

UNIT 4 Networking



Picture 4.1

Learning Outcomes:

By the end of the lesson, the students are expected to be able to use appropriate English to:

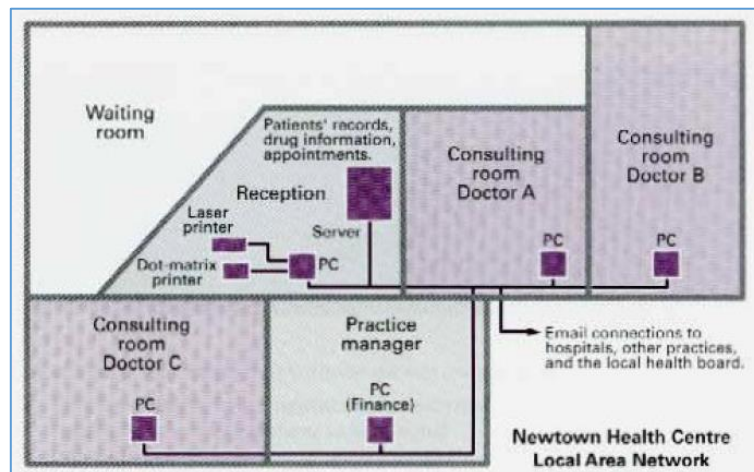
- identify and explain kinds of network hardware and its function
- explain the definition of network and its hardware components
- identify and explain kinds of network topologies
- identify and make sentences using if-clause type 1

1.1 Explaining a network and network hardware

Exercise 1: Below are hardware components used in creating a network. Match the words 1-8 to the descriptions a-g.

1. A modem	a. is an entrance to another network
2. A repeater	b. channels incoming data but maintains the bandwidth speed.
3. A bridge	c. allows wireless devices to connect to the network
4. A router	d. modulates and demodulates the data into a digital or an analog signal
5. A gateway	e. channels incoming data but shares the bandwidth among the devices present on a network
6. A switch	f. sends the digital signal further on in the network
7. A hub	g. connects networks and sends packages of data between them
8. A wireless access point	h. connects networks that use the same protocol

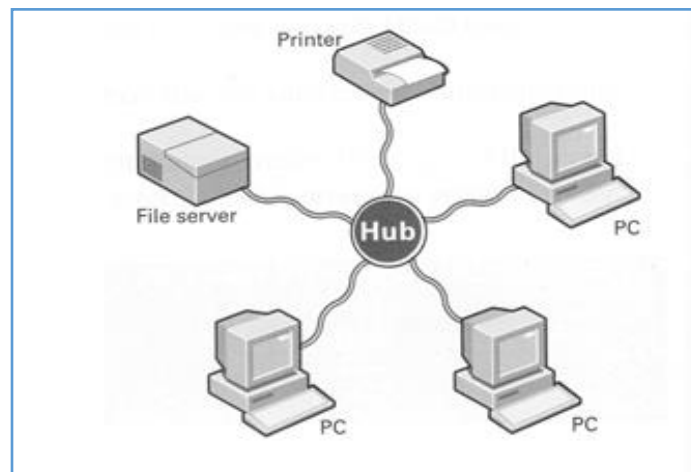
Exercise 2: Look at the sample of a Local Area Network (LAN). Then, answer the following questions.



Picture 4.2

1. Who are the users? [Newtown health care](#)
2. What kind of hardware is used? [PC, laser printer, dot matrix printer](#)
3. What do the doctors use it for? [Access and update electronic health records](#)
4. What do the receptionists use it for? [Access and update patient's records, drug information and appointments](#)
5. What does the practice manager use it for?
[Maintain patient's records, schedule appointments, and manage patient's demographics](#)

Exercise 3: With the help of this diagram, answer the following questions.



Picture 4.3

1. What is a *network*? [Network is a group of interconnected nodes or computing devices that exchange data and resources with each other.](#)
 2. What are its hardware components? [Modem, repeater, bridge, router, gateway, switch, hub, wireless access point](#)
 3. What is the difference between a *local area network* and *wide area network*?
 4. What advantages do you think networks have?
3. LAN (Local Area Network) connect users and app in close geographical proximity (same building), WAN (Wide Area Network) connect users and app in geographically dispersed locations (across the globe)
4. Advantages of networking your computers and reducing costs by sharing your files, resources and storage on a business network.

Exercise 4: Read the following text and do the following exercise.

Networks

Local Area Networks (LANs)

Networking allows two or more computer systems to exchange information and share resources and peripherals.

LANs are usually placed in the same building. They can be built with two main parts of architecture: **peer-to-peer**, where two computers have the same capabilities, or client server, where one computer acts as the **server** containing the main hard disk and controlling the other **workstations** or **nodes**, all the devices linked in the network (e.g. printers, computers, etc.).

Computers in a LAN need to use the same protocol, or standard of communication. Ethernet is one of the most common protocols for LANs.

A router, a device that forwards data packets, is needed to link a LAN to another network, e.g. to the Net.

Most networks are linked with cables or wires but new **Wi-Fi, wireless fidelity**, technologies allow the creation of **WLANs**, where cables or wires are replaced by radio waves.

To build a WLAN you need **access points**, radio-based receiver-transmitters that are connected to the wired LAN, and **wireless adapters** installed in your computer to link it to the network.

Hotspots are WLANs available for public use in places like airports and hotels, but sometimes the service is available outdoors (e.g. university campuses, squares, etc.).

Wide Area Networks (WANs)

WANs have no geographical limit and may connect computers or LANs on opposite sides of the world. They are usually linked through telephone lines, fiber-optic cables or satellites. The main transmission paths within a WAN are high-speed lines called **backbones**.

Wireless WANs use mobile telephone networks.

The largest WAN in existence is the Internet.

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Read and correct the following statements.

1. LANs link computers and other devices that are placed far apart.
LANs link computers and other devices that are placed close together.
2. In a client-server architecture, all the workstations have the same capabilities.
In a client-server architecture, all the workstations do not have the same capabilities.
3. The word protocol refers to the shape of the network.
The word protocol refers to the set of rules and standards that govern communication within a network.
4. Routers are used to link two computers.
Routers are used to link multiple networks.
5. Access points don't need to be connected to a wired LAN.
Access points typically need to be connected to a wired LAN.
6. Wireless adapters are optional when you are using WLAN.
Wireless adapters are required when you are using WLAN.
7. Hotspots can only be found inside a building.
Hotspots can be found both inside and outside a building.
8. The Internet is an example of a LAN.
The Internet is not an example of a LAN.
9. Wireless WANs use fiber and cable as linking devices.
Wireless WANs do not use fiber and cable as linking devices.

Exercise 5: Use the words in the box to complete sentences.

LAN	nodes	hub	backbones
WLAN	peer-to-peer	server	

1. All the PCs on a LAN are connected to one server, which is a powerful PC with a large hard disk that can be shared by everyone.
2. The style of hub networking permits each user to share resources such as printers.
3. The star is a topology for a computer network in which one computer occupies the central part and the remaining nodes are linked solely to it.

4. At present Wi-Fi systems transmit data at much more than 100 times the rate of a dial-up modem, making it an ideal technology for linking computers to one another and to the Net in a WLAN.
5. All of the fiber-optic backbones of the United States, Canada, and Latin America cross Panama.
6. A peer-to-peer joins multiple computers (or other network devices) together to form a single network segment, where all computers can communicate directly with each other.

Exercise 6: Read Katharina's email to Agatha. Complete this email with the words in the box.

equipment	internet	LAN	recommend
remote	should	VPN	WAN

Dear Agatha

Following our meeting last week, please find my recommendations for your business, I think you (1) should set up a LAN, or Local Area Network, and a WAN, or Wide Area Network, for your needs. A (2) LAN connects devices over a small area, for example your apartment and the shop. In addition, you should connect office (3) Equipment, such as the printer, scanner and fax machine, to your LAN because you can then share these devices between users: I'd recommend that we connect the LAN to a (4) WAN so you can link to the Internet and sell your products. In addition, I'd (5) recomend we set up a Virtual Private Network so that you can have a (6) remote access to your company's LAN when you travel.

(7) VPN is a private network that uses a public network, usually the (8) internet, to connect remote sites or users together.

Lets meet on Friday to discuss these recommendations.

Best Regards

Katharina

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1.2 Identifying Network Topologies

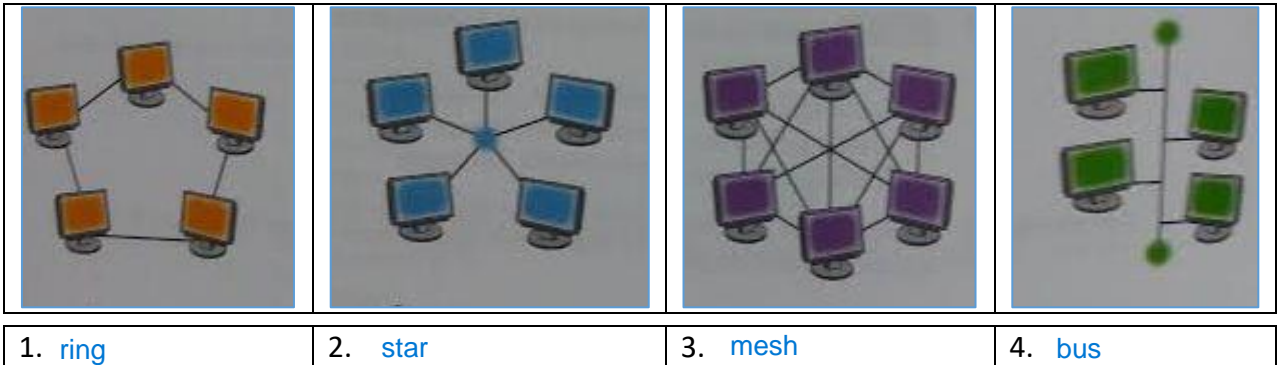
Exercise 7: These following diagrams show four network topologies. Match each with the correct name.

ring

bus

star

mesh



Picture 4.3

Exercise 8: Read this following text to check your answer for exercise 7.

NETWORK TOPOLOGY

Topology refers to the shape of a network. There are three basic physical topologies. One is a **star** system. In this topology, there is a central device to which all the computers/workstations are directly connected. This central position can be occupied by a server, or a hub, a connection point of the elements of a network that redistributes the data. Another type is a **ring** system. This is a network that has each workstation linked to two others. In a **bus** system there is a central or main cable which is called a bus, and each workstation is linked to it. There are also mixed topologies, like the **tree**, a group of stars connected to a central bus. Some large networks use a **mesh**. In this topology, each workstation is linked to several others. This has one big advantage: if one connection breaks, the data can use other connections. Therefore, it is difficult to break a mesh network.

Exercise 9: Referring to exercise 7 and 8 above. Identify which topologies these statements refer to.

1. If one of the computer fails, the whole network will be affected.
2. If we remove a computer from the network, it won't affect the other computers.
3. If the main cable fails, the whole network will fail.
4. If the central server fails, the whole network will fail.
5. If a cable breaks, the whole network will be affected.
6. If a computer fails, it won't affect the other computers.

1. ring topology
2. bus topology
3. bus topology
4. star topology
5. ring topology
6. mesh topology

Exercise 10: Referring to exercise 9. You see that If-Clause Type 1 are used the the sentences above. Here are more explanation on the If-Clause Type 1.

Note	Description	Examples
Formula	<p>If + simple present, simple future</p> <p>If clause (condition), Main clause (result)</p> <p>Meaning: If this thing happens, that thing will happen.</p>	<ul style="list-style-type: none"> ▪ If the main cable fails, the whole network will fail. ▪ The whole network will fail if the main cable fails. ▪ If a cable breaks, the whole network will be affected. ▪ The whole network will be affected if a cable breaks.
The Order	<p>The order of the clauses is not fixed. When you change the order of the clauses, you need to pay attention to the punctuation and pronoun, but the meaning is identical.</p>	
Function	<p>These sentences are based on facts, and they are used to make statements about the real world, and about particular situations. In type 1 conditional sentences, the time is the present or future and the situation is real.</p>	
If-Clause Type 1 with Modals	<p>In type 1 conditional sentences, you can also use modals in the main clause instead of the future tense to express the degree of certainty, permission, or a recommendation about the outcome.</p>	<ul style="list-style-type: none"> ▪ If a computer fails, it won't affect the other computers. ▪ It won't affect the other computers if a computer fails.

Exercise 11: Referring to the If-Clause Type 1 that you learned, complete the following sentences.

1. If she (need) needs a computer, her brother (give) will give her his computer.
2. If she (read/not) reads the Computer Networking module and her notes, she (pass/not) will pass the test.
3. If they (invite/not) invites me to the computer workshop, I (go/not) _____.
4. The administration staff (accept) _____ his thesis draft if Rama (turn in) _____ his thesis draft on time.
5. If you (want) _____ a remote access to your company's LAN, you (set up) _____ a Virtual Private Network.
6. If Anugrah (need) _____ to connect devices over a small area, he (need) _____ to set up a LAN.

Exercise 12: Link each action (1-10) with a suitable consequence (a-j). Then, combine them using if-clause.

Example: ***If** you place a floppy disk near magnet, you will destroy the data.*

1. You place a floppy disk near a magnet	a. The cursor moves to the left
2. You press print screen	b. The computer hangs
3. You input the correct password	c. It is not lost when you switch off
4. You add memory to a computer	d. You damage the drive
5. You move the mouse to the left	e. You copy the screen
6. You store data in RAM	f. You have access to the network
7. You use a faster modem	g. You destroy the data
8. There is a memory fault	h. It runs faster
9. You press the arrow key	i. Your phone bills are lower
10. You move a CD-ROM drive with the disk in place	j. The cursor moves accross the screen

Exercise 13: Now make a short dialog that uses the If-Clause Type 1 that you learned.

Perform the dialog in front of the class.