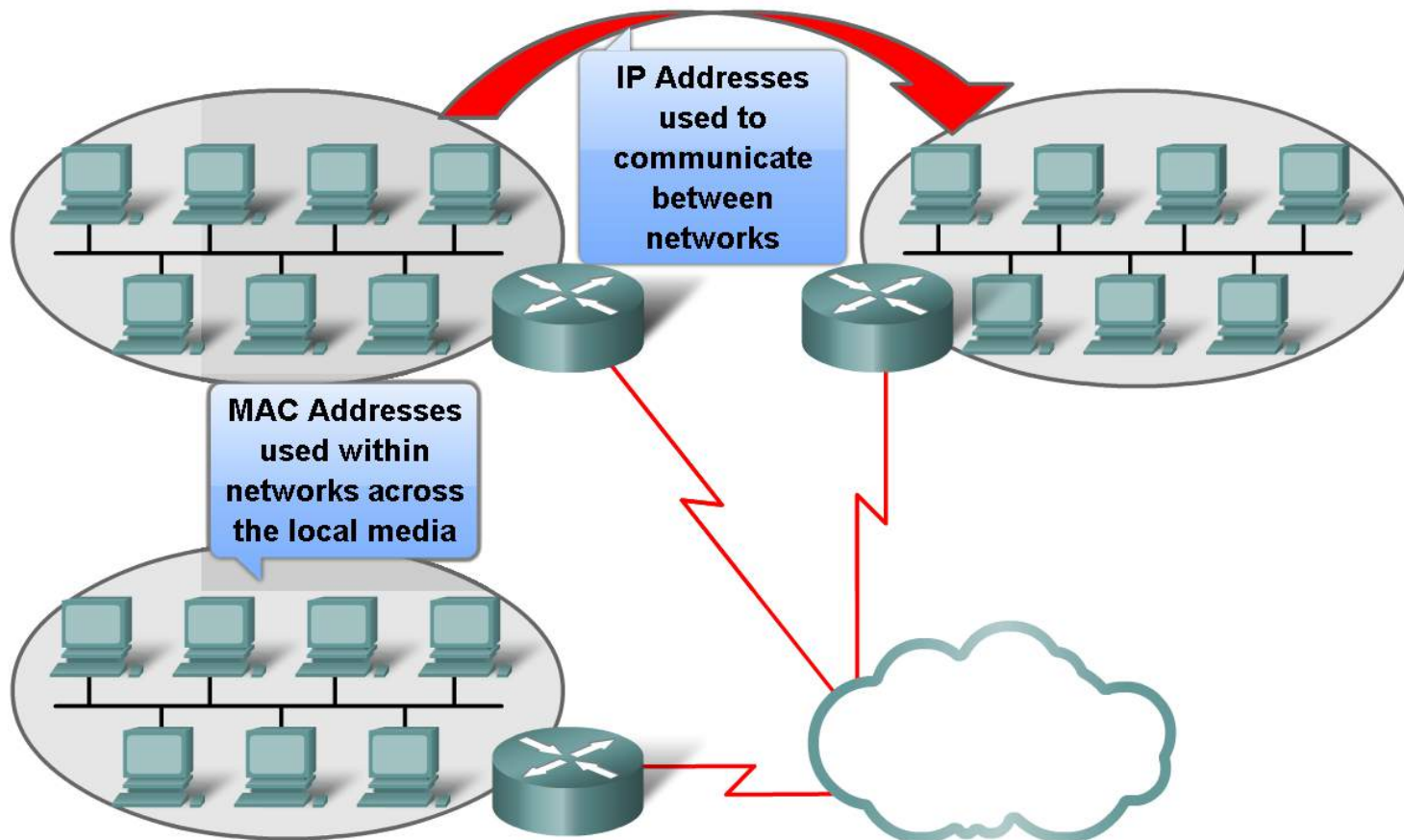


# Layer 2 addressing and its Impact on Network Operation and Performance

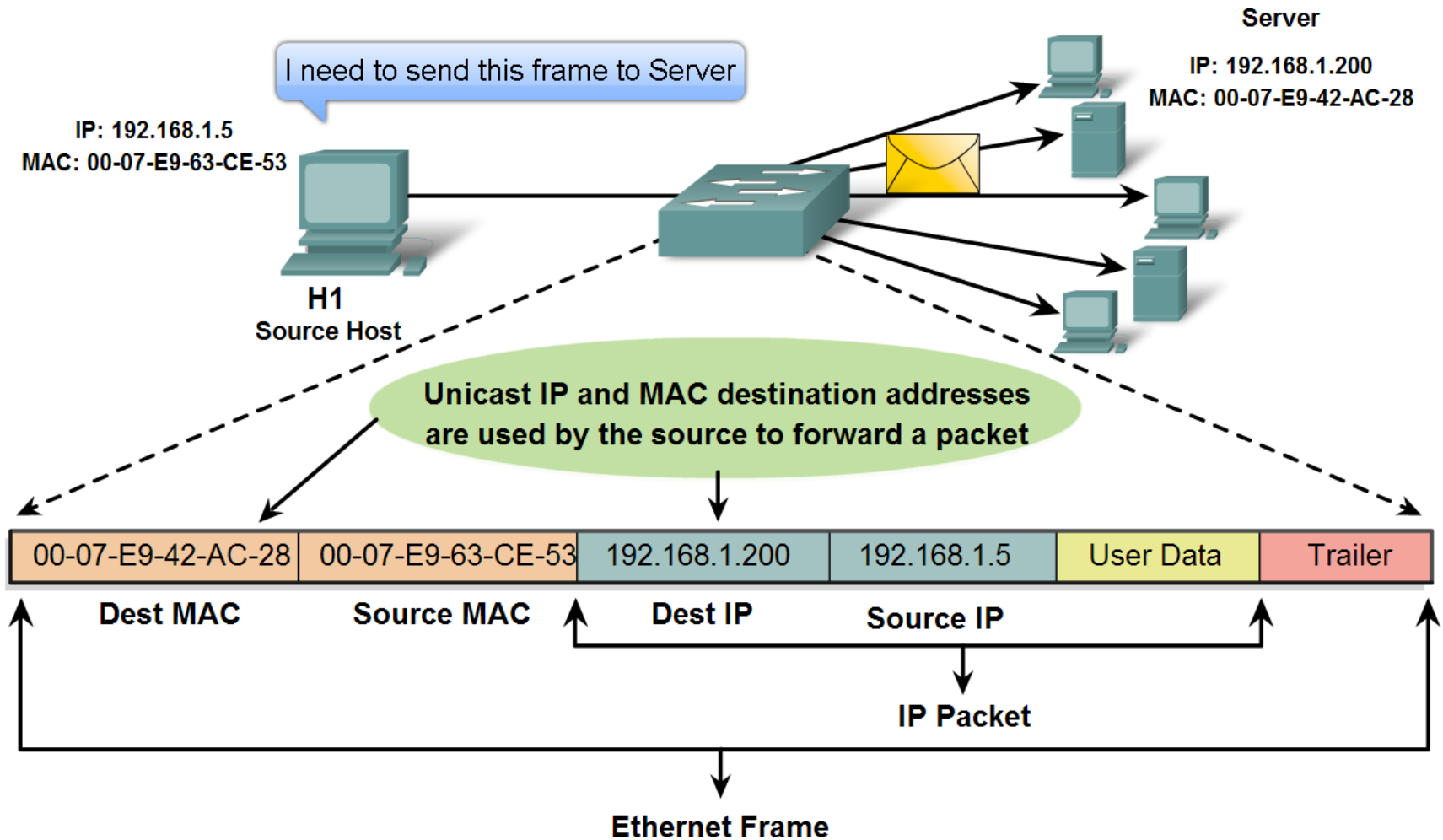
- Another Layer of Addressing

Different Layers of Addressing



# Layer 2 addressing and its Impact on Network Operation and Performance

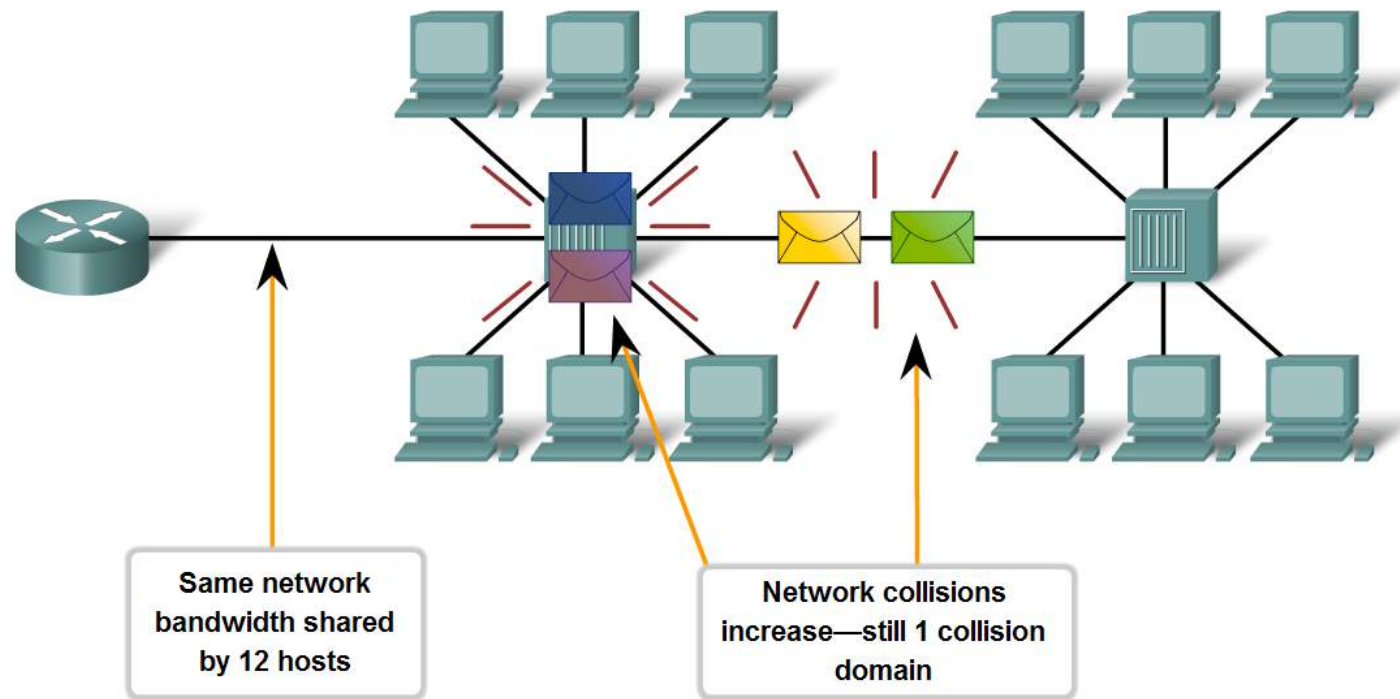
- Ethernet Unicast, Multicast and Broadcast



# Compare and Contrast the Use of Ethernet Switches versus Hubs in a LAN.

- Legacy Ethernet – Using Hubs

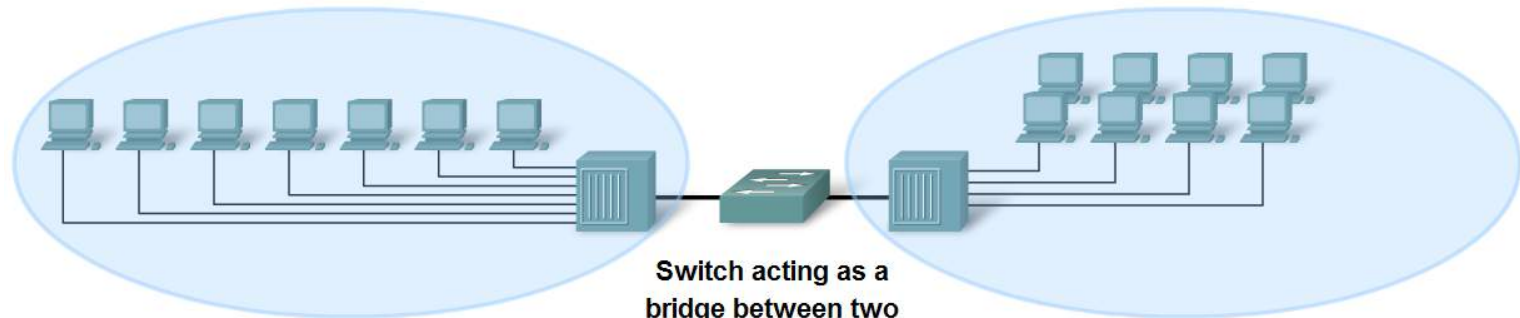
Poor Performance of Hub-based LANs



# Compare and Contrast the Use of Ethernet Switches versus Hubs in a LAN.

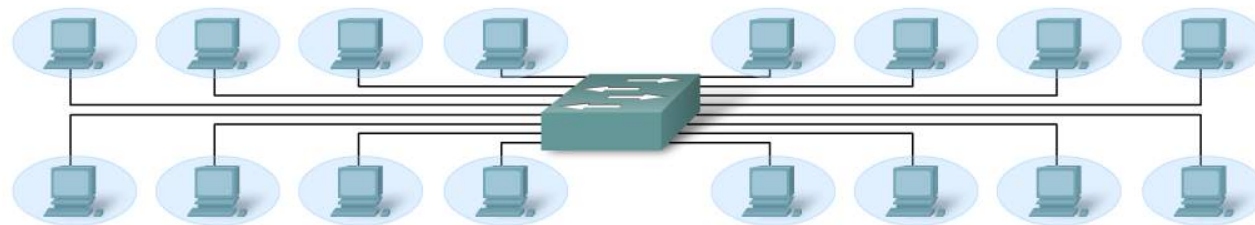
- Ethernet – Using Switches

**Switch Uses**



Switch acting as a bridge between two shared-media hubs

Two collision domains—one for each shared media LAN.



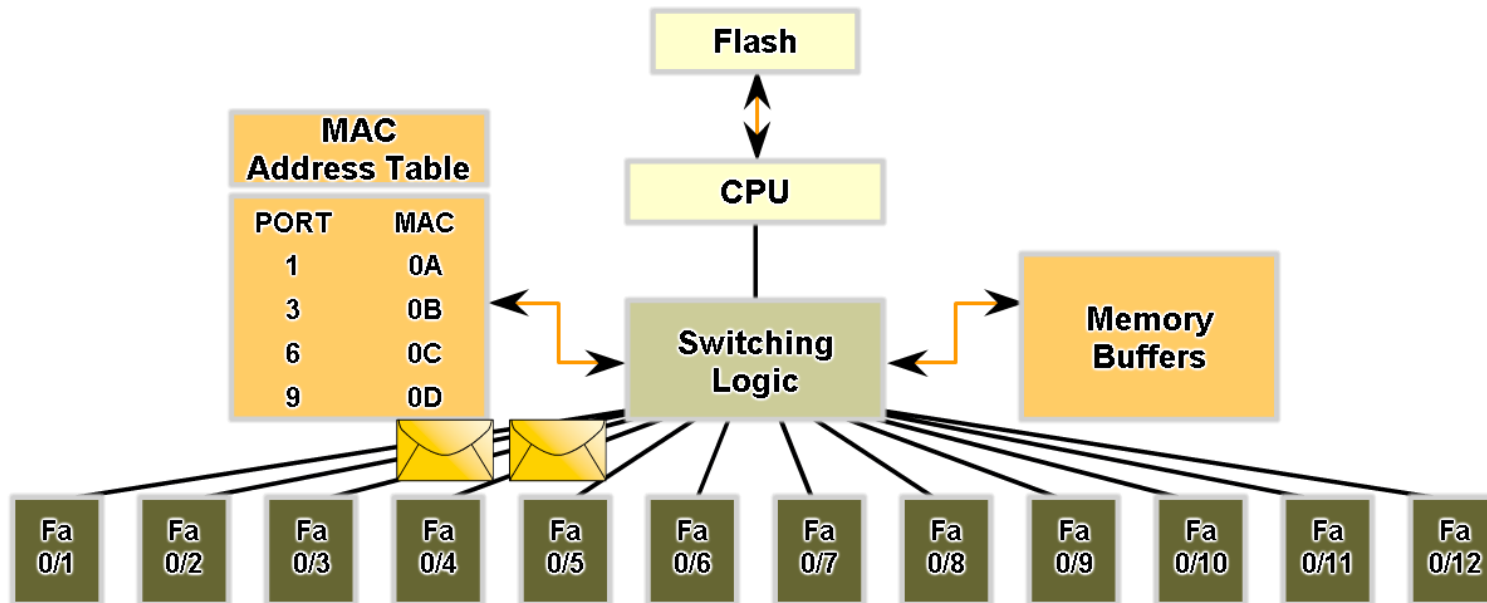
Switch at the center of a LAN

Each computer has its own collision domain.

# Compare and Contrast the Use of Ethernet Switches versus Hubs in a LAN.

- Describe how a switch can eliminate collisions, backoffs and re-transmissions, the leading factors in

Switches - Selective Forwarding



FRAME 1

Preamble	Destination Address	Source Address	Type	Data	Pad	CRC
	0C	0A				

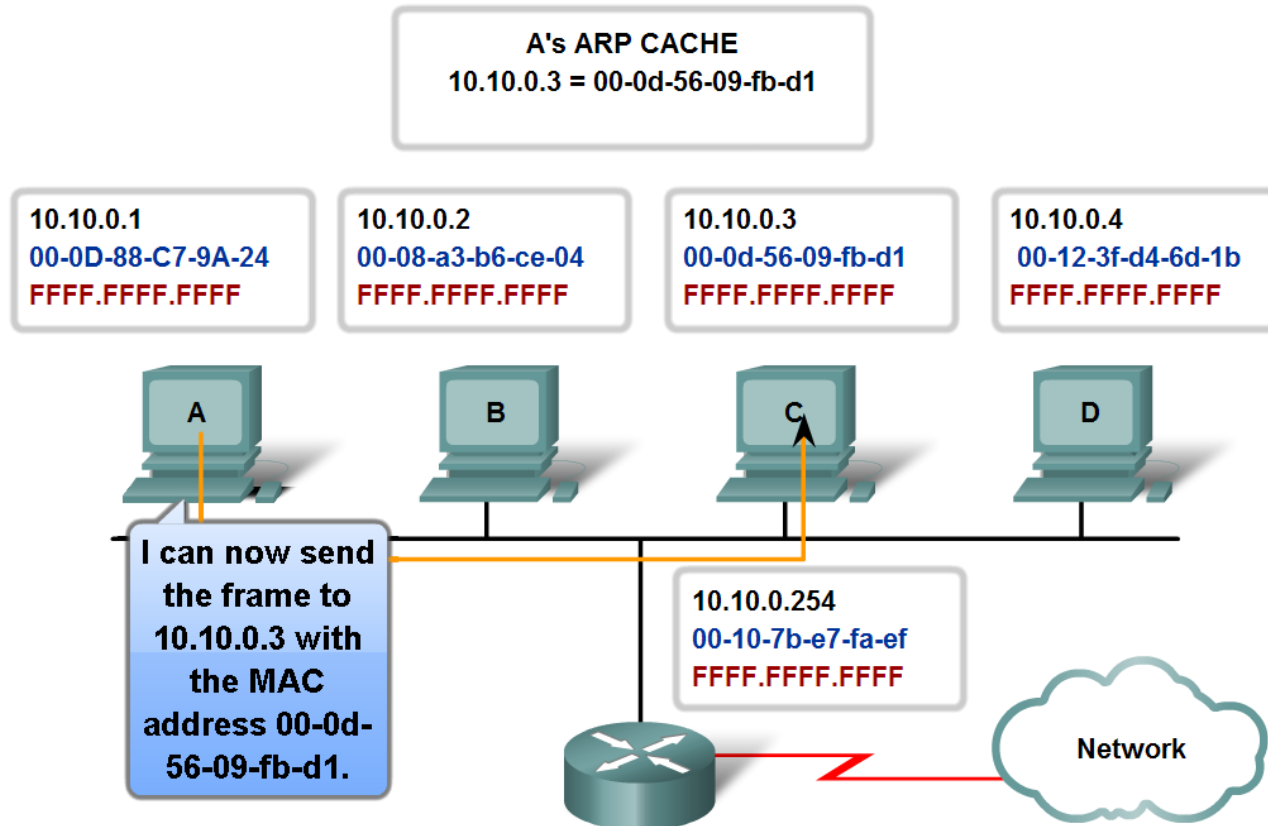
FRAME 2

Preamble	Destination Address	Source Address	Type	Data	Pad	CRC
	0C	0B				

# Explain the Address Resolution Protocol (ARP) process.

- Mapping IP to MAC Addresses

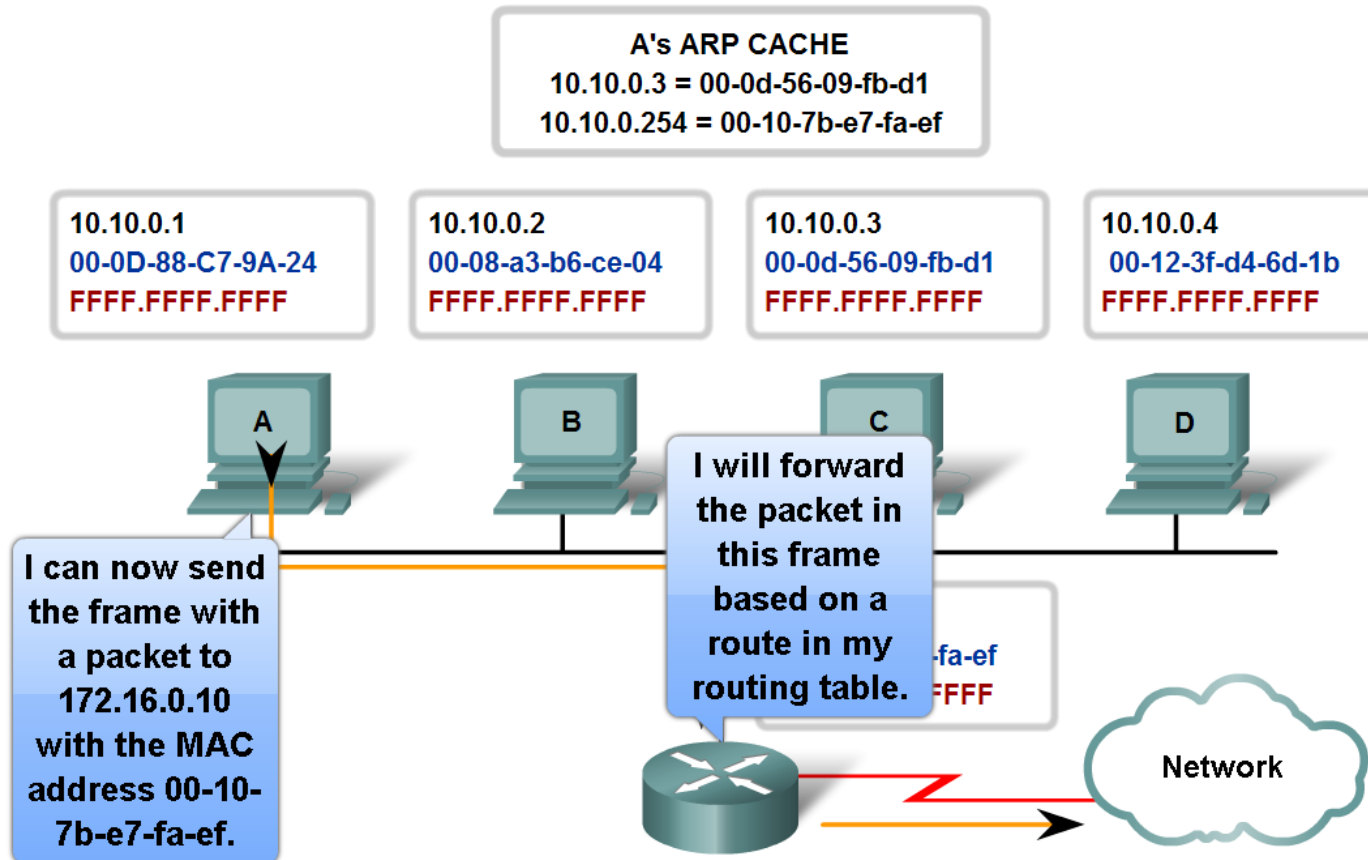
The ARP Process—ARP Entry Enables Frame to be Sent



# Explain the Address Resolution Protocol (ARP) process.

- ARP – Destinations Outside the Local Network

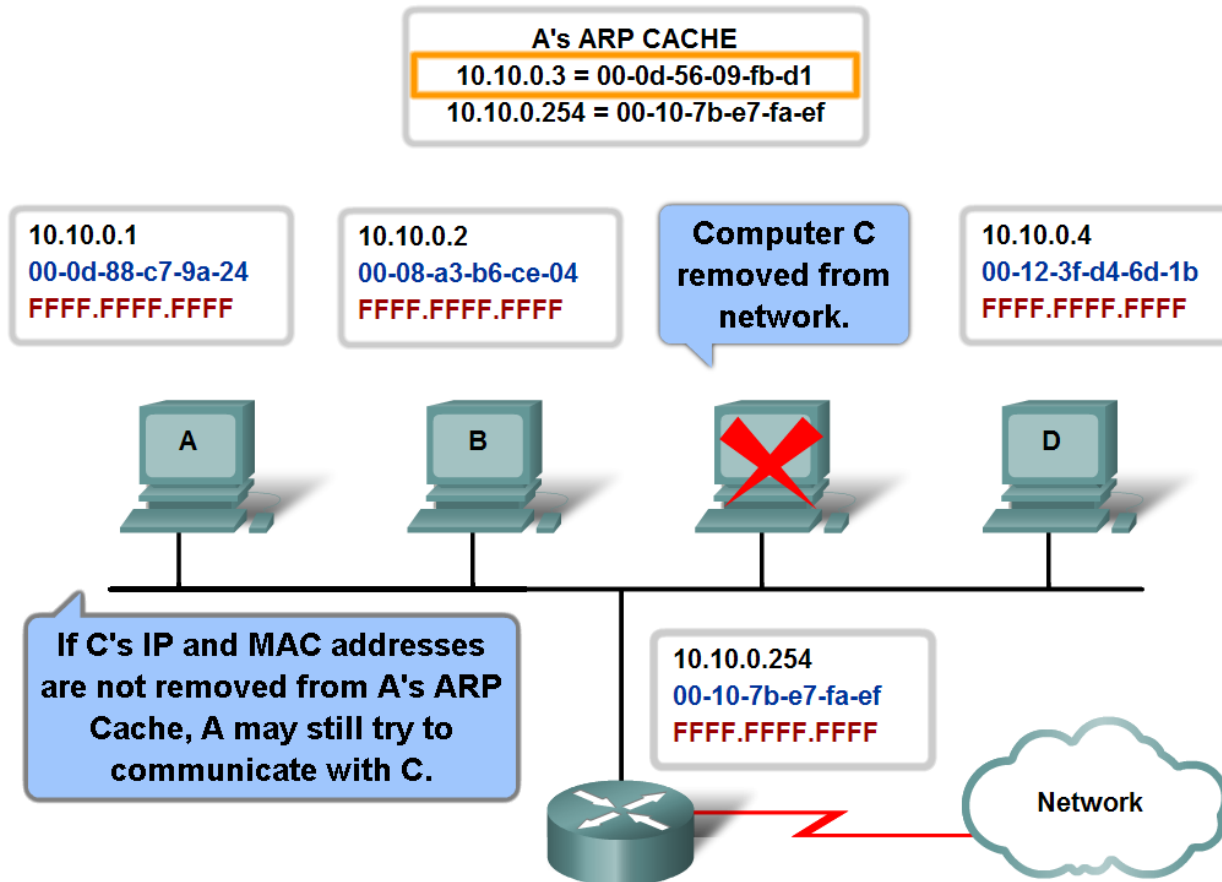
The ARP Process—ARP Entry Enables Frame to be Sent



# Explain the Address Resolution Protocol (ARP) process.

- ARP – Removing Address Mappings

The ARP Process - Removing Address Mappings



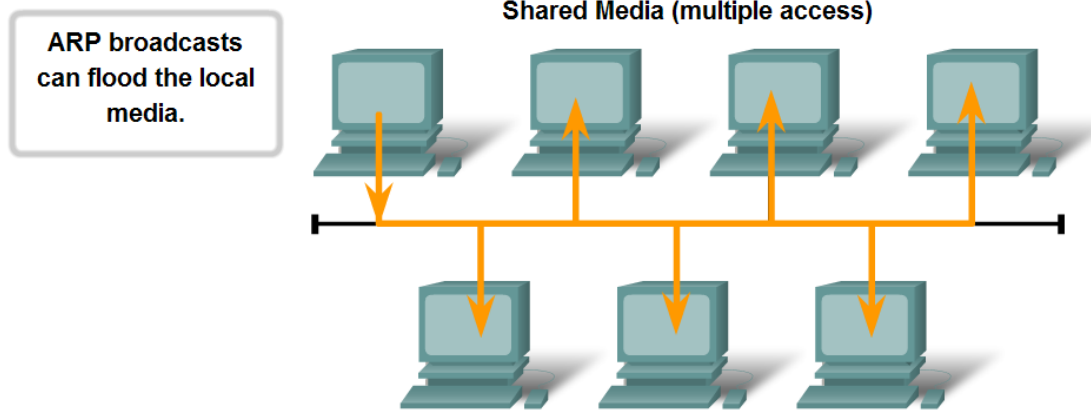


# Explain the Address Resolution Protocol (ARP) process.

## ▪ ARP Broadcasts - Issues

### ARP Issues:

- Broadcasts, overhead on the Media
- Security



A false ARP message can provide an incorrect MAC address that will then hijack frames using that address (called a spoof).

Ethernet					
8	6	6	2	46 to 1500	4
Preamble	Destination Address	Source Address	Type	Data	Frame Check Sequence

# Thank You