

Switching Concepts

Switching in Networking

Ports Types:

- Ingress: entering the interface
- Egress: exiting the interface

Forwarding frames:

- Ingress Interface
- Destination MAC address -> Egress
- Using its MAC Address Table ->
Ingress Source MAC Address



Destination Addresses	Port
EE	1
AA	2
BA	3
EA	4
AC	5
AB	6

The Switch Learn and Forward Method

1. Learn – Examines Source Address

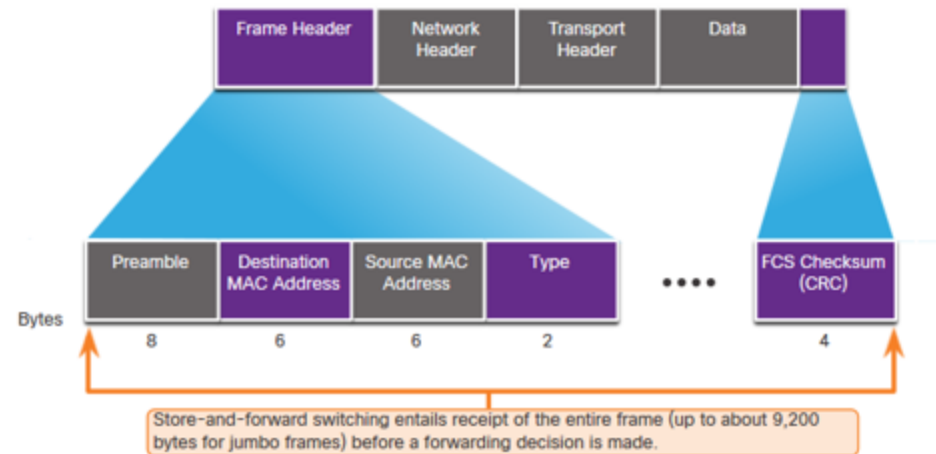
- Adds the source MAC if not in table
- Resets the time out setting back to 5 minutes if source is in the table

2. Forward – Examines Destination Address

- If the destination MAC is in the MAC address table it is forwarded out the specified port.
- If a destination MAC is not in the table, it is flooded out all interfaces except the one it was received.

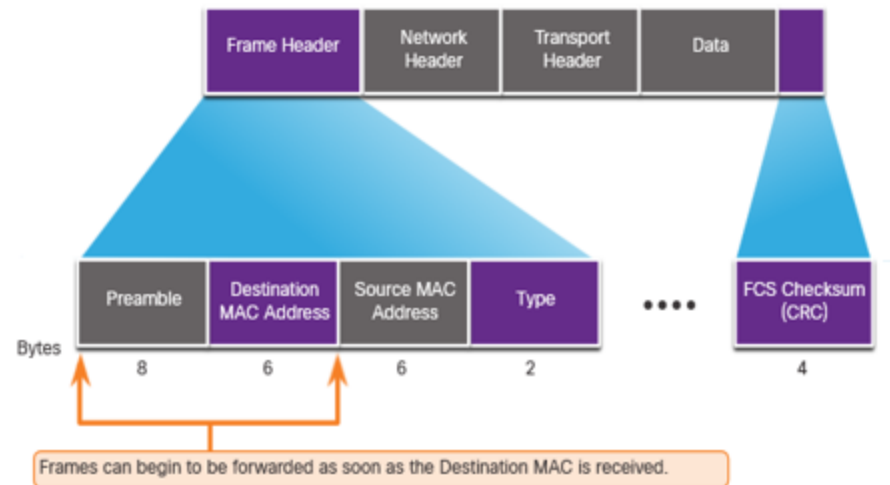
Switch Forwarding Methods: Store-and-Forward

- **Error checking:** Check FCS for CRC errors. Bad frames discarded
- **Buffering:** Buffer frame while it checks FCS.



Switch Forwarding Methods: Cut-Through

- **Cut-through:** Forwards frame after Destination MAC.
- **Fragment Free:** At least 64 bytes. Eliminates runts.
- **⚠ Does not check FCS ➡ It can propagate errors**

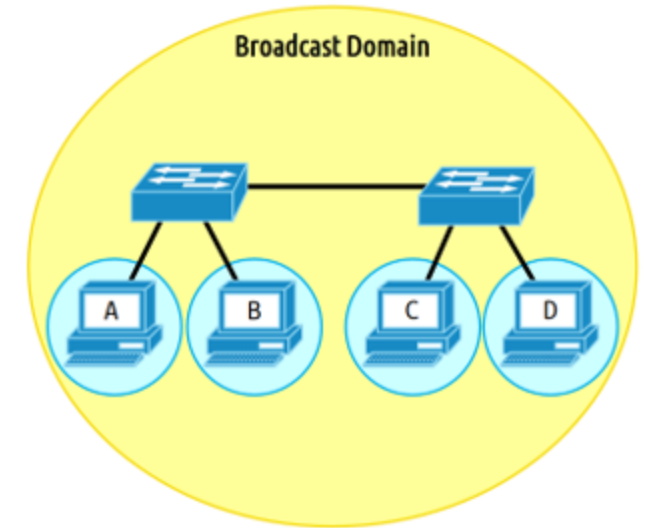
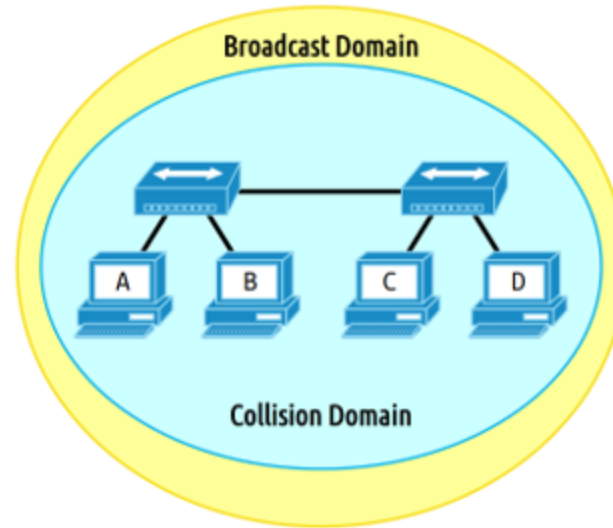


Broadcast domain

- Router: 
- Switch: 
- Hub: 

Collision domain

- Router: 
- Switch: 
- Hub: 



Alleviated Network Congestion

- MAC Address Table
- Full-duplex
- Fast Port Speeds
- Fast Internal Switching
- Large Frame Buffers
- High Port Density