

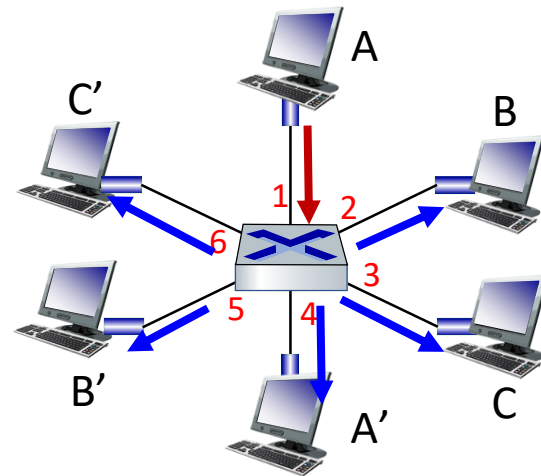
Computer Networks I

Hubs vs Routers vs Switches

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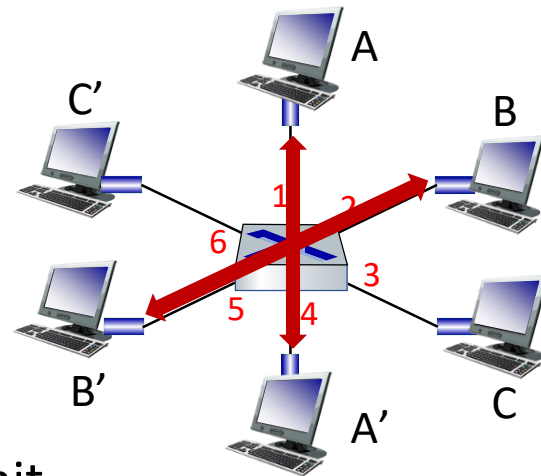
Hubs

- Bits coming from one link is repeated to all other links
- No frame buffering
- No CSMA/CD at hub
 - One large collision domain
- **Hub:** A-to-A' and B-to-B' cannot transmit simultaneously

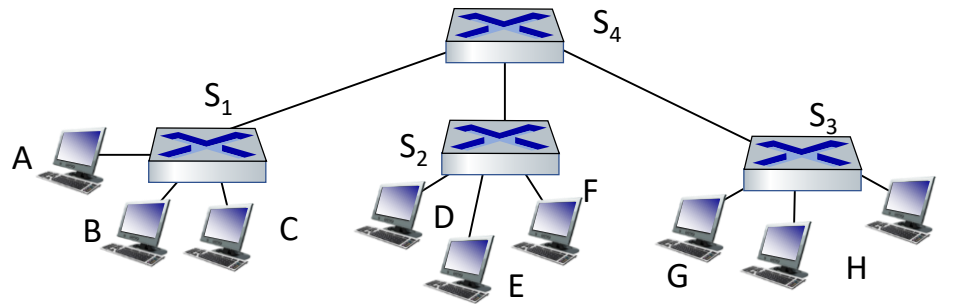


Switches

- Hosts have dedicated, direct connection to switch
- Switches buffer packets
- Ethernet protocol used on *each* incoming link, so:
 - No collisions; full duplex
 - Each link is its own collision domain
- **Switching:** A-to-A' and B-to-B' can transmit simultaneously, without collisions

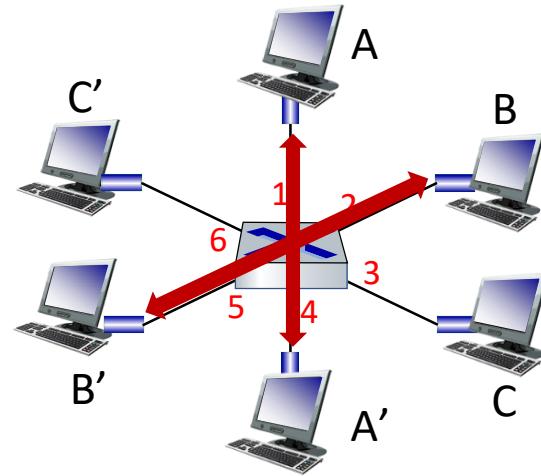


Switches



Cut-through Switches

- Switches start forwarding the frames just after reading the destination address
 - Slightly reduces the latency



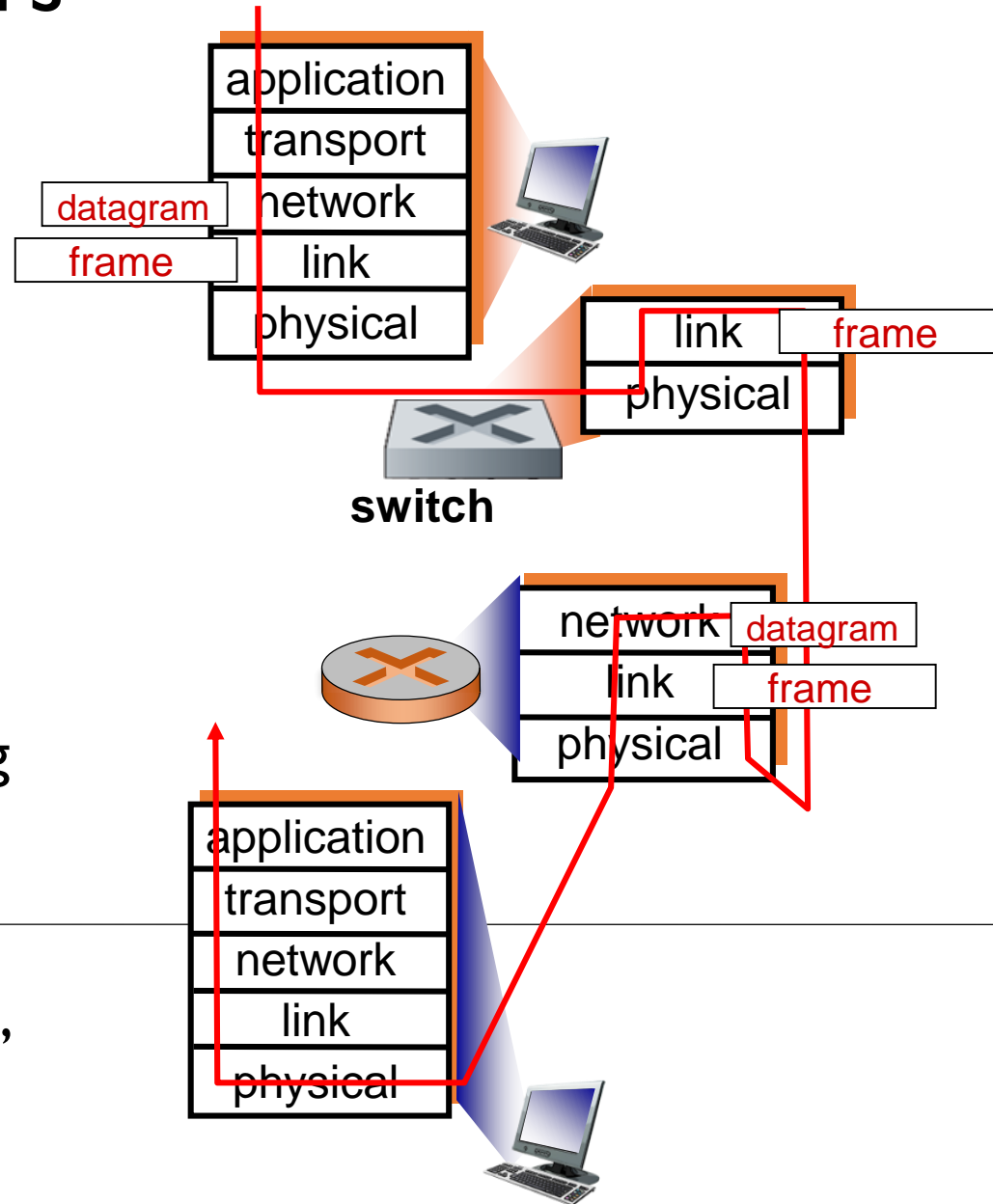
Switches vs. routers

both are store-and-forward:

- **routers:** network-layer devices (examine network-layer headers)
- **switches:** link-layer devices (examine link-layer headers)

both have forwarding tables:

- **routers:** compute tables using routing algorithms, IP addresses
- **switches:** learn forwarding table using flooding, learning, MAC addresses



Hubs vs Switches vs Routers

	<u>hubs</u>	<u>routers</u>	<u>switches</u>
traffic isolation	no	yes	yes
plug & play	yes	no	yes
optimal routing	no	yes	no
cut through	yes	no	yes

THANK YOU

QUESTIONS???
