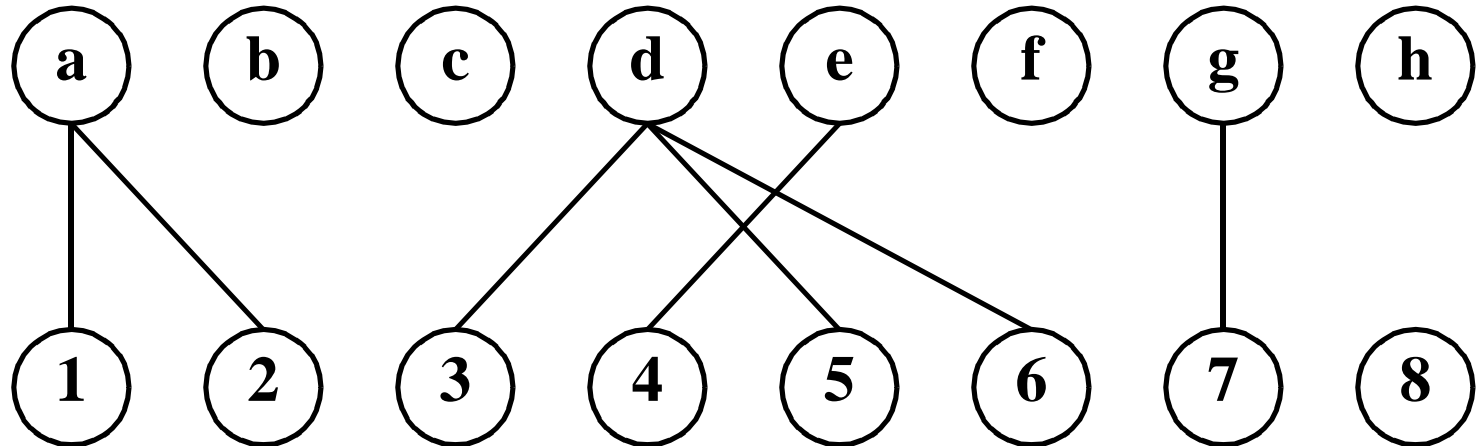


# **Automatic Trunking Establishment: Problem Statement**

- **How to present trunks to upper layers?  
(Logical vs. Physical interfaces)**
- **How to control trunking manually?**
- **How to establish trunking automatically?**
- **What, if any, additional bells and whistles?**

# Presenting to Upper Layers (bridge)

**Trunks:  
(Bridge ports)**



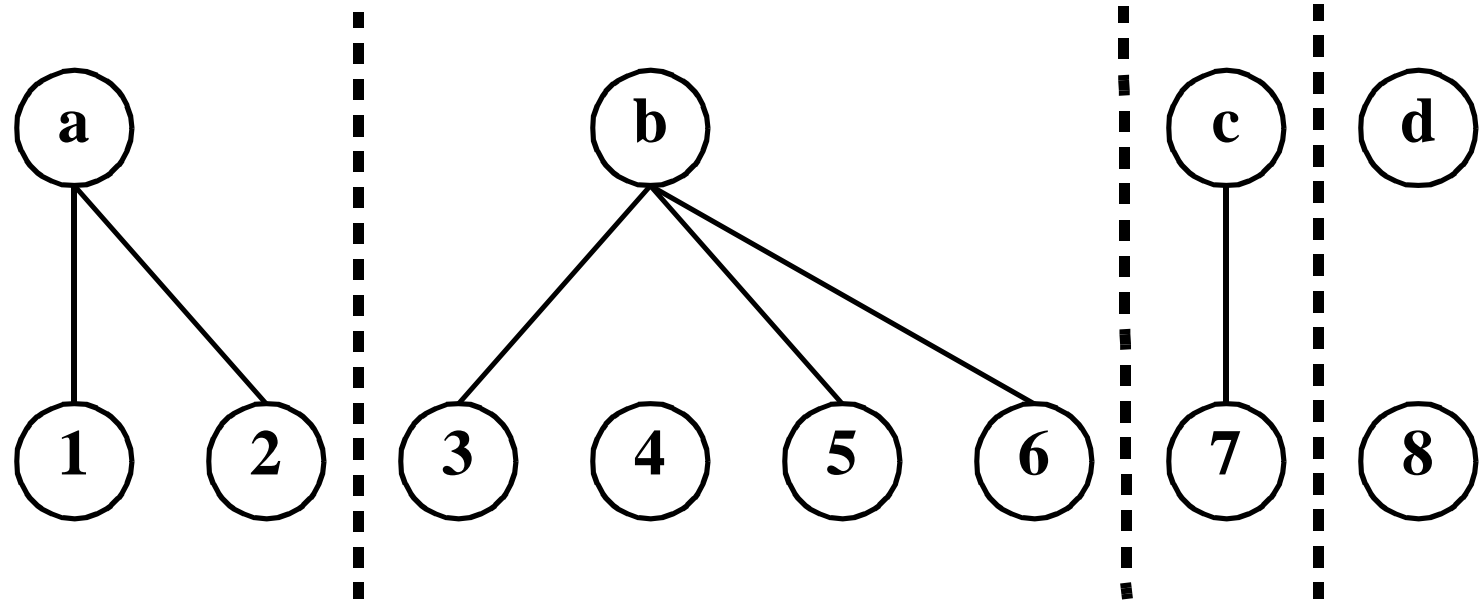
**Physical  
Ports:**

- **Arbitrary mapping between trunks and physical ports.**
- **Little or no permanent context attached to trunks.**
- **“Bridge ports” are trunks, not physical ports.**
- **A few low-level protocols (e.g. auto-discovery, duplex negotiation) run on physical ports, all others on trunks.**
- **Maximizes flexibility.**

# Presenting to Upper Layers (router/host)

**Trunks  
(Router/host  
Interfaces):**

**Physical  
Ports:**



- **Permanent context (e.g. IP addresses) attached to trunks.**
- **“Router and/or host interfaces” are trunks, not physical ports.**
- **A few low-level protocols on physical ports, all others on trunks.**
- **More for error checking than maximizing flexibility**

# Controlling Trunking Manually

- **A Trunking MIB would allow manual setup.**
- **The Interfaces Group MIB (RFC 2233, was 1573) provides the framework.**
- **The MIB for manual trunking control should be separable from the Automatic Trunking Establishment protocol control MIB.**

# Establishing Trunks Automatically

- **Some “do”s:**
  - **Converge quickly**
  - **Minimize overhead**
  - **Respond quickly to changes in topology**
  - **Support arbitrary topology of point-to-point links**
  - **Accommodate arbitrary hardware and software restrictions on allowed trunking configurations**
  - **Accept/deny connections with devices which do not run the trunk establishment protocol**
  - **Provide administrative control over allowed topologies**
  - **Provide means for extensions**

# Establishing Trunks Automatically

- **Some “don’t”s:**
  - **Avoid rapid sequence of connection changes when powering up or down**
  - **Leave multi-point connections or connections through hubs or bridges to higher layers**
  - **Do not confuse this protocol with the automatic topology detection work going on in the IETF**

# Establishing Trunks Automatically

- **Some “maybe”s:**
  - **Detect uni-directional connections**
  - **Allow connection to “silent partners”**
  - **Detect multi-point connections**
  - **Provide information to upper layers about who we are connecting to; allow/disallow certain partners**
  - **Provide a means for flushing the old pathway when shifting a flow between physical ports**
  - **Provide means to allow support for devices with limited capabilities with regard to trunking**

# A Simple Way to Do It

- **Exchange “This is me, and this is who I’m connected to” information on each link.**
- **Also exchange “This is the largest grouping I am capable of making” information.**
- **Both ends reach the same conclusion, because both use the same algorithm.**
- **Exchange “This is how I am trunking” as a sanity check.**