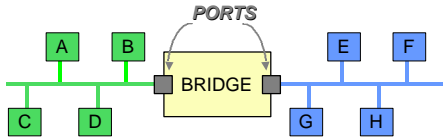
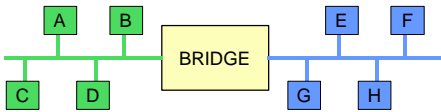


Bridge Software

- A bridge connects networks and forwards frames from one network to another.



Selective Forwarding



- If A sends a frame to E - the frame must be forwarded by the bridge.
- If A sends a frame to B - there is no reason to forward the frame.

Bridge Database

- The bridge needs a database that contains information about which hosts are on which network.
- The realistic options are:
 - The system administrator can create and maintain the database.
 - The bridge can acquire the database on the fly.

Hard to add new computers

Some loss of efficiency

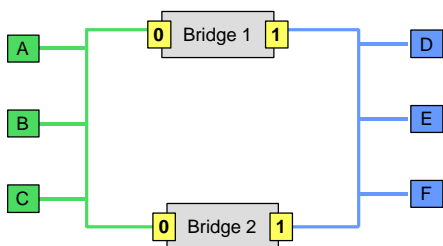
Learning the host mapping

- The bridge forwards packets for which it does not know which network the destination is on.
- Every time the bridge forwards a packet it can record the network on which the sender is located.
- Each host mapping expires when it is unused for a “long” period of time.

“Learning” Bridge

- A host can be moved to another network.
- New hosts can be added at any time.
- Requires no setup information from humans.
- One MAJOR flaw:

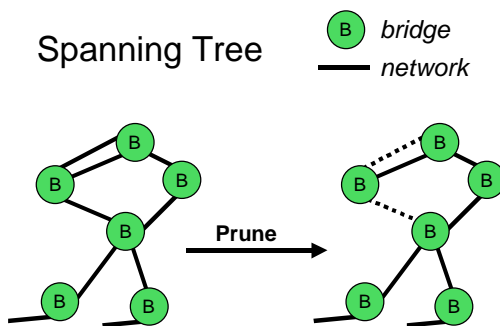
What is the problem ?



Possible Solutions

- Forget about smart bridges.
- Tell customers to avoid topologies that include loops.
 - design bridges so that they detect loops and scream at the customer.
- Design bridges that *prune* the network topology into something with no loops.

Spanning Tree



Spanning Tree Creation

- The bridges must communicate!
 - They send *configuration bridge protocol data units* : BPDUs.
 - Multicast: *special* data link address.
- Each bridge has a unique ID.
- Formal algorithm for constructing a spanning tree based on *local* messages.
