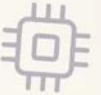


how far it reaches decides the type, how it is wired decides the topology



Network types, by how far they reach



- PAN, personal area network, connects devices around one person, a phone paired with earbuds is a PAN
- LAN, local area network, covers one building or one campus, wired or wireless, owned by a single organisation
- MAN, metropolitan area network, spans a whole city, often linking several LANs together
- WAN, wide area network, spans states or countries, the internet itself is the largest WAN there is

Network types



four network types branching from one root, ordered by the distance each one is meant to cover

Star vs Bus

Star

- every device wires to one central hub or switch
- one broken cable only takes down that single device
- needs more cable overall, and the hub is a single point of failure

Bus

- every device shares one backbone cable, no central device
- cheap to wire, very little cable needed
- a break anywhere on the shared cable can take the whole network down

Transmission media

- wired media: twisted pair cable is cheap and common, coaxial cable resists interference better, optical fibre carries light and reaches the farthest at the highest speed
- wireless media: radio waves, microwaves and infrared all carry signals with no cable at all
- wireless is easier to install and lets devices move, wired is generally faster and steadier once it is in place

Topologies: how the wiring is laid out

- bus: every device taps into one shared backbone cable, with no central device at all, simple to wire but the whole network stops if that cable fails
- star: every device connects to one central hub or switch, a single broken cable only drops that one device
- ring: every device connects to exactly two neighbours, forming a closed loop, data travels around the ring
- mesh: every device connects to many others directly, highly reliable but needs a lot of cabling to set up
- tree, sometimes called hierarchical: several star networks linked together through their hubs

Topologies



four common topologies branching from one root, tree topology itself sits outside this picture as several of these linked together

