Getting to know your computer:

A basic guide for HACC services

Compiled by Westnet on behalf of the
NSW HACC IT Help Desk Project

A project of the NSW Meals on Wheels Association Inc.

Funded by the NSW Department of Ageing, Disability & Home Care

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NSW Meals on Wheels Association Inc.
WESTNET, an initiative of TRI Community Exchange Inc.

Funding for the project is provided by the NSW Department of Ageing, Disability and Home Care.

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This book was designed and desktop published by Open Training and Education Network–Distance Education (OTEN-DE), a Division of TAFE NSW, 51 Wentworth Road, Strathfield NSW 2135. Telephone (02) 9715 8000.

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Introduction

Why do I need a computer?

When your computer is not running as smoothly as you would like, you may need reminding of how computers improve the service you offer to your clients and also improve the professional standard of the work you do.

A computer can save your organisation/service time and money by automating functions, making them faster, cheaper and able to be performed more accurately. One person can now perform tasks in no more time than a whole team would once have taken.

By giving you time, even to think about the things you were too busy to consider before, it has become possible to plan ahead, to ask questions and to innovate.

Computers can also help pinpoint things you can do better and help improve those things that you do best.

The more efficiently you work, the better service you can provide to clients and the more effective and dynamic your organisation/service will be.

Section 1:
Purchasing a computer

Purchasing a computer

When deciding on what computer to buy:

- Keep your budget in mind.
- Consider what you will need in a computer.
- Do some research on what computers and software (computer programs are also known as *applications* or *software*) are currently on the market.

Ensure that the hardware (hardware = the physical computer equipment) *and* software you are about to purchase comes with adequate warrantees and support that suits your needs.

What are your needs?

Ask yourself: What computer software, including the computer's operating system, will be needed for the service/organisation to operate successfully?

If you have a fair idea of your software needs you can assess your minimum computer hardware requirements. Software manufacturers list the hardware/system requirements on the side of the application's box.

To gain a good estimate of your minimum computer hardware requirements:

Step 1 Add the hard disk/drive space suggested for each type of software. Hard disk space is usually expressed as 'Disk Space' in lists of system requirements.

> **Tip:** When software manufacturers list hardware/system requirements as 'minimum' and 'recommended' on the side of the application's box, the 'minimum' list usually specifies the bare minimum that will allow your computer to run the software. For your computer to run efficiently note the *recommended* system requirements as the actual *minimum* requirement.

Step 2 Take note of the highest speed of processor (central processing unit or CPU) required by all of the types of software.

Step 3 Take note of the highest amount of memory (this refers to random access memory or RAM) required by all of the types of software.

Step 4 Take note of the versions of operating system required by all of the types of software (see notes below on operating systems for more information).

Step 5 Note any other equipment required to run all of the types of software and the highest speed or most advanced features of these (see notes below on peripherals for more information).

Step 6 Once you have created a list of the system requirements of your new computer, at least double the hard disk/drive space total to accommodate any software upgrades and storage of documents.

Hardware and software support warrantees/ guarantees

Related topic: Also see Chapter 7 for further details on professional computer support.

Ensure that the manufacturers of the computer hardware and software you are about to buy provide support either as part of a warrantee/package or at an extra price. In the short and long run this will save you money, time and your mental health. Thinking that you can just ask a friend to help if you should run into any problems can leave you without any help if they are too busy, or if their service is unprofessional.

Some hardware manufacturers offer to repair hardware by taking it offsite and returning it for you and providing you with replacement equipment while it is away for repair. This is the ideal type of support for hardware. Ensure that the replacement equipment will be of equal or better capability than that being taken away.

Tip: Even if you do receive/buy support for your new computer system, become familiar with the computer's documentation and operational manuals; they will save you time, even just by making it easier for you to explain the problem when things do go wrong with your computer.

Additional research

As your first point of contact talk to a number of friends, associates and organisations to get an idea of the quality of the products and services that they have bought, any problems that they may have experienced and the type of service and support they received when buying their computer equipment and following its purchase. If someone you know has access to the Internet, do some research for reviews here too.

Then get a number of quotes from reputable manufacturers/retailers and consider other options, such as leasing, for purchasing the equipment. Buying outright may not be the most suitable option for *your* organisation.

Integral components of a computer system

Processor – central processing unit (CPU)

Most current computers will come with a processor that is either a Pentium, Pentium II, Pentium III, Pentium 4, Celeron or Athlon processor. The difference between the Celeron or Athlon processors and the Pentiums is the company that manufactures them. Pentium processors are numbered up to 4, according to their model, with model 4 being the most improved of the four Pentium processors. The Celeron processor is comparable to the Pentium II processor, while the Athlon processor is often superior in performance to the Pentium processors.

When buying a new computer the processor type is usually specified, followed by a speed in MHz; this is the processor's speed. The faster the processor speed in MHz, the faster the computer will be able to process instructions, keeping in mind that this is not the only factor in determining your computer's performance.

The older, common processors still found in some second hand computers are called 8088, 80286 (also known as 286), 80386 (also known as 386) and 80486 (also known as 486). When looking to buy a new computer for your organisation you should not purchase one that contains any of these processors because they will not be able to cope with any of the modern software you will need to run on your computer.

Hard disk/drive

The hard drive is the computer's main inbuilt permanent data storage device. Currently computer hard drives are described as being able to store up to a certain number of gigabytes (GB) of data (see below for units table). A hard drive with storage capability of less than a couple of GBs will not be very useful to you if it is the organisation's main computer, as it will not be able to store much more than your program files (including the operating system).

Table 1: Computer storage measurement unit conversions

1MB (megabyte)	=	1024 KB (kilobytes)
1GB (gigabyte)	=	1024 MB
1TB (terabyte)	=	1024 GB

RAM and SDRAM

RAM (random access memory)

RAM is a computer chip that functions as temporary memory which the processor can use to retrieve or store information more quickly than storing it to the hard drive or other storage devices such as a floppy disk. RAM does not replace permanent storage devices like the hard drive or a floppy disk because it does not retain data once the computer is switched off.

If your computer does not have enough RAM for the task at hand it will save changes made to files onto your hard drive, noticeably slowing down your computer's performance.

SDRAM (synchronous dynamic RAM)

SDRAM is a type of RAM that most current computers use, as most new processors (CPUs) require this type of RAM.

CD-ROM, CD-R, CD-RW and DVD-ROM drives

You will need one of these drives as part of your system, or for your system to have access to one, because most software is now supplied on CD-ROM disks. Take note of the fastest speed the applications that you want to run support; some applications won't run properly if the drive is too fast.

Both CD and DVD drives can either be internal, fitted into the computer 'tower', or external, connecting to the computer 'tower' by a cable running from the drive to a computer port (connection on the computer). CD and DVD drives come in a variety of speeds, which determines their rate of data transfer. All computer CD or DVD drives can read CD-ROMs but CD drives cannot read DVDs. CD-ROMs have a storage capacity of 680 MB while DVD can store from 4.7 GB to 17.0 GB of data.

CD-ROM (compact disc-read only memory) drive

✓	**Advantages:** The cheapest option of CD or DVD drives due to its limited capability of only being able to read audio CDs and CD-ROMs.
✗	**Disadvantages:** Not able to read DVD-ROM disks and may not be able to read CD-RW disks. Not able to record data onto blank CDs, such as CD-Rs or CD-RWs.

CD-R (compact disk-recordable) drive

A CD-R drive is a type of CD drive that allows you to create CD-ROMs and audio CDs by writing (recording) onto special CDs called CD-Rs. The CD-R drive only has the capability to record data onto a CD-R once but not to erase and re-record data onto the same CD-R. Therefore CD-Rs are not reusable but they can be read many times.

✓	**Advantages:** The CD-R drive is able to save data onto a CD-R disk, creating a CD-ROM, and therefore can be used to back-up data files or to record audio CDs.
✗	**Disadvantages:** CD-R disks cannot be reused, ie recorded onto again.

CD-RW (compact disk-rewritable) drive

A CD-RW drive is a type of CD drive that allows you to create CD-ROMs and audio CDs by writing onto special CDs called CR-RWs. The CD-RW drive is able to record onto both CD-Rs and CD-RWs. The drive also has the capability to erase data from a CD-RW, leaving the disk blank, and then to re-record onto it. Therefore a CD-RW can be erased and reused, but CD-ROMs created using CD-RWs may not work in all players.

✓	**Advantages:** The CD-RW drive can record data onto both CD-Rs and CD-RWs. When using CD-RWs, material can be recorded over multiple times (CD-R disks can only be recorded onto once).
✗	**Disadvantages:** CD-ROMs created using CD-RWs may not work in all CD players.

DVD-ROM (digital versatile disc – read only memory) drive

A DVD-ROM drive/player is used to read DVD-ROMs and can also read CDs and CD-ROMs. This drive is similar to a CD-ROM drive, as it is a read-only drive and DVD-ROMs cannot be recorded onto. The main difference between any CD drive and a DVD drive is the disk: a DVD can hold from 4.7 GB to 17.0 GB of data compared to the 680 MB of data that a CD can hold.

✓	**Advantages:** The DVD-ROM drive can read CD-ROMs, CD-RWs and DVD-ROMs. A DVD-ROM can contain a lot more data than any CD and so can store higher quality data such as films. A DVD-ROM drive usually accesses data from the disk faster than any CD drive.
✗	**Disadvantages:** A DVD drive is not able to record data onto a disk (as can a CD-R or a CD-RW drive). It is the more expensive choice of drive. CDs created on CD-R disks may not be able to be read by all DVD drives.

Floppy drive

A floppy drive is used to move files onto your computer from a floppy disk or to move files into storage (onto a floppy disk) from your computer. A floppy drive accepts floppy disks which can hold up to 1.44 MB of information. As with a CD-ROM drive, a floppy drive can either be internal, fitted into the computer 'tower', or external, plugged into the computer by a cable, but most commonly they are internal.

Until recently most computers came with internal floppy drives and so the floppy disk is still one of the most widely used ways of transferring small data files quickly and cheaply between computer systems. However floppy disks are not very sturdy, making them an unreliable form of storage, as the data they hold can easily become corrupted. The amounts of data they can hold is also very small compared to other ways of moving it around (eg by electronically transferring the files between computers or by using other storage media). For these two reasons floppy disks and floppy drives are becoming less popular and may not be included as a standard feature with the next new computer you look at buying.

Why are floppy drives important?

In case your Windows operating system becomes damaged and will not start up at all, a boot disk (a floppy disk with operating system boot files saved onto it) can be loaded into the floppy drive and be used to 'rescue' your computer. If your computer includes a floppy drive a boot disk can easily be created and you should do so soon after purchasing the computer.

Monitor

A computer monitor is used to show what the computer is producing. It is similar to a television set but is more 'precise'. The difference between monitors, apart from their size, can be:

- the resolution it is possible to set them to
- the refresh rate
- whether they are digital or not
- whether they are flat or not.

When buying a computer, buy a monitor with the largest screen size you can afford, as it will make using the computer more comfortable. Make sure that the resolution of the monitor can be set to at least 800 × 600 pixels and that the refresh rate is at least between 60 and 90 Hz, but the higher the better. The resolution and the refresh rate will determine how 'crisp' your image is and the higher the refresh rate the less the image will appear to flicker.

Digital monitors produce a clearer image.

Flat screen monitors provide a space advantage; TFT (thin film transistor) is a type of LCD (liquid crystal display) and is currently the best quality flat screen monitor on the market.

Graphics card

Also known as a video card or a graphics accelerator. The graphics card is a set of electronic circuitry installed in your computer that gives it the ability to produce a display through the monitor. It is therefore an essential part of the computer system.

Different graphics cards give different capabilities to the computer monitor but the monitor must also be able to produce those qualities; for example early graphics cards allowed the monitor to display text on the screen but not pictures.
The monitor could produce *any* image made up of dots (pixels) but the graphics card restricted it to *text* characters only. Alternatively, regardless of the capabilities of the graphics card, a black and white monitor will never be able to display colour. So the graphics card and the monitor work together to produce the quality of the display on your monitor.

All modern graphics cards allow the monitor to produce a display in colour and all produce graphics (not just text). Most modern graphics cards will also contain their own RAM (memory), relieving the computer's RAM from storing the display, and they may also have other graphics capabilities such as graphics accelerators for performing graphics calculations, and the ability to produce 3D images.

Keyboard

A keyboard enables the input of data into the computer and will usually feature a number of keys other than the standard 'typewriter set' keys, depending on the keyboard producer.

Two main styles of keyboards are commonly available: the geometrically laid out keyboard (similar to a typewriter) and the ergonomic, curved keyboard. Try using the keyboard before you buy it, as some keyboards have stiffer and/or noisier keys. The choice of keyboard is a personal preference.

Mouse

A mouse is also an essential part of the computer hardware, allowing the user to quickly point to and select items from the computer's display.

There are different kinds of mouse. The standard PC mouse features two buttons – one that is clicked on the right side and another that is clicked on the left side – and a ball at its base that creates its movement on the screen. It is becoming standard for mice to also have a roller wheel at the front, between the left and right click buttons, for easy movement up and down through documents. Less common mice feature a ball that sits in the top; these are often used by illustrators, as they allow smoother, more precise control of the on-screen pointer. Another type of mouse does not have a ball at all at its base but senses movement when passed over a special grid surface, for more accurate results.

The choice of mouse is also one of personal preference.

Sound card

If you would like your computer to produce any sounds other than the occasional bleep, such as being able to play a CD, your system will require a sound card and a set of speakers. The sound card also allows your computer to record sound, with a microphone and the necessary software.

The sound card is installed in your computer.

Some software that works with the sound card to produce sounds requires a card that is compatible with a Sound Blaster card; that is, a card that can process commands written for a Sound Blaster card. Most sound cards included in new computer packages will include, if not a genuine Sound Blaster sound card, a Sound Blaster compatible card. Other sound cards are not recommended.

Modem

A modem is a device used by the computer to access the Internet via a telephone line.

Modems can be external or installed internally (inside your computer) and come in a range of speeds. Currently the fastest modems are 56Ks and buying anything slower (specified by a lower numbers of Ks) is not recommended. However you are unlikely to come across a slower modem as part of a new computer package.

Software

Software instructs the computer hardware (physical parts) on what functions to perform; telling the computer what to do and how to do it. Without software, a computer can't perform any functions.

Operating system

- The computer operating system acts like a translator between the computer hardware and all other software.
- Newer operating systems, with the help of other software, control the actions of all of the computer hardware, while older ones such as Windows 98 allow other software to have some direct control over relative parts of the computer hardware.
- The operating system also directs traffic – moving information to and from memory and input/output devices such as the keyboard, mouse and monitor.

Applications

Application software performs specific jobs that are extras to the basic operation of the computer; examples include word processing, accounting and publishing software.

Upgrading your computer

Most components of your computer can be upgraded but once your system is more than a few years old upgrading any internal component parts other than the memory (RAM) may not be very practicable.

Even though your computer is a combination of all of its parts, upgrading internal components of old computers separately, such as replacing the CPU for a super speedy one, may not improve the computer's performance significantly because improved performance may require that a number of parts be upgraded. And when comparing the cost of such parts to buying a new computer that will have a higher quality monitor, larger hard drive, smoother keyboard, latest version of operating system etc, it may be time to consider upgrading to a new computer.

If buying a new computer is not practicable and you have installed new software lately and are finding that your computer just doesn't run as well as it used to:

1 Spring clean your computer (see Chapter 4: Computer Maintenance) and remove any unwanted files and applications. If you are not sure if an application or file should be removed, instead of deleting those items, either move them onto floppy or Zip disks or create a new temporary folder on your computer and place any items in it. These can be retrieved or deleted at a later date.

2 If things are still running relatively slowly after you have freed up some hard drive space, consider buying extra RAM, after checking that you have the space inside your computer (refer to your computer's manual or a computer technician) and be sure to buy the right sort.

   or

   If you need more storage space on your computer for installing programs or storing files, an extra or new larger hard drive may be feasible (also refer to your computer or a computer technician for advice regarding your particular computer).

   Note: *If upgrading any of your computer's components yourself please refer to your computer's manual for instructions of how to replace its component parts SAFELY, or get help from a computer technician.*

Further reading ... 

Online resources are excellent for information on computers when you are thinking of a new purchase because things change so rapidly:

http://www.webopedia.com/
easy to understand definitions of anything to do with computers

http://www.hardwarehell.com/
an extensive list of links to information about computer hardware

http://www.tomshardware.com/
articles on anything you ever wanted to know about computer hardware.

… also talk to some local computer retailer.