4- Switches

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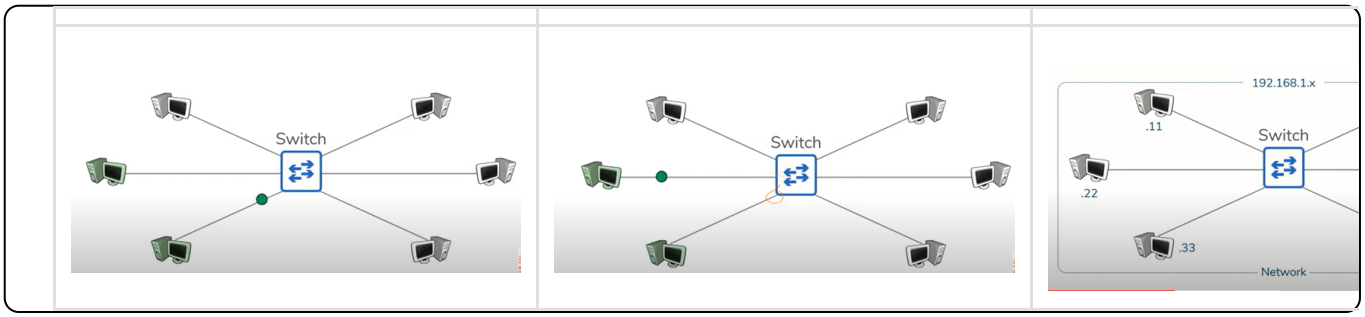
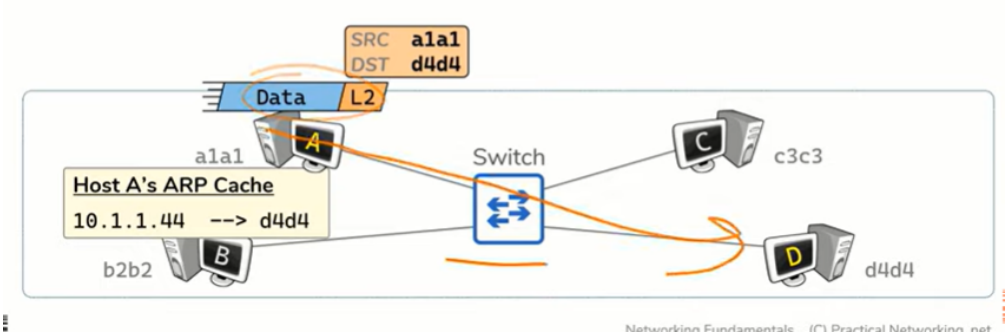
- ! Switches use and maintain MAC ADDRESS TABLE
- ! Switches perform three actions LEARN, FLOOD, FORWARD

PART A

- ! Switching is the process of moving data within networks
  - ! A switch is a device who's primary purpose is Switching.

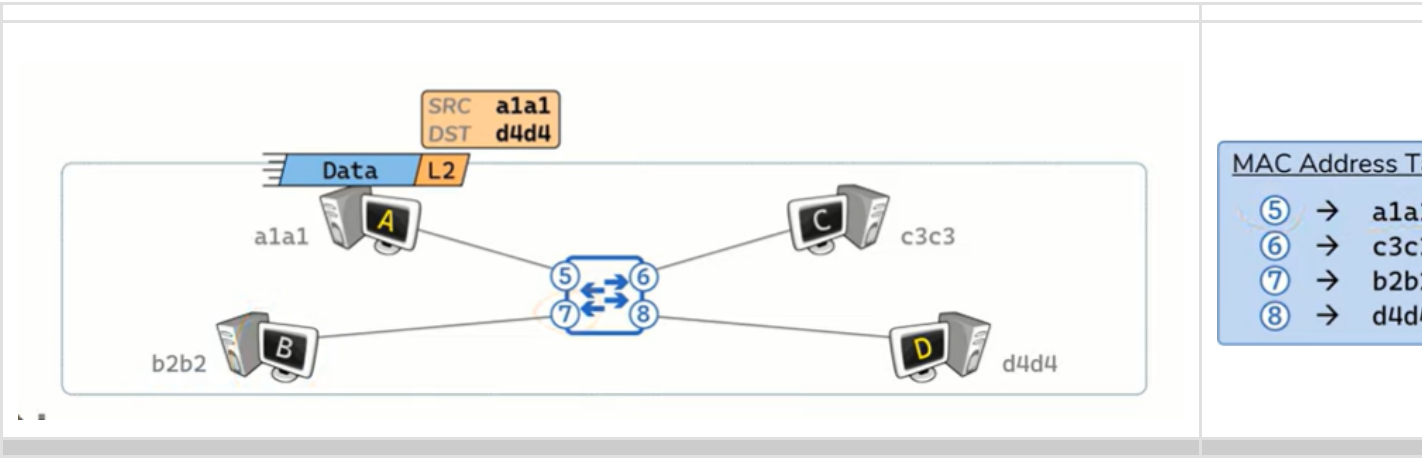




- Switches are L2 devices - they only use L2 header to make decisions.

How switches facilitate communication in a network

- ! use and maintain MAC Address Table
  - Mapping of switch ports to MAC Addresses



- ! Switches perform three actions
  - Learn - Update MAC Address Table with Mappings of Switch Port to Source Port
  - Flood - Duplicate and send frame out all switch ports (except receiving port)
  - Forward - Use MAC Address Table to deliver Frame to appropriate switch port
- Process would be identical if host was a router connected to the internet.

Traffic going THROUGH the switch vs TO the switch

- Switch has a MAC address and is configured with an IP address
- Switch essentially acts as a host in the network (follows all the communication rules)

PART B

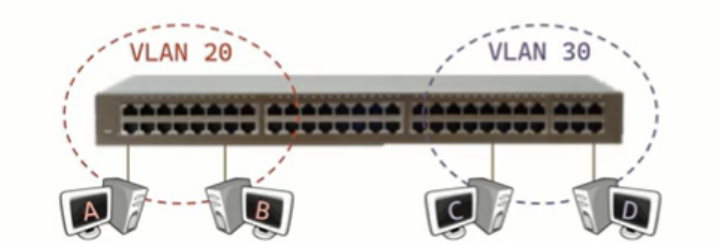
Unicast Frame vs Broadcast Frame

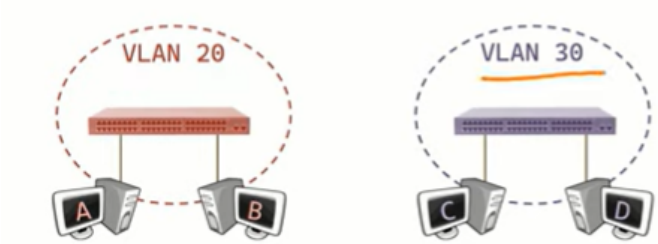
Unicast	Broadcast
Switch will flood only if MAC address is not in MAC address table	Broadcast frames are always Flooded

- ! Flood - type of action switch takes.
- Broadcast - Type of Frame.
- ! Switch will do Learn, Flood, Forward actions but not broadcast.
- Switches will only send broadcasts if traffic is going TO or FROM the switch.

VLANs - Virtual Local Area Networks

- Divides Switch ports into isolated groups
- Divides Switches into multiple “mini-switches”
- Switches do all three actions within each VLAN





How switches operate when multiple switches involve