Today: **switched** Ethernet

- Not bus anymore but switch
  - → contention moved from bus to “single point”
  - → switch: a computer

- Ethernet frames are logically scheduled
  - → e.g., who goes first (FIFO, priority), buffering

Diagram of 4-port switch (output-buffered):

→ called interconnection networks

→ switching fabric: hardware
- Ethernet switch **emulates** CSMA/CD
  → backward compatibility
  → use same DIX/IEEE 802.11 frame format
- upon buffer overflow: send collision signal
  → note: in a switch there are no collisions
  → switch emulates collision
  → transparent to legacy NIC
  → for incremental deployment

Internet: new technology must respect legacy

    → key requirement of any practical solution
Long distance Ethernet: e.g., 1000Base-LX

→ what about length limit of CSMA/CD?

Medium-haul GigE/10GigE (802.3ae): 500m, 5km, 40km

• solution: disable CSMA/CD

→ switch-to-switch: disable at both ends

→ purely point-to-point link

→ backward compatibility: not an issue anymore

• flow control

→ send pause frame to prevent buffer overflow
QoS: IEEE 802.3p

→ frame tagging conveys priority

→ priority classes supported at switches

→ useful for VoIP (voice-over-IP)

Note: today’s Ethernet is a hybrid mix of switch, CSMA/CD, short- and long-distance LAN

→ never would have been designed this way

→ a result of incremental legacy-respecting changes