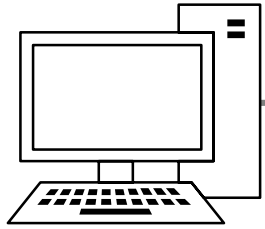
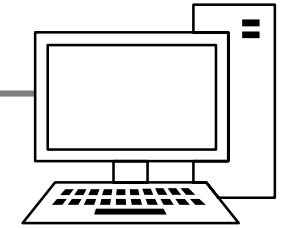


# OSI Reference Model - Encapsulation



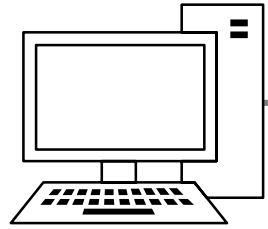
**Sender**



**Receiver**

Layer	Name	Includes	Devices
7			
6			
5			
4			
3			
2			
1			

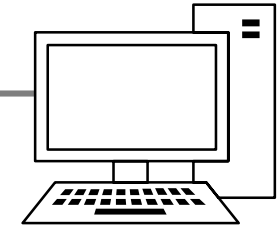
# OSI Reference Model - Encapsulation



**Sender**

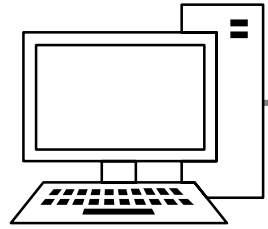


Layer	Name	Includes	Devices
7	Application		
6			
5			
4			
3			
2			
1			



**Receiver**

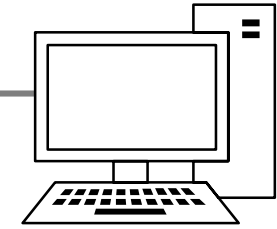
# OSI Reference Model - Encapsulation



**Sender**

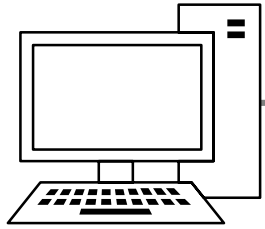


Layer	Name	Includes	Devices
7	Application		
6	Presentation		
5			
4			
3			
2			
1			



**Receiver**

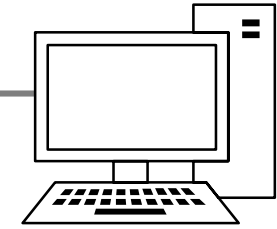
# OSI Reference Model - Encapsulation



**Sender**

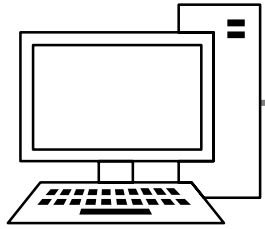


Layer	Name	Includes	Devices
7	Application		
6	Presentation		
5	Session		
4			
3			
2			
1			



**Receiver**

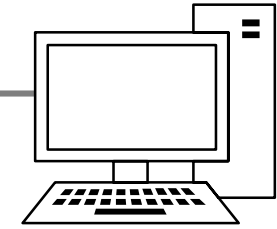
# OSI Reference Model - Encapsulation



**Sender**



Layer	Name	Includes	Devices
7	Application		
6	Presentation		
5	Session		
4	Transport	TCP/UDP, Port	
3			
2			
1			



**Receiver**

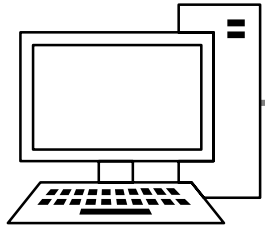
L4

L5

L6

L7

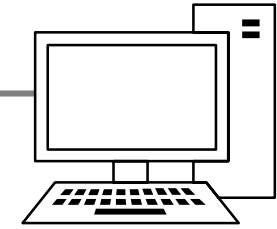
# OSI Reference Model - Encapsulation



**Sender**



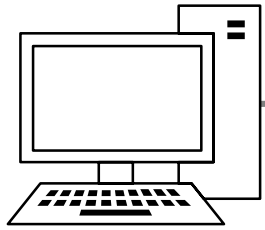
Layer	Name	Includes	Devices
7	Application		
6	Presentation		
5	Session		
4	Transport	TCP/UDP, Port	
3	Network	IP Address	Routers
2			
1			



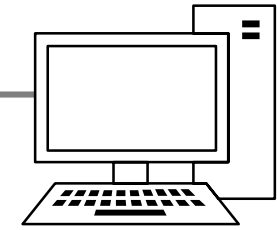
**Receiver**



# OSI Reference Model - Encapsulation



**Sender**



**Receiver**

Layer	Name	Includes	Devices
7	Application		
6	Presentation		
5	Session		
4	Transport	TCP/UDP, Port	
3	Network	IP Address	Routers
2	Data-Link	Ethernet MAC Address	Switches
1			

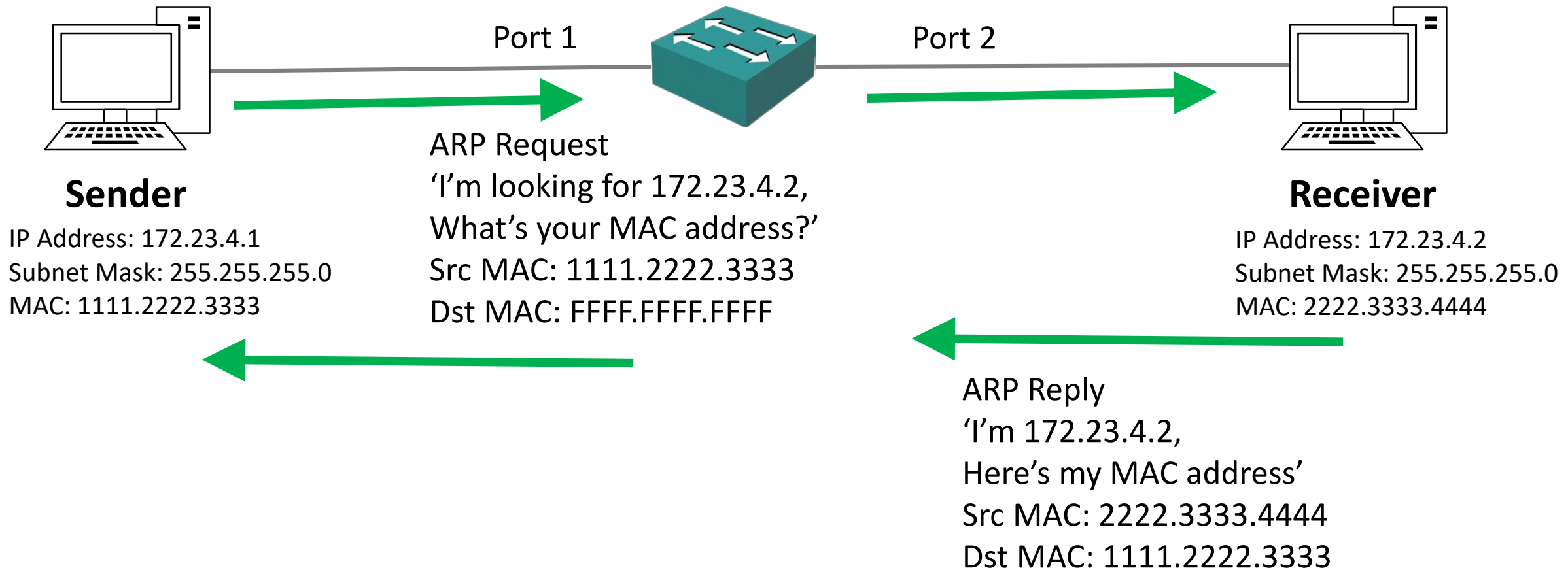
# IP to MAC Address Resolution



- The sender needs to know the receiver's IP address and MAC address to form the packet it's going to send
- We can point the sender directly at the destination IP address or at a user friendly FQDN such as `www.cisco.com`
- DNS Domain Name System maintains a mapping of FQDNs to IP addresses
- ARP Address Resolution Protocol is used to map the IP address to MAC address



# ARP Address Resolution Protocol



# Host ARP Commands



- ARP replies are saved in a hosts ARP cache so it doesn't need to send an ARP request every time it wants to communicate
- Windows
  - View ARP cache: `arp -a`
  - Clear ARP cache: `netsh interface ip delete arpcache`
- Linux
  - View ARP cache: `arp -n`
  - Clear ARP cache: `ip -s -s neigh flush all`