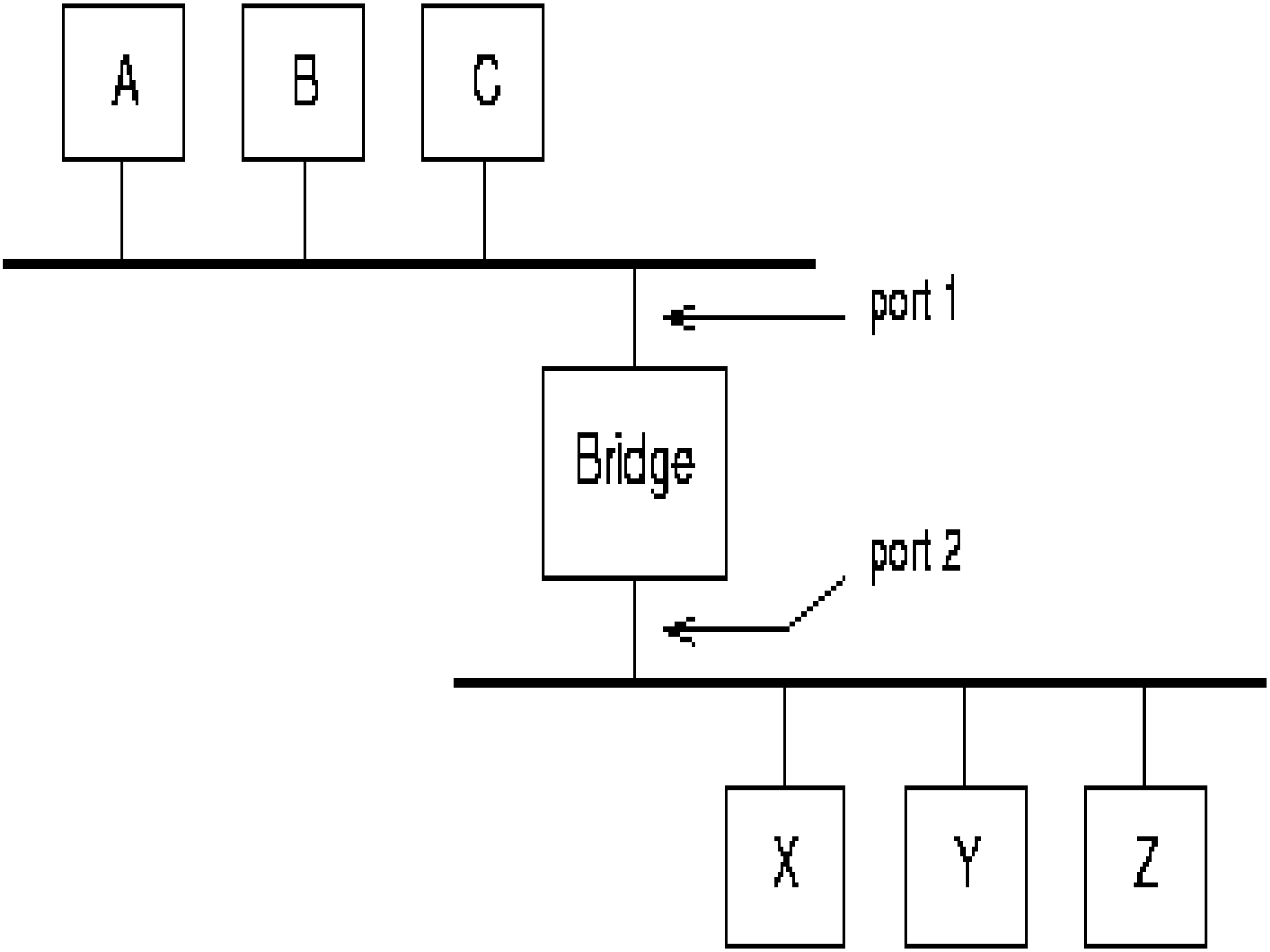
CS 348: Computer Networks

- Bridging; 28th Aug 2012

Instructor: Sridhar Iyer
IIT Bombay


A
B
C
port 1
Bridge
port 2
X
Y
Z

Bridge functioning

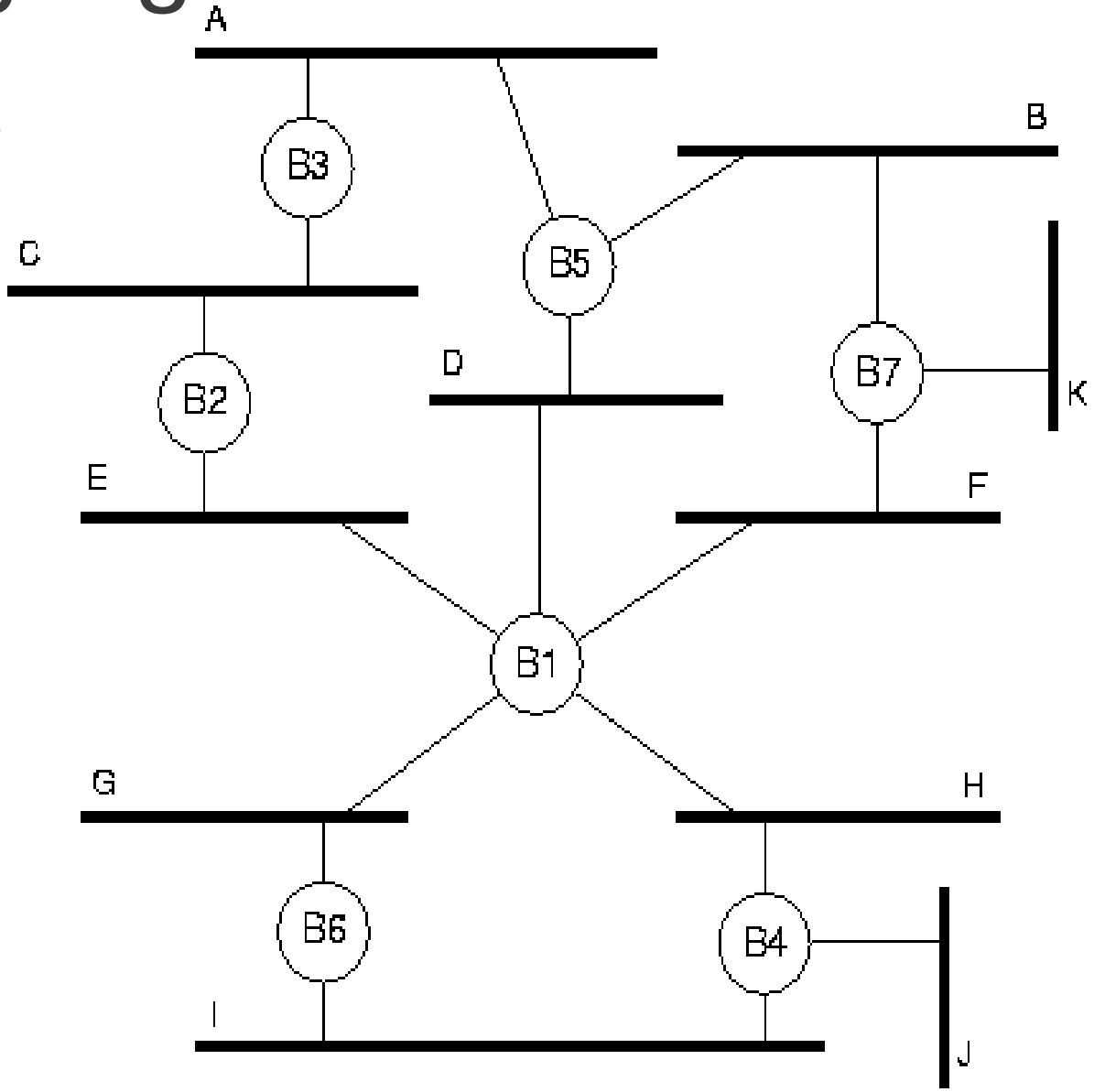
- Forwards to connected segments.

- Maintains a Mapping Table
- Maintains data in table till *timeout*
  - Node to segment mapping may vary

- Learns MAC address to segment mapping
  - How?

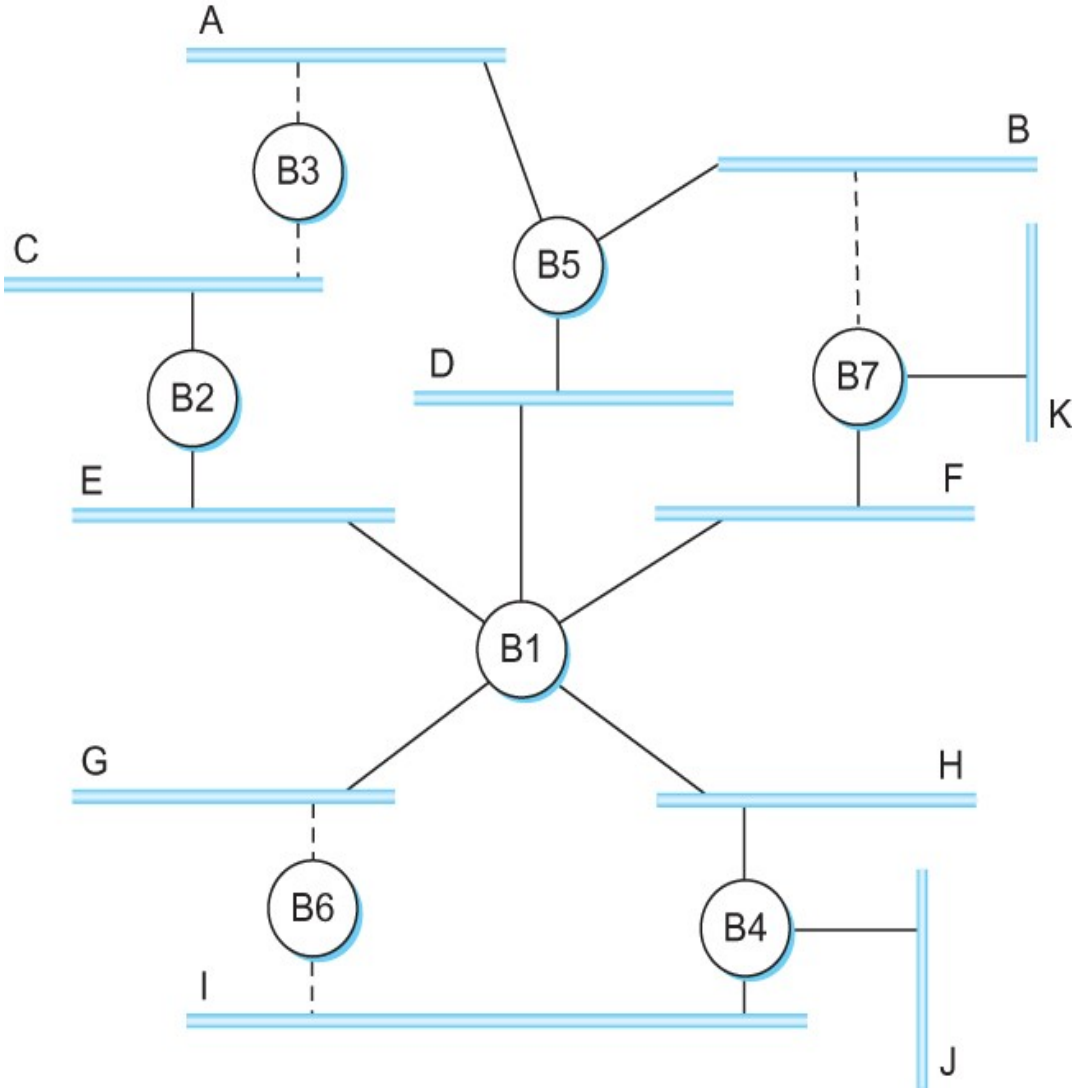
Bridging algorithm

- Extended LANs may have loops due to parallel bridges
- Bridges run a distributed spanning tree algorithm.



Spanning tree algorithm

- Each bridge has a unique id (e.g., B1, B2, B3).
- Select bridge with smallest id as root.
- Select bridge on each LAN that is closest to the root as that LAN's *designated bridge* (use id to break ties).



Spanning tree protocol

- Bridges exchange configuration messages.
  - id for bridge sending the message.
  - id for what the sending bridge believes to be root bridge.
  - distance (hops) from sending bridge to root bridge.

- Each bridge records best configuration message for each port.

Spanning tree protocol

- Initially, each bridge believes it is *root*.
- When learn not *root*, stop generating configuration message.
- When learn not *designated bridge*, stop forwarding configuration messages.
- Root bridge continues to send configuration messages periodically.

- Example – pg 199