Who are the *actors* involved?

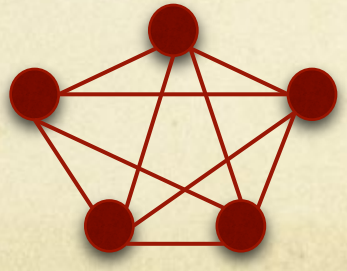
- *Source* or *sender* [host/end system]
  - Generates data to be transmitted
- *Transmitter* [router/switch]
  - Converts data into transmittable form (signals)
- *Communication medium*
  - Carries data (in the form of signals)
- *Receiver* [router/switch]
  - Converts signals into data
- *Destination* or *receiver* [host/end system]
  - Receives data

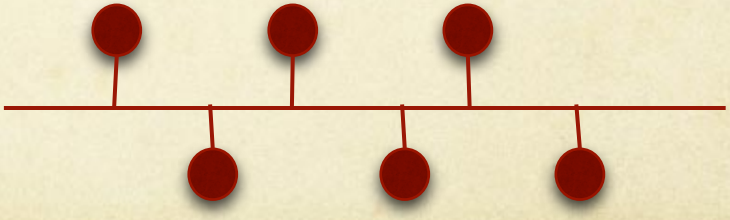
Medium of communication

- Networks may use different communication media...
  - *Wired* network
    - Co-axial cables, fibre-optic cables, etc.
  - *Wireless* network
    - WiFi, bluetooth, etc.

Who is connected to *whom*?

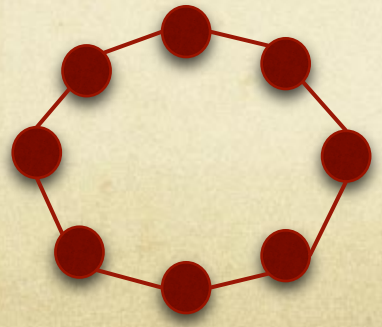
- *Every* comp can directly communicate with *every* other comp
  - *Mesh* topology
    - Each computer connected to every other computer
  - *Bus* topology
    - All computers connected to *common* bus

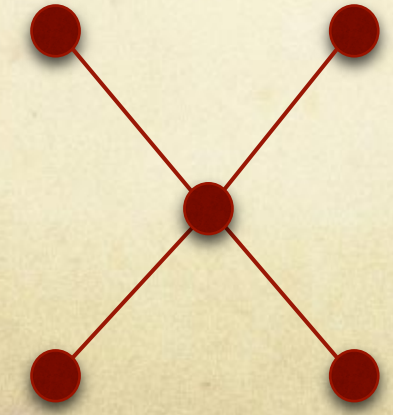


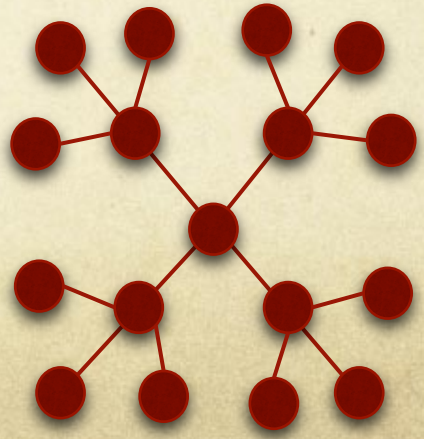


Who is connected to *whom*?

- We can always get to a computer *via* another
  - *Ring* topology
    - Each computer connected to two neighbors
  - *Star* topology
    - Computers connected to *central* hub/computer through spokes
  - *Extended star* (tree) topology
    - Improves scalability of star topology!

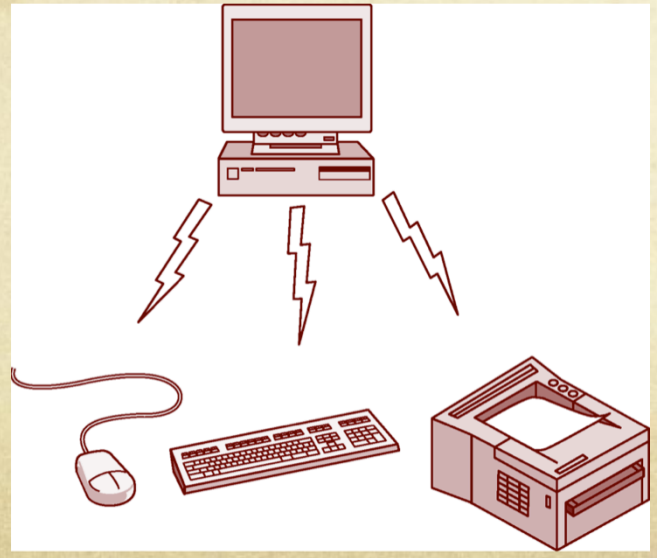


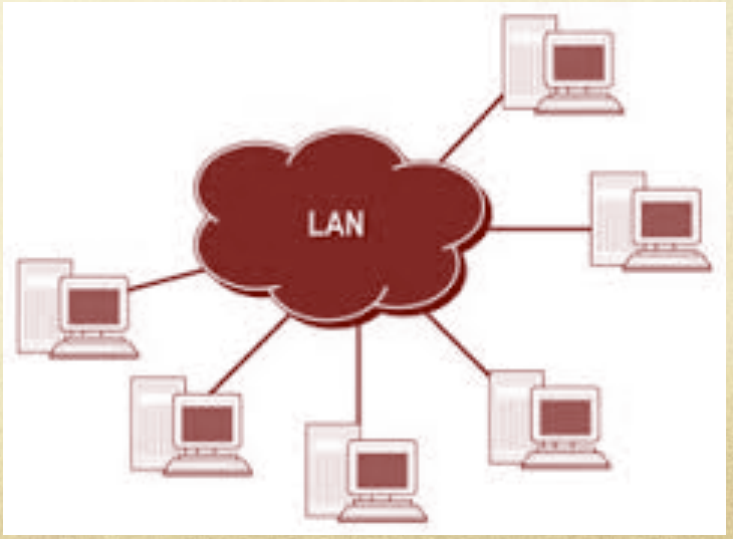




How *large* is a computer network?

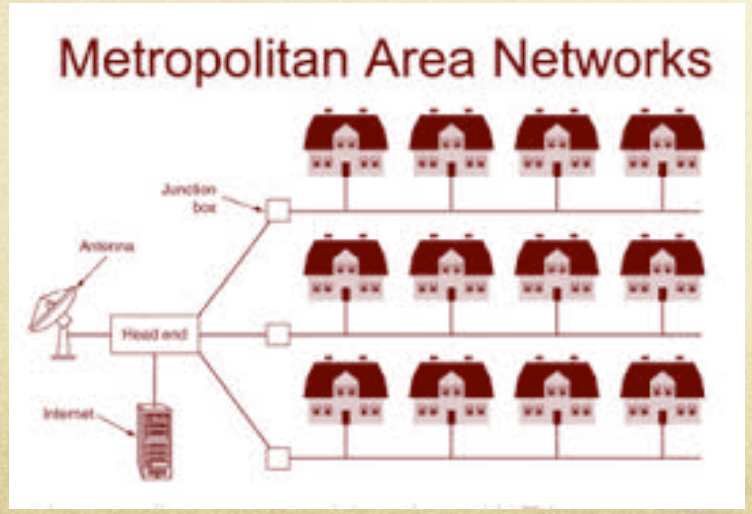
- Network scale can vary...
  - Within 1 square meter or so
    - Personal Area Network (*PAN*)
  - Within room, building or single campus
    - Local Area Network (*LAN*)

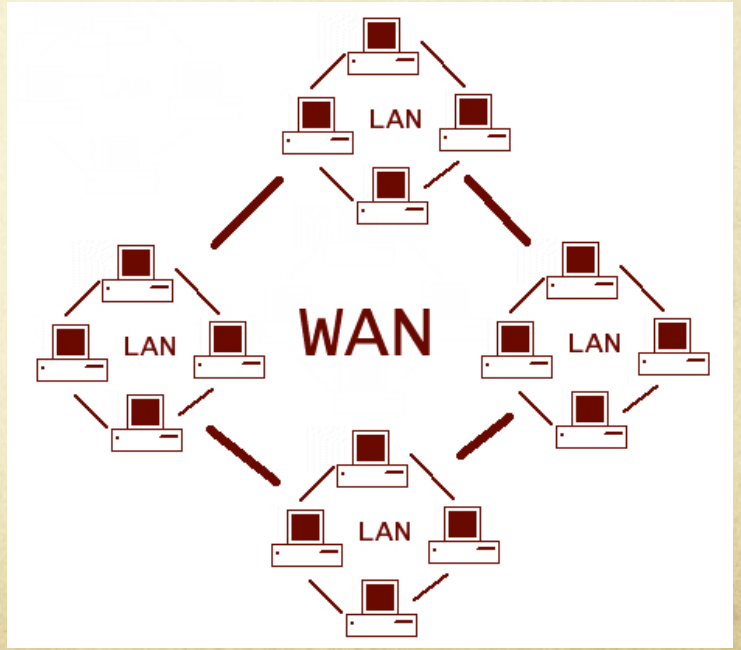




How *large* is a computer network?

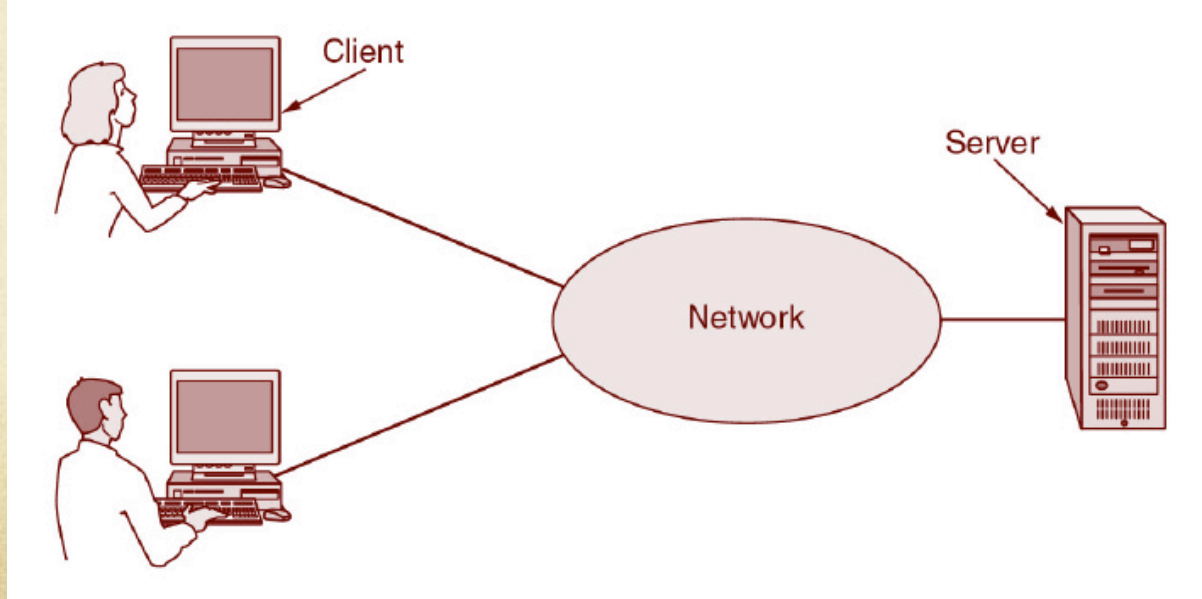
- Network scale can vary…
  - City wide
    - Metropolitan Area Network (*MAN*)
  - Country or continent wide and beyond
    - Wide Area Network (*WAN*)





Network architecture/model

- Central computer provides services & resources
- Other computers request for services & resources
- → *Client-server* model (e.g., online banking)



Network architecture/model

- All computers in network are equal...no hierarchy
- → *Peer-to-peer* model (e.g., BitTorrent)