

BASICS

Overview

- \$ Computer hardware is the actual physical parts of a computer. It includes the CPU, monitors, keyboard, mouse, different cards, CD and DVD's, backup devices, printers, and power-supply devices.
- \$ Software are the programs or rules that a computer follows. There are many different software options available to veterinarians: read the yearly article in *Trends* (AVMA), which covers all of the different software programs currently used.
- \$ Each software company will have different recommendations for hardware.
- \$ All of the computers should be connected by a network, which should be done by a computer consultant or a software company.
- \$ Because technology is improving so rapidly, it is best to plan ahead. For example, if a software company suggests a 40 GB hard drive, consider purchasing a 60 or 80 GB drive. The cost difference is minimal, and such precautions could prevent the necessity of purchasing another unit in the next few years.
- \$ The major issues when purchasing computer hardware have to do with choosing the best operating system, deciding how much hardware to buy, considering whether or not to have a separate server, and whether or not a business should go paperless.

Terms Defined

- \$ Backup device. A device that copies information from the CPU and stores it in the event of a hardware malfunction. Can be internal or external.
- \$ Broadband. A high bandwidth internet connection, i.e. a high speed internet connection that can transmit information forty times as fast as a telephone and modem connection.
- \$ Cathode Ray Tube (CRT) monitors. Large monitors that are inexpensive, but heavy and bulky.
- \$ CD Player. An imaging device that "reads" and/or "writes" data on CDS. Can be internal or external.
- \$ Central Processing Unit (CPU). The "brain" of the computer, often located in the main unit.
- \$ Colorjet printer. A printer that allows for color printing.
- \$ Compact Disc (CD). Device for storing data.
- \$ Desktop. A large computer, where the CPU sits either on the desk or under it. Not considered to be portable.
- \$ Digital Subscriber Line (DSL). A high speed connection that uses the same wires as the telephone.
- \$ Digital Video Disc (DVD). A device for storing data that can hold more information than a CD.

- \$ Docking station. A stationary device that allows a tablet to function as a desktop computer.
- \$ Dot Matrix Printer. Old, slower, and noisier printer. Rarely used now.
- \$ DVD Player. An imaging device that “reads” and/or “writes” data on a DVD. Can be internal or external.
- \$ Flat screen monitors. Monitors with thin screens: usually only a few inches thick. More costly than CRT monitors, but these are lighter, easier to move, and take up significantly less space.
- \$ Gigabyte (GB). A measure of computer data storage, roughly a billion bytes.
- \$ Graphics card. A card that is inserted into the main unit that determines how detailed video images appear on the monitor (in other words, it determines the resolution of images).
- \$ Handwriting recognition. Technology that allows the computer to convert touchscreen writing into printed words.
- \$ Inkjet printer. A printer that prints in black and white.
- \$ Keyboard. Device that looks like a small typewriter and allows for the input of information. Can be wired or wireless.
- \$ Label printer. A printer designed to print labels for containers and/or folders.
- \$ Laptop. A portable computer. Weight ranges from two-plus pounds to ten pounds.
- \$ Laser printer. A printer that prints high resolution (high quality) papers at faster speeds (more pages per minute).
- \$ Modem. A device that converts digital information to analog. This allows information in the computer to be sent to other locations. The computer on the sending end MODulates is, and the receiving computer DEModulates the analog information back into digital.
- \$ Monitor. Video screen of the computer.
- \$ Mouse. A hand-held device that allows the user to navigate among programs on the monitor screen. Can be wired or wireless.
- \$ Network Card. A card that is inserted into the main unit, which allows the computer to communicate with other computers of the practice. Can be wired or wireless.
- \$ Personal Computer (PC). Most common type of small business computer.
- \$ Printer. A device that transfers information from the computer onto printed documents.
- \$ Processor Speed. The speed at which the “brain” of the computer can move information around and produce results.
- \$ Random Access Memory (RAM). The short term memory of the computer.
- \$ Server. A computer or a device that manages network resources. These include file servers, print servers, and data servers.
- \$ Sound Card. A card that is inserted into the main unit that determines the clarity of sound coming out of the computer.
- \$ Tablet. A portable computer that, in addition to regular input devices, allows touchscreen and handwriting recognition. Weight ranges from three to six pounds.
- \$ Touchscreen monitor. A monitor that can receive input from a stylus (a pen-like device).
- \$ Voice recognition. Technology that allows the computer to input information from spoken commands.

OPTIONS AND ISSUES

Purchasing an Operating System

- \$ There are two major software operating systems used in the veterinary field: Microsoft Windows and MAC OS X (the Apple system). Both can easily handle most veterinary software programs.
- \$ There are other operating systems available, but they are more expensive and generally provide more than is needed by veterinary facilities.
- \$ Microsoft Windows is most widely used. It requires a PC.
- \$ MAC OS X has supporters who are fanatical about its benefits. It requires an Apple computer.

Deciding How Much and What Hardware to Buy

- \$ When first starting out, it is best to start small. Computer hardware technology changes quickly, so buy only computers that are immediately needed.
- \$ The number of computers needed will vary according to the size and projected computer use of the practice.
- \$ Possible computer locations include the reception area, doctor's office, business office, lab/pharmacy, surgery, and treatment areas.
- \$ There are three types of computers to consider: laptops, desktops, and tablets.
- \$ Desktops are the most durable, least expensive, and most commonly used.
- \$ Laptops are smaller, portable, and great for a practice that requires mobility.
- \$ Tablets are just coming onto the market. They have great potential for the future, as they offer touchscreen access and handwriting recognition.
- \$ When purchasing a computer, one option is to buy from a larger company, such as IBM, Dell, HP, or E-machines. Larger companies have a greater chance of remaining viable and can offer better and faster repair work.
- \$ Smaller companies may be less expensive and offer personalized service. If the company goes out of business, however, getting service can be difficult and costly.
- \$ After picking a type of computer, choose a processor. They range from the slower and cheaper ones, such as Celeron and Athlon, to the faster and more expensive Pentium IIIs and IVs. A software company will explain the processor their program requires.
- \$ The majority of practices do not use color printers, as their ink cartridges are more costly. It is customary, however, to have fast printers: either a laser or inkjet in the receptionist area for invoices, another one in the business or doctor's office for reminders and reports, and a possible label printer in the pharmacy.
- \$ Dot matrix printers were the old standard, but have since been almost universally replaced with the newly cheap, faster, and quieter versions.
- \$ After reaching a level of comfort with your system, it might be beneficial to consider adding more computers and/or peripherals.
- \$ One nice extra is a digital camera, which allows doctors to take photographs to be included with the invoice. This might be helpful for teeth, injuries, or skin problems.

Separate Servers

- \$ The server is a computer system's "main brain." Each computer has its own brain, the CPU. When linking computers together, however, it is important to have a priority brain to avoid confusion.
- \$ In a small, two-computer system, it is more convenient for the faster computer with the greater memory to be the server. Either one, however, could be designated as the server.
- \$ As a system grows (as more computers are added), the need for a separate server increases.
- \$ Most software companies will suggest creating a separate server at five or more computers. This will allow the system to process information at a faster rate.

Going Paperless

- \$ Computers provide the option of a paperless practice. All notes, charts, radiographs, and lab reports will be entered into computers, either manually or from lab machines.
- \$ The only limit as to what can be kept in a computer is the amount of digital storage, which can always be easily increased.
- \$ In reality, paper will still be used for invoices, but all medical records can be maintained solely within the computer system.
- \$ The advantages to this is that client records are never misplaced, and more than one computer can access the information at the same time.
- \$ Some practices will have a receptionist print out a paper copy of the client's recent records when they come for an examination.
- \$ Computer malfunction or a power outage could seriously cripple the business. To prevent against this problem, it is vital to use backup devices on a regular basis.

EXAMPLES

- \$ In a small practice, the computer hardware will usually consist of one desktop unit in the reception area, a second in the office that serves both as a doctor's and business office, and a third in the treatment/lab area. A laser printer and one label printer should be located in the receptionist area, and an inkjet printer would be in the combination office.
- \$ In a larger practice, the hardware would be much more extensive. There could be three desktop computers in the receptionist area, and label printers in both the reception area and pharmacy. There is a server in the business office, as well as a laser printer. There is also an alternate color-jet printer for promotions and mailings to quality clients. There are laptops or tablets in each exam room and desktop units scattered about the work areas: Two in treatment, one in the pharmacy, and one at the doctor's station. All computers are connect via a wireless network.

MISCELLANEOUS

Abbreviations

- \$ CD: Compact Disk
- \$ CPU: Central Processing Unit.

- \$ DSL: Digital Subscriber Line.
- \$ DVD: Digital Video Disk.
- \$ GB: Gigabyte.
- \$ PC: Personal Computer.
- \$ RAM: Random Access Memory.

References

- \$ Webopedia. Available at www.pcwebopaedia.com. Accessed July 8, 2004. Dictionary of computer terminology.

Recommended Reading

- \$ The Computers Place. Available at www.computers-place.com. Accessed July 10, 2004. An informational source on computer hardware.

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