

4.3 Network Types

Syllabus 2026 - 2028

WHAT YOU NEED TO KNOW

- Local area network (LAN), wireless local area network (WLAN) and wide area network (WAN)
- The differences between these networks

Local area network (LAN)

A **LAN** connects computers and devices in a small area such as one room, building or school site. Devices are joined by cables (and sometimes wireless) through a switch or hub. The network is owned and managed by the organisation using it.

- Characteristics:** small area, high data speed, owned by one organisation, usually wired
- Uses:** a computer room, an office, a home; sharing files, printers and an internet connection
- Advantages:** fast, secure, cheap to run and easy to control
- Disadvantages:** limited area, cables are needed and cost money to install, devices are not mobile

Wireless local area network (WLAN)

A **WLAN** is a LAN that uses wireless connections (Wi-Fi) instead of cables. Devices connect to a wireless access point or router. It covers the same small area as a LAN.

- Characteristics:** small area, uses radio waves, users can move around, needs a password to join
- Uses:** homes, offices, classrooms, cafes, airports and public hotspots
- Advantages:** no cables, devices can move around, easy to add new devices, suits phones and laptops
- Disadvantages:** slower than cable, walls and interference reduce the signal, limited range, easier for hackers to attack unless it is protected

Wide area network (WAN)

A **WAN** connects computers and networks over a large geographical area, such as between cities or countries. It usually joins several LANs and uses telecommunications links such as telephone lines, fibre cables, undersea cables and satellites, run by telecom companies, with routers at each link. The internet is the largest WAN.

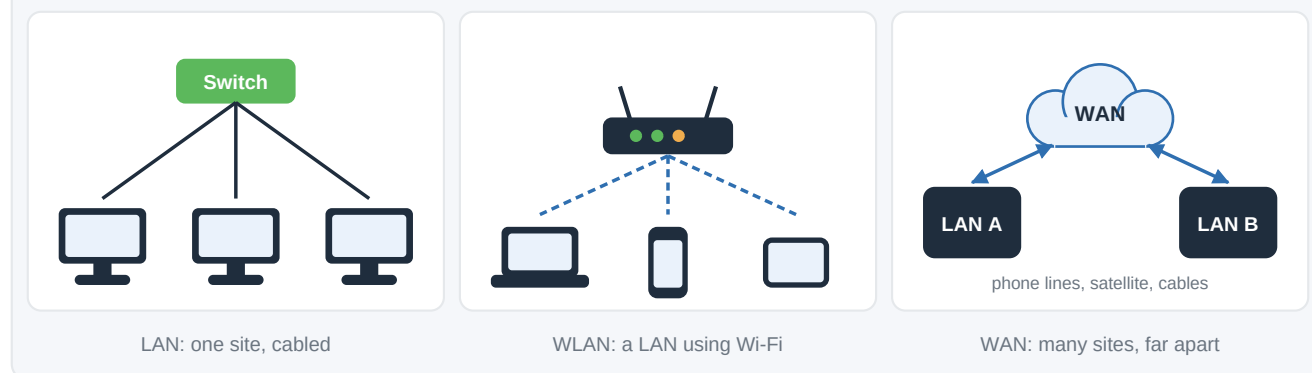
- Characteristics:** very large area, uses links rented from telecom companies, slower than a LAN, often owned by several organisations
- Uses:** a bank linking its branches, a company with offices in different countries, ATM networks, airlines booking systems
- Advantages:** links people and sites across the world, lets organisations share data and work together over long distances
- Disadvantages:** expensive to set up and run, slower than a LAN, harder to secure, needs routers and special equipment

Comparing LAN, WLAN and WAN

	LAN	WLAN	WAN
Area covered	Small: a room or building	Small: a room or building	Large: cities, countries
Connection	Cables (wired)	Wi-Fi radio waves	Telephone lines, fibre, satellite
Speed	Fast	Fast, but slower than wired	Slower
Cost	Low	Low to medium	High
Owned by	One organisation	One organisation	Often several organisations or telecom companies

	LAN	WLAN	WAN
Mobility	Low, tied to cables	High, move around	Depends on the access method
Security	Easier to secure	Needs a strong password and encryption	Harder to secure
Example	School computer room	Home Wi-Fi	A bank's branch network

Figure 6: LAN, WLAN and WAN

**EXAM TIP**

In a 'differences' question, do not just say LAN is 'small' and WAN is 'big'. Name the **area covered** (a building compared with cities or countries), and add a second difference such as the **connection used** or **who owns the network**.

Key terms

Term	Meaning
LAN	Local area network; covers a small area such as a building.
WLAN	A LAN that connects devices using Wi-Fi.
WAN	Wide area network; covers a large area and joins LANs.
Access point	Device that lets wireless devices join a network.
Switch	Connects devices on a LAN and sends data to the right one.
Router	Joins networks together and routes data.
Hotspot	A place that offers public Wi-Fi.
Leased line	A permanent connection rented from a telecom company.