

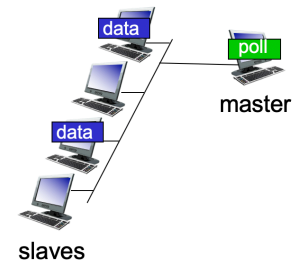
Link Layer (III)

“Taking turns” MAC protocols

- channel partitioning MAC protocols
 - share channel **efficiently and fairly at high load**
 - **inefficient at low load**: delay in channel access, or R/N bandwidth allocated even if only 1 active node!
- random access MAC protocols
 - **efficient at low load**: single node can fully utilize channel
 - **high load: collision overhead**
- “taking turns” protocols
 - look for best of both worlds!

Polling

- master node “invites” slave nodes to transmit in turn
 - the master sends a message to slave1 and lets it know that it can transmit up to some maximum number of packets, after slave1 transmits some packets, the master sends a message to slave 2 and lets it know it can transmit up to some maximum number of packets.
- typically used with “dumb” slave devices
- concerns:
 - polling overhead
 - latency
 - single point of failure (master)
- examples: 802.15 protocol and Bluetooth protocol



Token passing

- control token (a small, special-purpose packet) passed from one node to next in some fixed order
- When a node receives a token, it holds onto the token only if it has some packets to transmit; otherwise, it immediately forwards the token to the next node.
- If a node has packets to transmit when it receives the token, it sends up to a maximum number frames and then forwards the token to the next node.
- concerns:
 - token overhead
 - latency
 - single point of failure (some recovery procedure must be invoked to get the token back in circulation)

