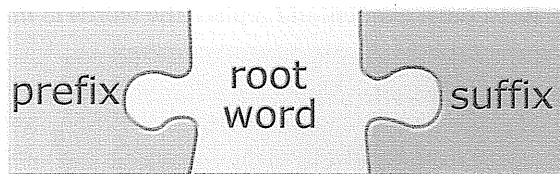


A

Common prefixes

We can form new words by using prefixes and suffixes, e.g. micro-process-or
prefix + root + suffix.



Word parts are like puzzle pieces

Prefixes come before the root word and usually change its meaning. Here are some common ones in ICT.

■ Negative prefixes meaning 'not':

non- **Non-volatile** memory retains its content when the power is turned off.

un- An **unformatted** disk has not been 'initialized'; it doesn't allow data to be stored.

■ Prefixes of location:

trans- (= across) Data **transmission** can be wired or wireless.

inter- (= between) The Internet consists of millions of computers **interconnected** in a global network.

intra- (= within) An **intranet** is a private network, restricted to a company's internal use.

extra- (= outside, in addition to) An **extranet** links a company with its customers and suppliers.

tele- (= over a distance) **Teleconferencing** enables users in different places to talk to and see each other.

■ Prefixes of size:

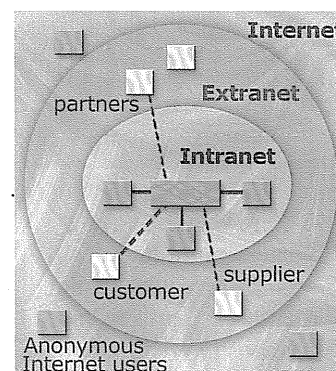
super- (= large, better) A **supersite** offers links to other websites on a certain topic.

semi- (= half, partly) A **semiconductor** is neither a good conductor nor a good insulator (e.g. silicon, used to make computer chips).

micro- (= small) A **microbrowser** is designed to display web pages on PDAs and mobiles.

Prefixes of size are also used in units of memory like *megabyte* and *gigabyte*.

■ Another common prefix is **re-** in words like *reprint*, *rewritable* and **reboot**, to start the computer again.



An extranet is like an extended intranet

B

Verb prefixes

Prefixes used to form verbs which mean 'to cause to be something':

en- **encrypt**: to change data into a secret code so that only someone with a key can read it

up- **update**: to modify data in a file and thus ensure the file reflects the latest situation

upgrade: to add or replace hardware or software in order to expand the computer's power

upload: to send files to a central, often remote computer; compare with 'download'

Prefixes that mean 'the opposite of an action' or 'to reverse an action':

de- **decrypt**: to convert secretly coded (encrypted) data back into its original form

decompress: to restore compressed data back to its original size

debug: to correct errors in a program or system

defragment: to reorganize data stored on disk by putting files into contiguous order

un- **uninstall**: to remove hardware or software from a computer system

C

The prefixes **e-** and **cyber-**

The **e-** prefix means 'electronic'; **cyber-** describes things relating to computer networks.

e- The term **e-learning** refers to the use of ICT to provide education and training.

An **e-zine** is a magazine or newsletter published online.

E-commerce is the buying and selling of products or services over the Internet.

cyber- The electronic space in which online communication takes place is called **cyberspace**.

Cyberslacking means using a company's Internet access for activities which are not work-related, e.g. emailing friends, playing games, etc.; it is also called 'cyberloafing'.

33.1 Use words from A opposite to complete these sentences.

- 1 Medical researchers in many countries exchange information through email and
- 2 memory (e.g. ROM or flash memory) is able to hold data when switched off.
- 3 Blogs and web portals are examples of ; they offer news, opinions and web links.
- 4 are used for making integrated circuits and computers.
- 5 I'll post the agenda for next week's meeting on the company's
- 6 A home network is two or more computers to form a local area network.

33.2 Complete these definitions with words from A opposite.

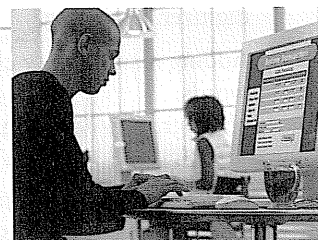
- 1 : a disk that is completely blank, so information can't be recorded onto it
- 2 : a network that allows communication between a company and the people it deals with
- 3 : the process of sending data over a communication channel
- 4 : to restart the computer, without switching it off completely
- 5 : a web browser designed for small screens on hand-held devices

33.3 Complete these sentences with words from B opposite and make any necessary changes.

- 1 The program ran so slowly, I had to un..... it.
- 2 Your financial information is fully en..... and cannot be accessed.
- 3 Messages encrypted using a public key can only be de..... by someone with the corresponding private key.
- 4 The computer compresses and de..... a colour image in less than a second.
- 5 Once you've written a program, you have to test it and de..... it to remove all the errors.
- 6 In cyberspace, 'up.....' means to send a file.
- 7 You can easily up..... your files by adding or deleting information.
- 8 To de..... your hard disk you need a disk optimizer, a program that will reorder your files.
- 9 There are minimum system requirements for your PC to be suitable for to Windows Vista.

33.4 Complete this text with words from C opposite.

The term 'cyber' first appeared in the word 'cybernetics', coined by Norbert Wiener in 1948 as the science of communication and control. In the 1960s new 'cyber' words emerged, such as *cybermen* and *cyborg*, referring to a being that is part robot, part human. In 1984 William Gibson popularized the term (1) in his novel *Neuromancer*. He used it to describe a futuristic, virtual world of computers, but now it refers to the Internet. Other common words are *cyberworld*, *cybercafé*, and *cyberphobia* (a fear of computers). Companies are now worried about (2) : employees using the Net to do things that have nothing to do with their jobs, e.g. chat with friends. The e- prefix is often added to activities that have moved from the physical world to the electronic alternative, e.g. *email* and *e-shopping*. Other well-known examples are: (3) , small magazines that are available on the Internet; (4) , doing business electronically on the Net; and (5) , providing instruction via optical discs, the Web or satellite TV.

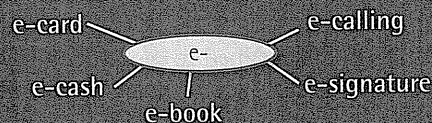


A cybercafé

You and computers



With the help of an online computer dictionary, find the meaning of these words.



A

Common suffixes

Suffixes change the class of the root word. For example, by adding the suffix *-er*, the verb *publish* becomes the noun *publisher*. Suffixes can tell you if a word is a noun, adjective, verb or adverb.

Suffixes for jobs:

- er* *manufacturer* The two major **manufacturers** of processor chips are Intel and AMD.
webmaster
- eer* *engineer* Greg is a **software engineer**, which means he writes computer programs.
auctioneer
- or* *animator* He worked as a computer **animator** on *Toy Story*.
operator
- ant* *IT consultant* She's a **computer consultant** and specializes in e-commerce, data protection
IT assistant and IT strategies.
- ian* *technician* A **computer technician** installs, troubleshoots and upgrades hardware
electrician and software.
- ist* *typist* Anyone who works as a **typist** may develop a problem with their hands.
scientist

Other common suffixes in ICT:

Nouns	-ion, -ment, -ics, -ity (activity, state)	compression, management, robotics, electricity
Adjectives	-able, -ible (able to be) -ful (full of), -less (without)	programmable (keyboard), convertible (format) colourful, colourless (picture)
Verbs	-ize, -ise (to make)	synthesize (music – to make it with a synthesizer)

B

Word families

It is useful to know how to build up word families by adding suffixes. Look at these examples:

Nouns	Verbs	Adjectives	Adverbs
magnet, magnetism	magnetize	magnetic, magnetized	magnetically
recorder, recording	record	recordable, recorded	
digitizer, digitizing	digitize	digital, digitized	digitally

Adding a suffix may change the pronunciation. Look at how the stress changes in these words:

photograph photographer photographic photographically

C

We love 'wares'

The suffix *-ware* refers to products of the same type. In computing, *software* refers to programs executed by a computer, as opposed to the physical devices on which they run – the *hardware*. It is commonly used to form jargon terms for classes of software.

- **freeware**: available free of charge, but protected by copyright; it differs from 'free software', which can be changed and distributed subject to licence
- **shareware**: distributed similarly to freeware, except that it requires payment after a trial period
- **malware**: designed to infiltrate or damage a computer (e.g. viruses, trojan horses, spyware)
- **spyware**: designed to monitor the actions of your computer and send this data via the Net
- **adware**: devised to display advertisements; some includes spyware
- **groupware**: enables a group of people connected to a network to work on the same project



Be careful of spyware!

34.1 Which IT professionals from A opposite are described here?

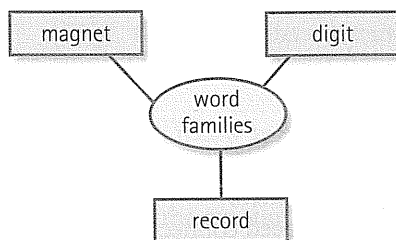
- 1 a person who designs and maintains software applications
- 2 a person who gives expert, professional advice
- 3 a person who uses graphics software to make or edit animated pictures
- 4 a person who is employed to type letters, reports and other documents
- 5 a person or enterprise that produces goods in large numbers, using machines
- 6 a specialist in the technical details of computers

34.2 Complete each sentence using the word in brackets and the correct suffix from A opposite.

- 1 IBM's BlueGene is the most supercomputer. (POWER)
- 2 Most library databases are via the Internet. (ACCESS)
- 3 I'll email my report to you as an (ATTACH)
- 4 This book will show you how to your small business. (COMPUTER)
- 5 An optical disc allows data to be deleted and new data to be recorded on it. (ERASE)
- 6 The growth of the Internet has increased the need for effective data (SECURE)
- 7 The combination of and new textile materials has made it possible to create musical jackets and smart shirts that can read our heart rate. (ELECTRON)
- 8 Bluetooth is a technology designed to connect computers, mobile phones and other devices, replacing direct cable links. (WIRE)
- 9 Aircraft flight is used to train pilots. (SIMULATE)

34.3 Look at the word families in B opposite and complete these sentences with the correct word.

- 1 From kitchen magnets to computer disks, plays a central role in the technology of everyday life.
- 2 Hard disks are storage devices.



- 3 My digital voice has a storage capacity of 2 GB.
- 4 Blu-Ray Disc is a new optical disc format developed by nine electronic manufacturers.

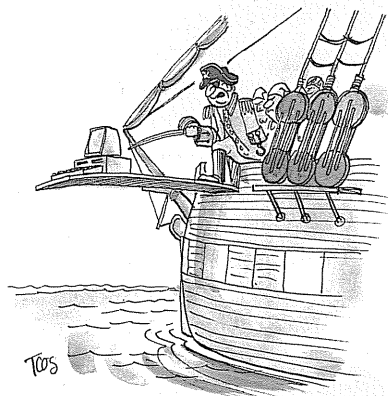
- 5 A video is used to convert analogue video into digital video files.
- 6 Sound and pictures can be stored , as on a CD.

34.4 Look at C opposite. What type of software do these descriptions refer to?

- 1 software that transmits data about your Web surfing habits without your consent
- 2 also known as 'try before you buy' software
- 3 short for malicious software
- 4 software that periodically pops up advertising material
- 5 collaborative software
- 6 programs that you don't have to pay for

You and computers

Access the *Professional English in Use ICT* website at www.cambridge.org/elt/ict. Then do the activity *More 'wares'*.



"Do you still refuse to run pirated software?"

A

Compound nouns

Compound nouns consist of two or more words used together as a single word, e.g. *hard drive*.

In a compound there is a headword and one or more modifiers.

<u>ink-jet</u>	<u>printer</u>
modifier	head

Modifiers can refer to different things:

- material, e.g. **silicon chip** = a chip made of silicon
- use or function, e.g. **search engine** = a program used to find information on the Web
- activity or profession, e.g. **software engineer** = a person who designs software
- place, e.g. **web portal** = a site on the Web that acts as a gateway to other sites

Compound nouns are written in different ways:

- as two separate words, e.g. **control panel** = a utility that lets you configure and adjust a system
- as two words joined with a hyphen, e.g. **self-test** = an automatic examination of a device
- as one word, e.g. **clipboard** = a holding place for text or graphics you've just cut or copied

Unfortunately there are no rules. For example, you may see *clip art*, *clip-art* and *clipart*.

Some compounds change over time, for example two words – *web site* – become hyphenated after a time, and then eventually end up as one word – *website*.

The two parts may be:

- | | |
|------------------------------|---|
| 1 noun + noun | address bus = a set of wires that identifies locations, addresses, in the main memory
bandwidth = the rate at which data flows through a cable or network
mail merge = a tool that combines a standard letter with a mailing list to create personalized letters |
| 2 adjective + noun | broadband = high-speed connection, e.g. cable or ADSL Internet access
shortcut = a small file, 1KB in size, that links to a real file stored elsewhere
smart card = a plastic card that contains a small chip |
| 3 verb or verbal noun + noun | scrollbar = part of a window that lets you move through a document
recording head = a mechanism that transfers data to a disk |
| 4 verb + particle | add-on = a hardware or software module that can be added to a computer
set-up / setup = the way in which a program or device is configured |

Compound nouns normally have the main stress on the first part and a secondary stress on the second part, e.g. screen saver /skri:n ,seivə(r)/.

B

Compound adjectives

Compound adjectives are made up of two words, normally with hyphens between them. The second part is often a past participle.

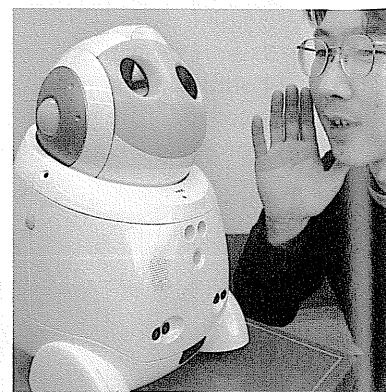
A **menu-driven** program lets you select a command from a menu.

A **voice-activated** product is activated by the user's voice.

Object-oriented programming is based on objects and their effects on each other, rather than on a series of instructions.

Other common patterns include:

- noun + present participle
Space-saving PCs take up very little desktop space.
- noun + adjective
A **hands-free** device does not require the hands for operation.
A **stand-alone** computer or business can operate on its own.



An experimental robot receiving voice-activated instructions

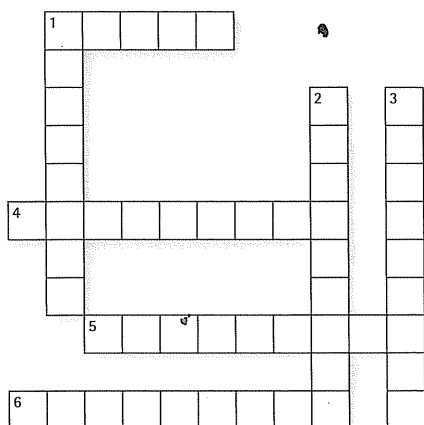
35.1 Look at A opposite. Which compound do these definitions refer to?

- 1 a small piece of silicon which is used in computers
- 2 a site that offers email, news, forums, web searching, online shopping and links to other sites
- 3 a utility used to adjust computer settings such as fonts, sound and networks
- 4 the read/write head of a disk drive
- 5 a computer bus used by the CPU to communicate memory locations

35.2 Complete these sentences with a compound from A opposite.

- 1 enables you to combine two files, one containing names and addresses and the other containing a non-specific letter intended for multiple recipients.
- 2 A USB headset is a useful, the ideal accessory for your computer games and music.
- 3 The printer's didn't identify any errors.
- 4 Because the Web has no central organization, every Web surfer needs a
– a special site that locates other sites based on words or phrases you type in.
- 5 They are seeking a to help write and test a new operating system.

35.3 Complete the puzzle with compound nouns.



Across

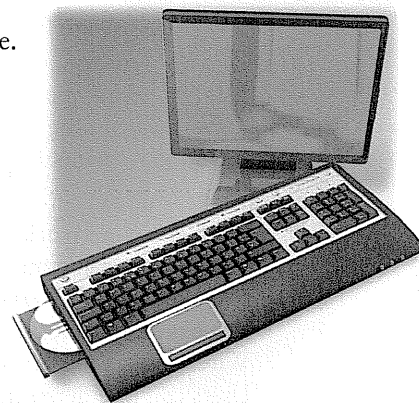
- 1 the configuration of hardware and software
- 4 a bar that allows you to select the portion of the document you want to see
- 5 an area that holds the things you copy, ready to be pasted anywhere else
- 6 a type of data transmission that provides fast Internet access

Down

- 1 a special file which redirects to another file or program
- 2 a small card with an embedded microchip
- 3 the amount of data that can be transmitted along a channel

35.4 Complete these sentences with a compound adjective from B opposite.

- 1 A - telephone allows people with limited mobility to dial and answer the phone with just the sound of their voice.
- 2 A fax machine is a - device, so it does not require any other device to function.
- 3 A - application is operated by making choices from menus instead of giving instructions on a keyboard.
- 4 In some countries it is obligatory to use a - car kit when you are using a mobile phone while driving.
- 5 An - language like C++ lets the programmer concentrate on individual units (e.g. a piece of text, a graphic or a table) and give each object functions which can be changed easily.
- 6 They've launched a new - computer, an entire PC embedded inside a keyboard.



A space-saving PC

You and computers

Access the *Professional English in Use ICT* website at www.cambridge.org/elt/ict. Then do the activity *Combinations with 'card' and 'web'*.

A

What a collocation is

A collocation is a pair or group of words that are often used together. You need to learn them in order to sound natural in English. For example, in computing we say 'attach a file', not 'enclose a file'.

New collocations are particularly common in ICT. Notice the combinations that are worth learning from these reviews.

With the Nokia 770 Internet Tablet you can **browse your favourite sites** and catch up on your email – from right where you are. Whether you're relaxing on the sofa or enjoying the moment at your favourite café, if you have **broadband access** over Wi-Fi, the Nokia 770 Internet Tablet gives you instant wireless access to the Web. You can also **stream¹ files**, **tune in to Internet radio** and News Reader, or **play your favourite videos and music**.



A Blu-ray Disc is a new **optical disc** that provides five times more data storage than a DVD, with a capacity of 25 GB (single-layer), 50 GB (dual-layer) and 100 GB (four-layer). Unlike current DVDs, which use a red laser to **read and write data**, Blu-ray uses a blue laser (which is where the format gets its name). Blu-ray discs can record and play back **high-definition television** and digital audio, as well as computer data.



Blu-ray Disc players are **fully backward compatible²** with CD/DVD formats. They also let users **go online** and download subtitles.

¹ Listen to audio or watch video directly from the Internet rather than downloading and saving it first

² Able to share data with older systems

B

Some types of collocations

Verb + noun

The easiest way to **connect to the Internet** is by using a DSL modem.

A DSL modem can **transmit data** at high speed.

Your ISP will probably give you a CD with instructions on how to **install the software** on your PC.

Once you are online, you can **access the Web** or **send and receive emails**.

You may like to **burn CDs**, i.e. copy your favourite songs or important files onto CDs.

Verbs with particles

Can you show me where the microphone **plugs into the computer**?

If you want to **log onto your account** you will need your user ID and password.

Computer criminals are getting better at **hacking into** other people's computers.

Adjective + noun

High-speed networks and multimedia phones allow customers to view live TV.

To send **outgoing mail** and retrieve **incoming mail**, you need to configure the email settings.

Most teenagers use **instant messaging** to chat with friends.

Electronic commerce – from a PC, digital TV or mobile phone – offers competitive prices.

Wireless hotspots provide Wi-Fi Internet access in airports, hotels and other places.

Users can interact with a **virtual environment** through the use of VR displays and data gloves.

Typical **interactive TV** uses are voting in polls, video on demand and shopping from home.

Adverb + adjective

Don't send **highly sensitive information** via email or fax unless it is encrypted.

This movie is **freely available** on the Internet, so it can be downloaded free of charge.

Phrases

When you chat in a chat room, you are interacting in **real time** since it is immediate.

A USB device is a good example of **plug and play**; you install it and use it immediately.

To **drag and drop**, just click on the object and drag it to a different location.

36.1 Look at A opposite. Match each word on the left with its partner on the right.

- | | |
|-------------------|------------------------|
| 1 high-definition | a Internet radio |
| 2 read and write | b disc |
| 3 play | c videos and music |
| 4 tune in to | d television |
| 5 broadband | e data |
| 6 optical | f your favourite sites |
| 7 browse | g compatible |
| 8 fully backward | h access |

36.2 Answer these questions using collocations from B opposite.

- What sort of locations or access points can be used to surf the Net without wires?
- What feature allows an electronic device to be used as soon as it is connected to a computer?
- If you are *gaining illegal or unauthorized access to computer data*, what are you doing?
- If you want to move a picture to a new location, what do you do?
- What expression is used to refer to personal, confidential or classified information?

36.3 Read these statements by computer users and complete them with suitable collocations.

- 'I have a program that monitors both incoming and mail and also blocks spam.'
- 'With a webcam you can add video to online chats and messaging. Simply the software included, plug the webcam your PC, and start having video conferences.'
- 'This software enables you to burn and DVDs containing any data files.'
- 'I use a media player to audio and video files from the Web; I can play them directly.'
- 'NetMeeting allows us to perform video conferencing in time, without any delay.'
- 'We have decided to make the material available on the Web.'
- 'I often log my Internet bank account to make payments; I never forget to log off.'

36.4 Complete the collocations in this text.

Fast connections

Connecting to the (1) using DSL lines, cable TV and satellite increases bandwidth dramatically, making the Web more useful. Increased speed has ignited an explosion of (2) commerce, video on demand, telecommuting, collaborative scientific projects, video conferencing and (3) environments.

Internet2, shaping the future

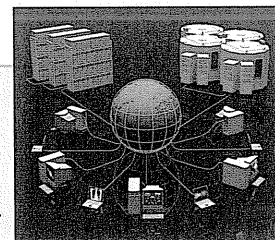
Internet2 is not a single network, but a consortium of hundreds of (4) networks linked by fibre-optic backbones that span the United States and link to other countries. The network transmits (5) at speeds up to 2.4 gigabits per second – 45,000 times faster than a 56 Kbps modem – allowing scientists to test their laboratory discoveries in the real world.

The next-generation network went (6) in February 1999, linking a number of universities around the world. When it is in commercial use, services will be available like (7) television, virtual 3-D videoconferencing, and much more.

A new kind of Web

While PCs were once the primary means of accessing the Internet, we're now seeing Internet-enabled devices such as PDAs and cell phones that send and receive (8) and access the (9) Soon, everything from your car to your refrigerator will be connected to the global network, all communicating with each other wirelessly.

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You and computers



Access the *Professional English in Use ICT* website at www.cambridge.org/elt/ict. Then do the activity *Word combinations* relating to mobile phones.