

Computer Networks

Form 3
Computer Literacy

Either "What is a computer network?" or "What are computer networks?"

What is a computer network?

Flash Animation

http://www.bbc.co.uk/schools/gcsebitesize/ict/datacomm/2networks_act.shtml

What is a computer network?

- A computer network ~~is~~
 - ~~A number of computers linked together.~~ links a number of computers together
 - ~~To allow them to share resources.~~ allows them to share resources
 - Can share hardware, software and data.
- Most computer networks have at least one server. A server:
 - ~~Powerful computer~~ is a powerful computer
 - Provides one or more services to a network and its users

LANs and WANs

LANs and WANs

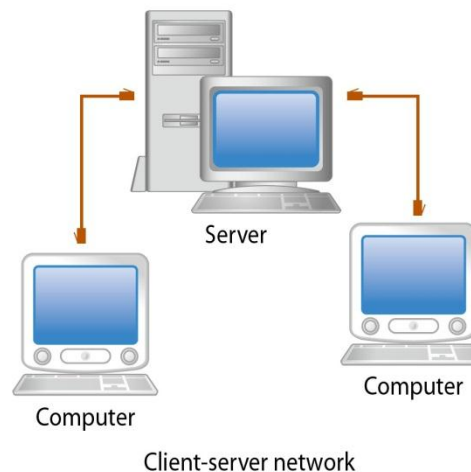
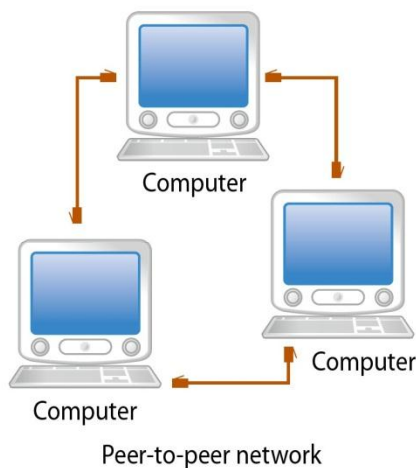
There are two main types of network:

- Local Area Network (LAN)
- Wide Area Network (WAN)

• Local Area Network (LAN)

- A local area network (LAN) is a computer network limited to a small area such as inside a building.
- The LAN is ~~commonly~~^{often} used in schools and offices.
- There are two types of LAN, namely **peer-to-peer network** and **client-server network**.

Make sure you explain in simpler language what peer, client and server mean. For example, you can define peer as workmates or friends; client as a customer; and a server as a powerful computer that exists to serve other computers.



Types of local area networks

- **Local Area Network (LAN)**

- In a peer-to-peer network, each computer can function as a client and a server.
- In a client-server network, the client's workstations are connected to a server.
- The clients can access the resources via the server.

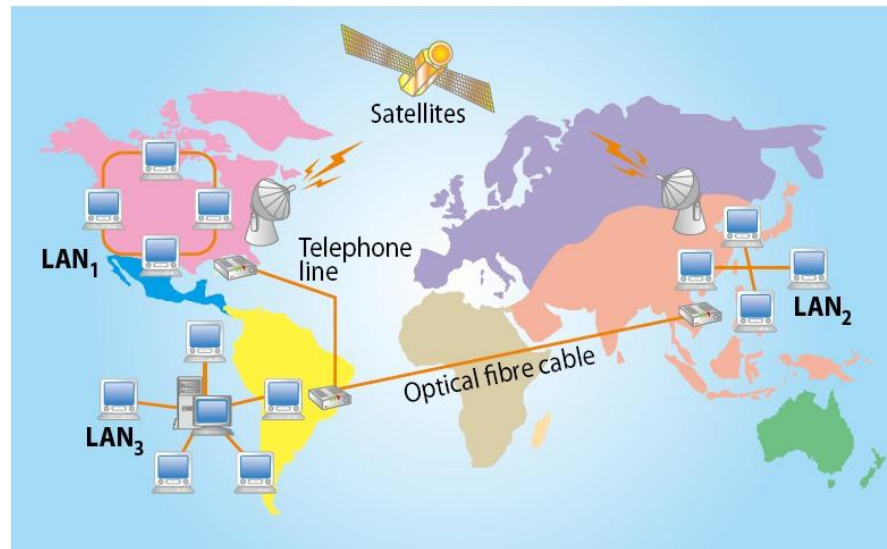
This information isn't quite in keeping with your previous definitions. You need to explain why all of a sudden a personal computer can also be a server.

Also you have 3 dot points of equal value (ie hierarchy) but the last two belong together so I would show visually that they are about client-server networks and not peer-to-peer networks, which is only the first point.

• Wide Area Network (WAN)

- A wide area network (WAN) is a computer network that spans ~~over~~ a relatively large geographical area.
- A WAN usually consists of two or more LANs.

Use "covers" rather than "spans over". If you want to use "spans", then explain it in everyday language as "covers" and then use it but without "over". You just say "... spans a large area."



You also need to explain what "optical fibre cable" is. Explain by describing its component parts.

A wide area network (WAN) usually spans ~~over~~ a large geographical area

- **Wide Area Network (WAN)**

- Computers connected to a wide area network are often connected through public networks, such as telephone lines, leased lines or satellites. Explain "leased" as "private lines".
- The largest WAN is the Internet.



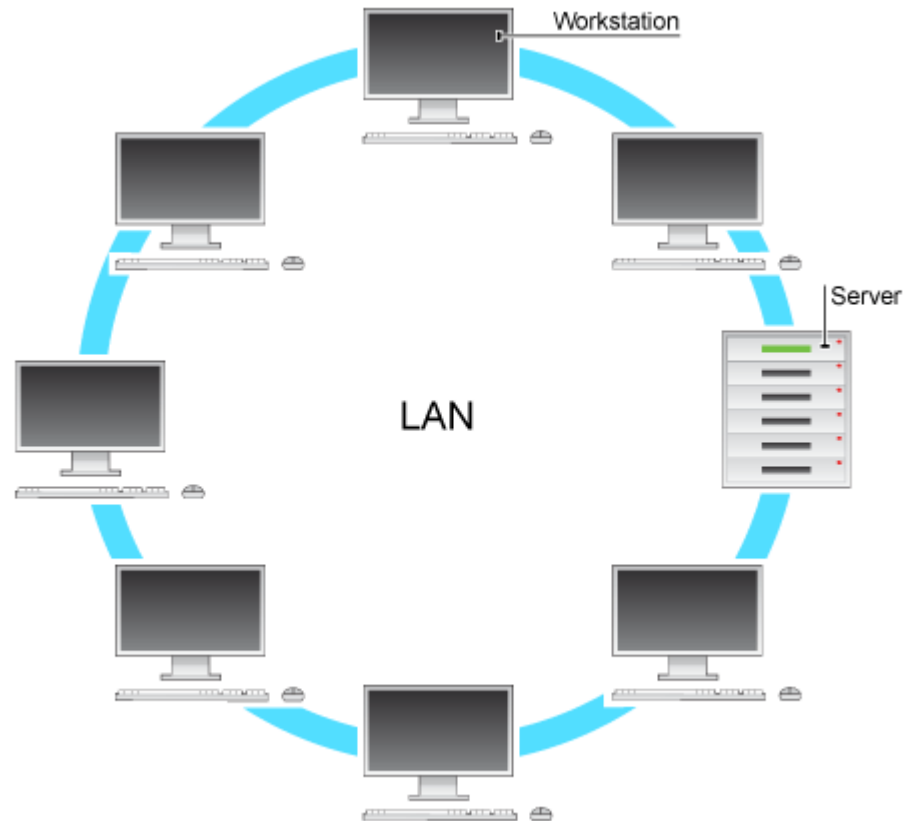
The Internet is the largest WAN.

Source: <http://www.cybergeography.org>

Short Summary - LAN

- A LAN covers a small area such as one site or building, eg a school or a college.

You can recycle LAN by asking the SS what LAN stands for.



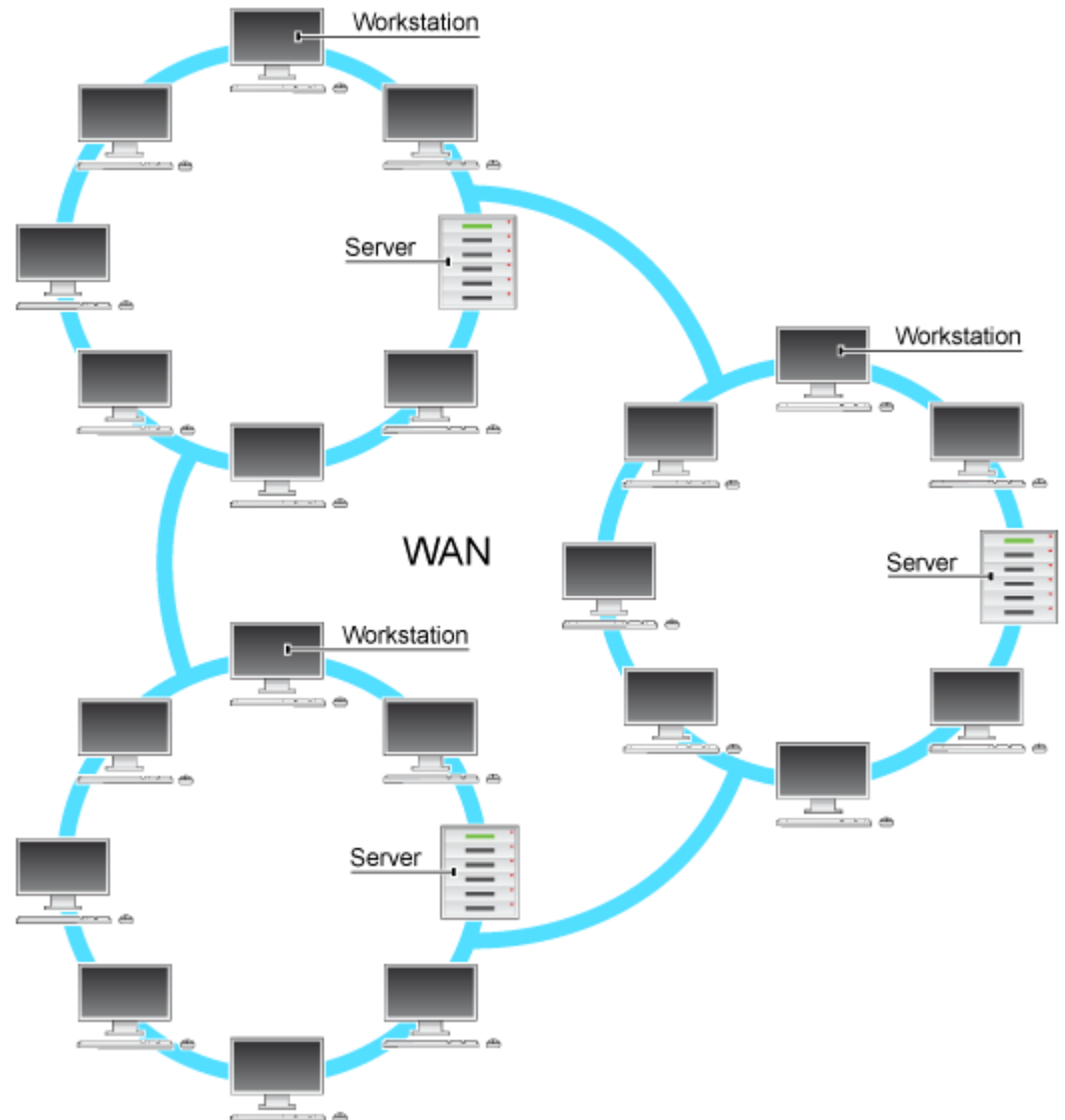
Short Summary - WAN

- A **WAN** covers a large geographical area. Most WANs are made from several LANs connected together.

Same for WAN.

Why don't you set up an equation, eg

$WAN = LAN\ 1 + LAN\ 2 + LAN\ 3 + \dots LAN\ n$



Examples of LAN & WAN

- The Internet is a WAN.
- A network of bank cash dispensers is a WAN.
- A school network is usually a LAN. Can you ask the SS when a school network could be a WAN. What would be needed, for example, for it to be a WAN?
- LANs are often connected to WANs, for example a school network could be connected to the Internet.
- WANs can be connected together using the Internet, leased lines or satellite links.

LANs and WANs

Flash Animation

http://minisite.proj.hkedcity.net/secte/cht/topics/network_lanwan/index.html

Advantages and disadvantages of networks

Advantages of networks

- Sharing devices
- Sharing software
- Sharing files
- Communication Isn't sharing files "communication" as well?
- Security is good Really? I don't understand what you mean here. I thought the most secure is never to be connected to another computer!!! As soon as you are connected with another device, you instantly create a risk.
- Data is easy to backup (Central Management)

I think the first 4 points are fine and talk about advantages but the last 2 are completely different and are arguable in my opinion.

I travel around the world and carry with me one or two personal back-up drives. I find it extremely easy. Why is a network easier? You mean that it is possible to save large amounts of data to a network at a reasonable cost - that is its advantage. But there are risks there, too, if the network gets hacked for example. I know you mention the disadvantages in the ext bit - Maybe it would be better if you had both advantages and disadvantages on one slide - the LHS would be advantages and the RHS would be disadvantages. As you talk about 1 point, you can then say ... "BUT," That would be an easier way for the students to understand the knowledge here.

Disadvantages of networks

- Purchasing the network cabling and file servers can be expensive.
- Managing a large network is complicated
- If the file server breaks down the files on the file server become inaccessible.
- Viruses can spread to other computers throughout a computer network.
- There is a danger of hacking, particularly with wide area networks. Security procedures are needed to prevent such abuse, eg a firewall.

Activity

Computer Networking Hardware and Software

- Group of 5
- Prepare a presentation on
“Computer Networking Hardware and Software”
- Guideline:
 - What is a computer network?
 - What hardware should be used to construct the computer network? (At least 5)
 - What software should be used to manage the computer network?