packets through internet



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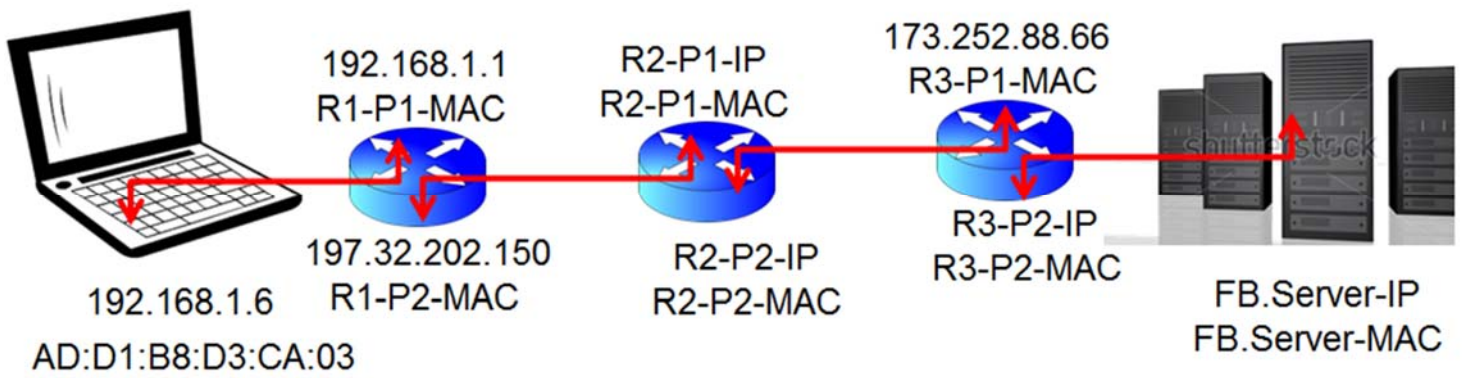
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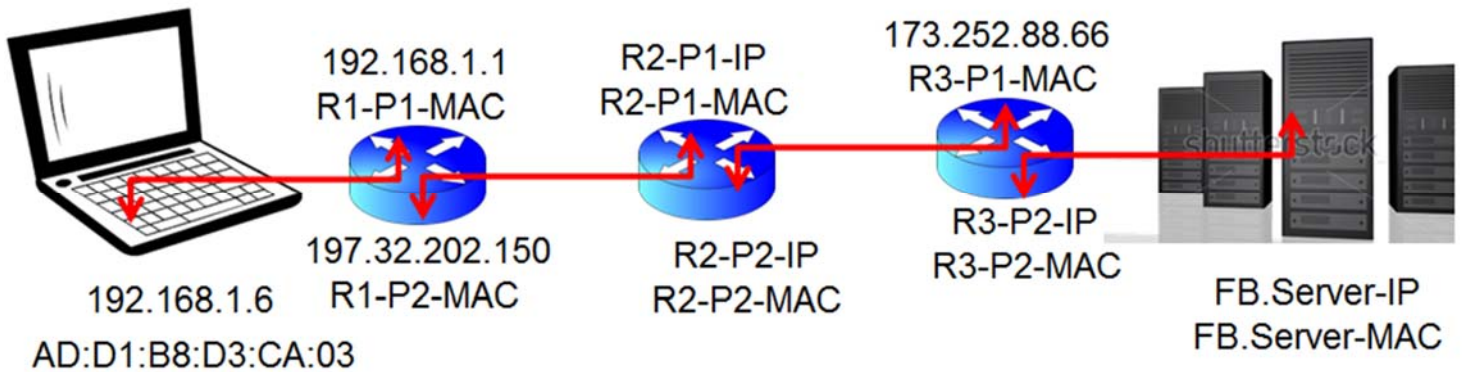
Sending

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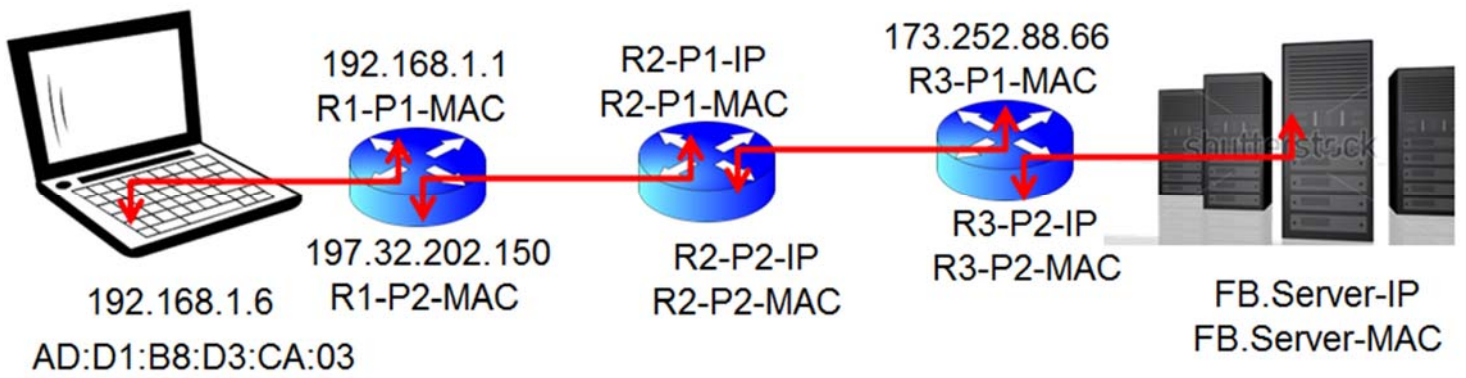
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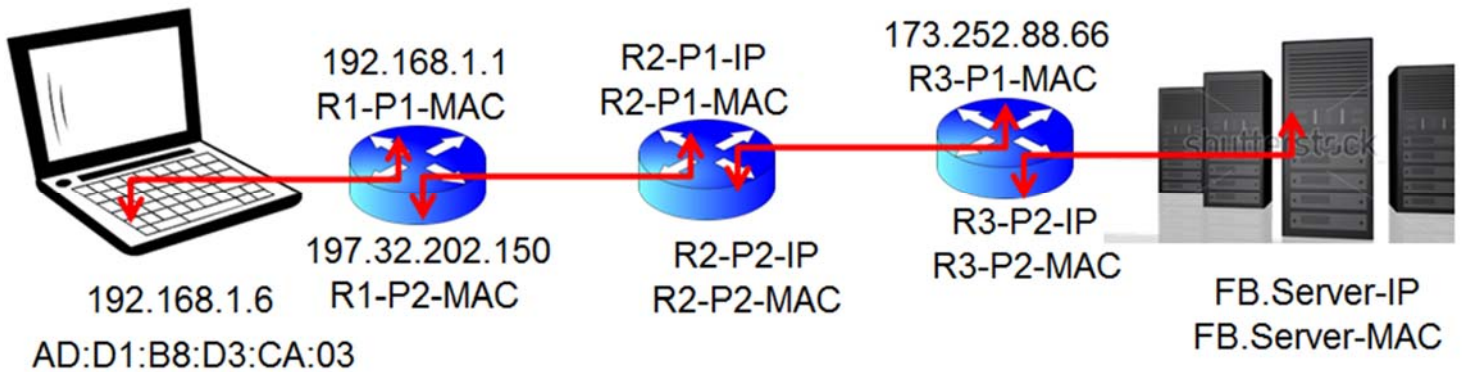
Source device	PC	Destination device	R1
	IP	MAC	data
Source Address	192.168.1.6	AD:D1:B8:D3:CA:03	
Destination Address	FB.Server-IP	R1-P1-MAC	



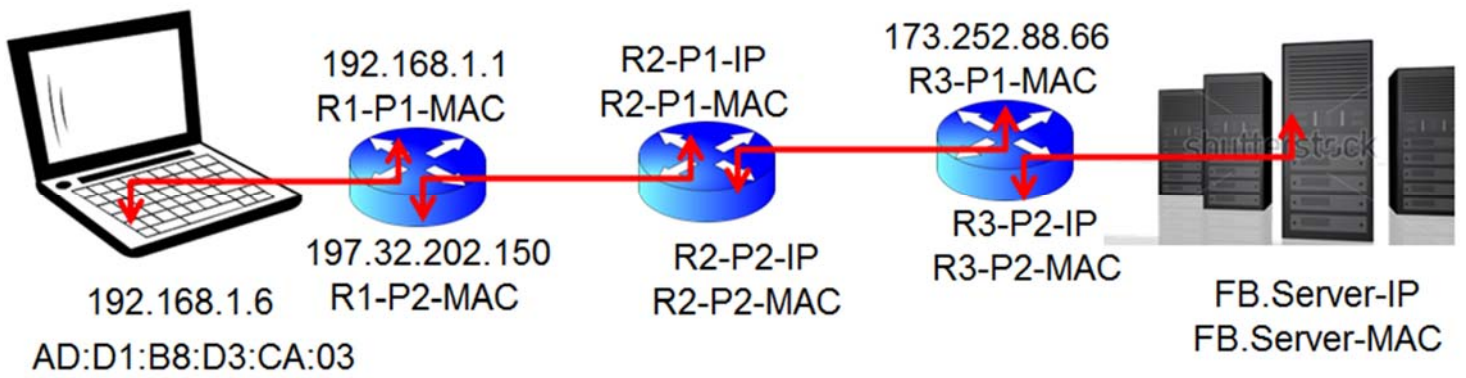
Source device	R1	Destination device	R2
	IP	MAC	data
Source Address	197.32.202.150	R1-P2-MAC	
Destination Address	FB.Server-IP	R2-P1-MAC	



Source device	R2	Destination device	R3
	IP	MAC	data
Source Address	197.32.202.150	R2-P2-MAC	
Destination Address	FB.Server-IP	R3-P1-MAC	



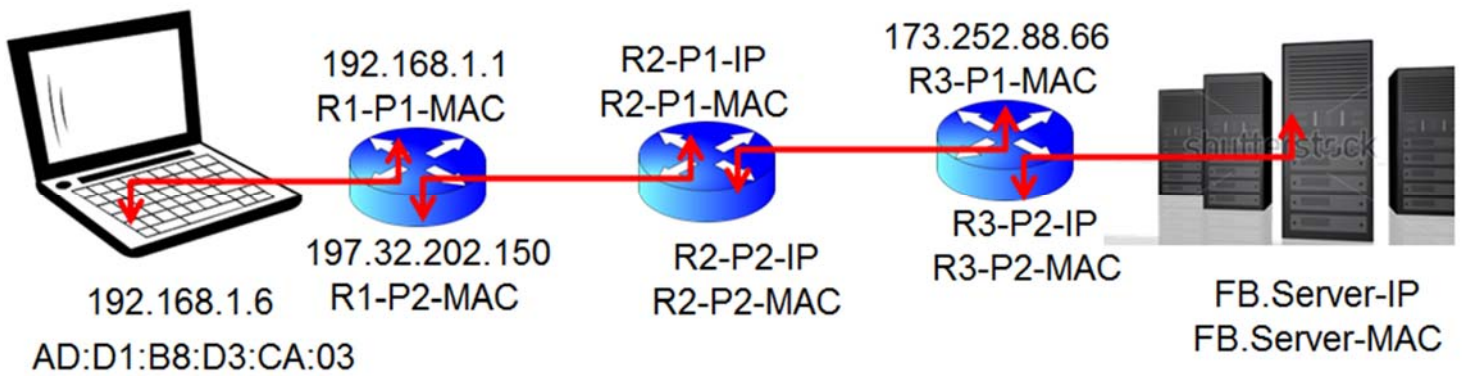
Source device	R3	Destination device	FB.SERVER
	IP	MAC	data
Source Address	197.32.202.150	R3-P2-MAC	
Destination Address	FB.SERVER-IP	FB.SERVER-MAC	



Reply

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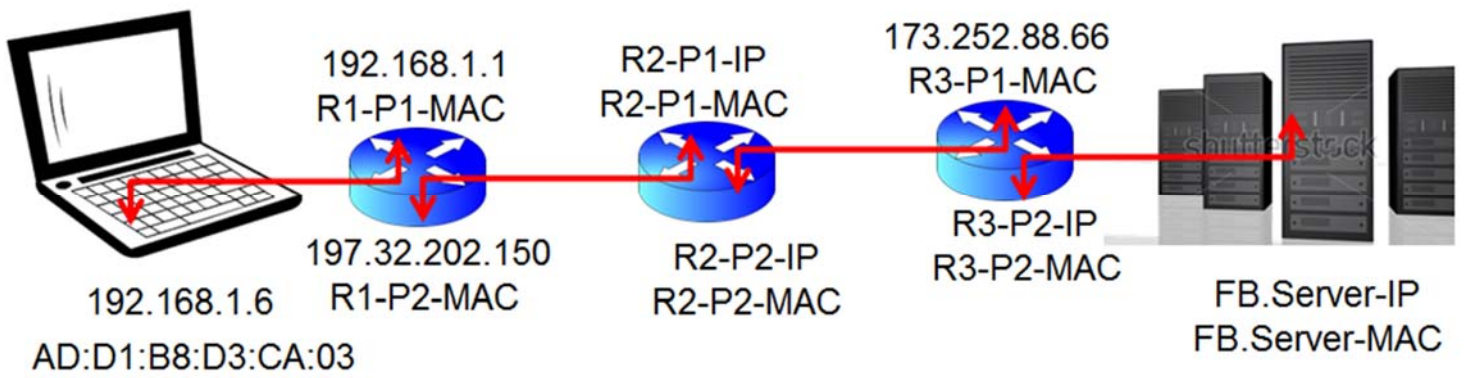
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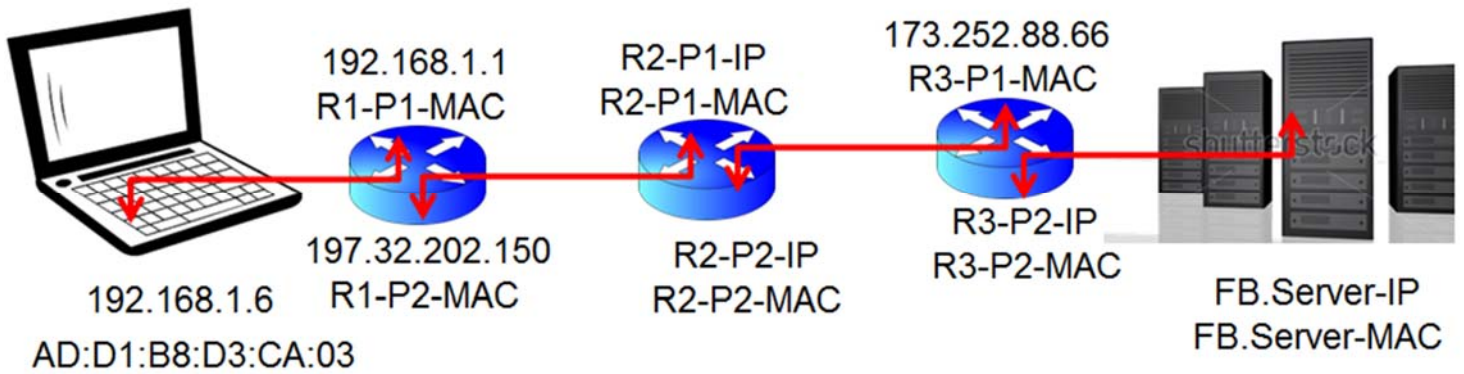
Source device	FB.SERVER	Destination device	R3
	IP	MAC	data
Source Address	FB.SERVER-IP	FB-SERVER-MAC	
Destination Address	197.32.202.150	R3-P2-MAC	

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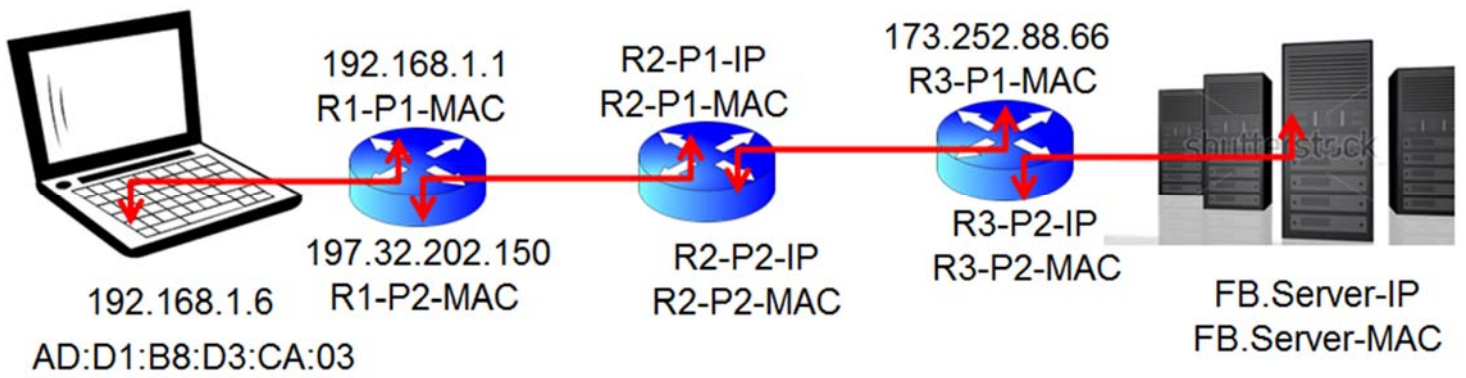
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Source device	R3	Destination device	R2
	IP	MAC	data
Source Address	FB.SERVER-IP	R3-P1-MAC	
Destination Address	197.32.202.150	R2-P2-MAC	



Source device	R2	Destination device	R1
	IP	MAC	data
Source Address	FB.SERVER-IP	R2-P1-MAC	
Destination Address	197.32.202.150	R1-P2-MAC	



Source device	R1	Destination device	PC
	IP	MAC	data
Source Address	FB.SERVER-IP	R1-P2-MAC	
Destination Address	192.168.1.6	AD:D1:B8:D3:CA:03	

