Unit 28 Networks

Topics
- Networking basics
- Types of network
- Wired networks versus wireless networks

Learning objectives
- To understand the basics of networking
- To discuss the advantages of using networks
- To describe networks, both in speaking and writing
- To use phrasal verbs common in ICT

Language
- **Grammar:** Verbs with particle (phrasal verbs)
- **Vocabulary:** *wired network, wireless network, network architecture (client-server, peer-to-peer), network topology (bus, ring, star), protocol, router, Ethernet cables, fibre optic cable, wireless access point, Wi-Fi, Bluetooth*
  Abbreviations: *PAN, LAN, MAN, WAN, GSM*
  Phrasal verbs / verbs with particles: *look at, consist of, carry out, turn on/off, switch on/off, log in/on, log out /off, plug into, set up, sign up, try out, find out, take up, make up, fill in*

Skills
- **Listening:** Labelling a diagram of a mixed wired/ wireless LAN based on information from a lecture
- **Speaking:** Discussing the advantages of using networks
  Describing a WAN connected via satellite
- **Reading:** Understanding general and specific information from a text about networking
- **Writing:** Describing a network

Technical help is given on page 127.

Plan

Teacher's activities	*Students' activities*	*Comments*
1 Small networks **A** Elicit ideas from SS and write them on the board. **B** Play track 34 of the CD. **C** Play the CD twice more if necessary.	**A** SS brainstorm ideas and try to define *computer network*. SS then discuss the benefits of using networks. **B** SS listen to the description of a LAN and answer the questions. **C** SS listen again and label the elements of the network.	You may like to write the word *network* on the board and elicit ideas about networks in real life: *TV network, telephone network, radio network, spy network, railway network, neural network, computer network,* etc. Make sure SS understand these basic concepts: *Local area network* (LAN), *wired* vs. *wireless, router, wireless access point*
2 Networking FAQs **A** Ask SS to only look at the FAQs for now. They will be reading the whole text in Task B. **B** Monitor the task, helping with any vocabulary problems. **C** Let SS do the network quiz in pairs or trios.	**A** SS look at the FAQs without reading the whole text and answer as many of them as they can. **B** SS read the whole text and find answers to the questions. **C** SS choose the correct answers in the network quiz.	You may like to set **C** as a game. The winners are the group that answers the most questions correctly in three minutes. Make sure SS understand the different ways of classifying networks.

3 Language work: phrasal verbs **A** Refer SS to the HELP box, providing more examples if necessary. Encourage SS to explain how these verbs are formed in their mother tongue. **B** and **C** Monitor the tasks, helping where needed.	**A** SS study the HELP box and translate the phrasal verbs into their own language. **B** SS complete some sentences with the correct form of phrasal verbs from the HELP box. **C** SS then practise some phrasal verbs by matching questions and answers in short exchanges.	
4 WANs and satellites **A** Draw SS' attention to the picture and refer them to the *Useful language* box. Remind SS that this is a good opportunity to use the technical terms and the phrasal verbs learnt throughout the unit. Encourage SS to prepare a PowerPoint presentation of the description. Monitor the activity, helping where needed. **B** Ask some students to present their description to the class.	**A** SS look at the illustration of a wide area network and then prepare a written description. **B** Some SS present their description to the class, either as an oral report or as a PowerPoint presentation.	

Evaluation of the unit:

Answer key

1 Small networks

A

Possible answers

1 A computer network is a system of interconnected computers that share files and other resources.
2 They enable us to get the most from our peripherals. For example, printers, scanners and high-speed modems or routers can be shared by a great number of users on the same network. In the same way, networks allow us to send and receive messages, have access to large databases, and transfer files to and from other computers. This implies faster communications, and flexible and interactive work between users.

B

1 Local Area Network
2 LANs are usually located within a relatively small geographical area, such as an office or building.
3 A wired LAN is connected with cables; a wireless LAN uses electromagnetic waves, such as radio waves, instead of cables.

C

1 mixed
2 Central computer (or File server)
3 cables
4 Broadband modem
5 Router
6 Wireless access point (or wireless router)

2 Networking FAQs

A

Open task

B

1 Personal Area Network
2 A network protocol is the language or set of rules that computers use to communicate with each other.
3 To log on to an Internet Service Provider, you need to type in your username and password.
4 WiMAX has greater range than Wi-Fi and is used to connect various Wi-Fi hotspots with each other. (WiMAX is short for Worldwide Interoperability for Microwave Access)
5 To set up a wireless LAN, you need computers equipped with a wireless adapter or wireless card, a wireless access point (a wireless router) and a broadband internet connection.
6 Wireless networks are easier to install; they let you move, or roam, from one access point to another. However, they are less secure than wired networks and are subject to interference.

C

1b 2a 3b 4c 5c 6b 7a 8c

3 Language work: verbs with particle

A

Open task

B

1 fill in
2 carries out
3 takes up
4 make up
5 find out

C

1c 2a 3e 4b 5d 6f

4 WANs and satellites

A

Possible answer

- The diagram represents a wide area network, or WAN, connecting two networks via satellite.
- The wired network in Barcelona is made up of a desktop PC and a PDA connected with Ethernet cables. A central computer acts as a file server, allowing the PCs to access common files and resources.
- The wireless network in Los Angeles consists of a wireless access point (a wireless router), which links multiple computers (a central computer, a laptop and a PDA) without using cables.
- In Barcelona, the network is connected by a modem to fibre optic cables. In Los Angeles, however, the computers are linked up by ordinary telephone lines.
- The satellite receives signals from a disk aerial. The signals are then amplified and sent on to workstations in Barcelona or Los Angeles.
- The purpose of this integrated network may be to establish information and communications services on a transcontinental scale. It allows large companies and institutions to exchange information, transfer files and communicate – for example, via videoconferencing – over long distances.

B

Open task

Audio script

Let's begin by talking about small networks, which are called local area networks, or LANs. These are groups of computers within a small physical area, like a home or an office building.

In this diagram, we see a mixed wired and wireless LAN, a typical solution for small businesses that already have a wired LAN and decide to expand it with wireless technologies to accommodate new needs.

In the existing fixed, wired LAN, the central computer is a file server with a large hard drive used to store common files and application programs. The computers, acting as clients, are connected to the file server and to a printer via Ethernet cables.

In the wireless part of the network, several devices, including desktops, laptops, PDAs and a gaming console, are connected to each other without cables. This part is controlled by a wireless access point – also called a wireless router. This access point is like a base station that transmits and receives radio frequencies from wireless-enabled devices. Each device that operates over the network is equipped with a wireless card or adapter.

Many wireless LANs use Wi-Fi, a wireless technology that uses radio waves to enable communication between devices in a limited area. This gives users flexibility and mobility. Another popular technology is Bluetooth, used for short distances.

The whole network is linked to the Internet via a broadband modem. This modem is plugged into a router, or hub, which splits the internet connection into parts and allows all users to access email and web resources. With appropriate networking software, users on the wireless LAN can share files and the printer located on the wired LAN.

Technical Help: Network topology

Topology refers to the shape of a network. There are three main topologies or configurations used in LANs:

In a **Star** network, all devices are connected to a central station, called a *star controller*. The central station functions as a switching centre. Computers cannot pass messages directly to one another; instead, they have to communicate via the central station, which prevents messages from colliding.

A **Bus** network consists of one cable to which all the devices are connected.

In a **Ring** network, all devices are connected to the same circuit, forming a continuous loop, or ring. A *token* (a piece of software) circulates continuously along the ring and is read through an adapter card in each machine as it passes by.