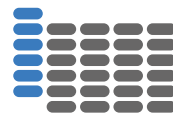


Maintaining your IT system



Berg Kaprow Lewis

Buying the equipment and applications is only the start of your investment in IT.

Throughout the life of any system, the cost of maintaining hardware and software will form a significant part of the total cost of ownership.

But keeping a system running does not always require expensive systems consultants or engineers. As long as you exercise a degree of care, many aspects of maintaining your IT system can be tackled in-house, saving you time and money.

This briefing covers:

- How to start off on the right foot.
- Good habits and preventive maintenance.
- How to tell if there is a problem.
- What to do when something goes wrong.

1 Suppliers and warranties

Planning your maintenance strategy starts before you buy your equipment.

Cheap PCs are a false economy, especially if they are needed to support key applications. Budget PCs often contain components with a short lifespan.

Ensure any new PC purchase is compatible with your other equipment (such as printers). See **Specifying and purchasing IT**.

1.1 If you and your employees are inexperienced with PCs, choose a supplier that offers at least one year's **on-site** maintenance.

- If this is not part of the standard deal, ask

how much on-site cover would cost. If the cost is below 15 per cent of the purchase price, it is probably a good investment.

1.2 If you already have PCs and some experience with them, but have never opened one up to fit new parts, a **return-to-base** maintenance deal may be suitable (except for critical equipment like network servers).

- You will lose the use of faulty equipment for a while, so you may need to use other machines to provide cover. If you have to pay carriage charges, this may make the total cost of return-to-base maintenance as high as an on-site deal.

1.3 If you have employees with **proven**

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experience of simple repairs, paying extra for hardware maintenance cover may not be worthwhile.

- Check that opening up your PCs to add or replace components will not invalidate the warranty — and do not overrate your employees' capabilities.
- Once the standard warranty has expired, or if software or network problems occur, a good relationship with a local repairer may be worth more than extended hardware cover from the manufacturer.

1.4 Pick a supplier that will give you the original **CD-ROM disks** of all your pre-installed software, and the manuals and licences.

1.5 If the supplier is not setting up your new PC system for you, **check the delivery** (hardware, software, cables and manuals) against the delivery note and your order.

- Do not continue installing equipment until any missing items have been supplied.
- Keep packaging materials. You might have to return equipment for repair or replacement under warranty.

1.6 A PC is most likely to demonstrate a fault when it is first **powered up**.

- The most common cause of failure is components coming adrift during transit.
- If your new PC will not start, check the external cables and connections and try switching on again.
- If the problem persists, do not open the machine. Contact the supplier, who will usually send an immediate replacement.

2 The office environment

The environment can have a dramatic effect on the performance and reliability of IT systems.

But you can avoid most of the pitfalls simply by using a little common sense.

2.1 Do not place equipment near **radiators, water or dust**.

2.2 All cables should be as **short as possible**.

- Use cable ties for a tidy and safe office.
- Connectors that are pulled loose are the most common cause of hardware failure. Check that all connector screws are tight, but not over-tightened.
- The connectors linking PCs to a network

are especially important. In some circumstances, a bad connection here could cause your whole network to fail.

3 Looking after your data

Looking after your data is one of your highest priorities.

The hard drive in any PC will gradually fill up with data and become cluttered with unwanted or unnecessary files. It will then slow down, as it struggles to find data on the disk.

Your operating system (usually Windows) will have utilities to look after the basic housekeeping required to keep your hard disk tidy. Specialised software is also available.

3.1 If you run short of hard disk space, start by **archiving and deleting** data files you no longer need immediate access to.

- Files relating to completed projects can be archived using floppy disks or CD-ROMs and then deleted from your hard disk.
- Empty your Windows recycle bin if you are sure you no longer need the files you have deleted.

See Filing and records management.

3.2 Hard disks slow down dramatically if the data stored on them is too **fragmented**.

- You should run a defragmentation utility every month. This re-packs the data on the hard disk to make it more compact and efficient.

3.3 The hard disk should be **scanned** for errors once a month, using the ScanDisk utility.

- ScanDisk can usually fix any damaged files it finds, unless they are severely corrupted.
- Any files ScanDisk cannot fix will have to be restored from back-up copies.

3.4 Buy good quality **branded tapes and pre-formatted disks**. If you are tempted to cut corners, think of the value of your data.

- Using pre-formatted floppies rules out the risk of accidentally formatting a disk containing important data.

4 Identifying problems

When you have problems with a PC, it is often hard to pinpoint the actual cause. It may be

“Few small businesses take backing-up seriously enough, until they have had at least one close shave. If you stop and think what losing all the data on your server could do to your business, you soon realise it is an absolutely vital issue.”

Chris Garcia,
CNR

“The basic mistakes can be the most costly. For example, if you do not have a full-blown uninterruptible power supply unit, at least use surge protection plugs. Otherwise, you risk losing both machines and data if something goes wrong.”

Mark Kerr,
London ASPECT

difficult to know whether it is a hardware fault or a software-related problem.

4.1 Many faults occur **intermittently** or completely at random. These are often the most difficult to cure.

- If the fault can be replicated, identify precisely what triggers the problem.

4.2 Hardware faults usually affect **all the applications** you use. If a fault only appears with one application program, it is probably a software problem.

Basic maintenance

Modern PCs are generally reliable, but a little regular preventive maintenance will increase your chances of trouble-free performance.

A It is best to **leave systems on** all day, as the surge of power as a PC is switched on puts stress on the various electronic components.

- Older computers should be switched off if the office is unmanned overnight.
- Modern PCs have 'sleep mode' features and will last longer if left running.
- A PC is most likely to fail when it is being powered up after a long period and the temperature is too low.

B PCs use fans for cooling, so you should check that the air **intake vents** are not clogged with dust.

C **Keyboards and mice** can be difficult and time-consuming to clean.

- If drinks get spilt on a keyboard, replacement (about £20) will be more cost-effective than repair.
- Broken mice may also be uneconomical to repair. But a 'sticky' mouse can often be revived by taking out the ball and scraping the roller contacts clean.

D **Printers** should be kept free from dust, which can cause paper jams.

- Keep the paper pick-up rollers clean.
- Spillages of laser toner should never be cleaned up with a vacuum cleaner, as ultrafine toner particles can pass through the filters and burn out the motor.
- Laser toner sets when heated, so wash hands and clothes in cold water only.
- If an inkjet printer suffers a leak from an ink cartridge, it should be professionally cleaned and repaired.

4.3 There are **diagnostic tools** you can use to test hardware, such as Norton Utilities.

4.4 **Unusual noises** coming from the PC usually indicate hardware faults.

- Intermittent whirring noises can be caused by faulty fans — common on budget PCs. Make a back-up of all your important data immediately.
- Whining, knocking noises, or a recurrent "ching ching" sound, may mean a hard disk is about to fail, or has failed already. If this is the problem, it may already be too late to start backing up your data.

4.5 If you suspect a software problem, run the **same software** on another PC which you know is working properly. See if other users are experiencing the same difficulties.

- If necessary, re-install the software and see if that cures the problem.
- Software that starts behaving strangely may be doing so as a result of a virus attack.

4.6 A failing **monitor** sometimes produces sudden changes in the picture on the screen. It may shrink down and then go back to its original size, or wobble and flicker — or you may hear strange noises.

- Do not assume a monitor has failed just because you cannot see an image on the screen. Check to see if the brightness or contrast has been turned down.

4.7 If the output from a **laser or inkjet printer** is streaky, patchy or missing colours, the problem may just be due to an empty or dried-out cartridge.

- Try fitting new cartridges.
- If this does not fix the problem with an old budget-priced inkjet, replace the whole printer. It will be much cheaper than repair.

5 Tackling hardware problems

Today's PCs are highly modular designs, with modules designed for replacement, rather than repair. With care, you should be able to replace many of the common components inside a PC (but see **1.3**, about invalidating warranties).

5.1 Many **major components** — floppy disk drives, sound cards, network adapters, and so on — are relatively easy to replace.

5.2 Order an **exact replacement** part from the supplier.

“Don't underestimate the difference adding extra RAM can make to a PC's performance. It really is worth trying, before you spend hundreds on a new machine.”
Steve Newton,
Galatea Training Services

- If a part is obsolete and unavailable, look for equivalent or upgraded replacements. Do not buy without a definite assurance that the new part will be compatible with your system.
- 5.3** If a **hard disk** fails, replacing it is a job for an expert. Remedial work has to be done on-site, so you will need outside help.
- If you need more hard disk space, you may be able to add an extra hard drive. This is often easier than replacing an existing unit.
- 5.4** The principal ways to improve a PC's **performance** are to upgrade the memory (RAM) and the central processor (CPU).
- Adding more RAM can have a dramatic effect on system speed and should usually be your first step.
 - Upgrading the processor can be done if your PC's motherboard is capable of supporting a faster chip.
 - These upgrades are usually best done by an engineer. RAM and CPU components are easily damaged by static, and configuring business systems can be complicated.
 - If upgrading both your RAM and processor, it may be more economical in the long run to replace the whole PC.

6 Troubleshooting software

- 6.1** Start by trying to **replicate** the problem.
- Some software faults are caused by a particular combination of programs. You may encounter a one-off problem purely by chance and never experience it again.
- 6.2** If you can replicate a fault, see if your application's own **online help** section offers a method of working round the problem.
- 6.3** Answers to common problems are often available on the **Internet**.
- Look on the software manufacturer's website.
 - Most packages have related newsgroups, where users swap tips and advice. You can search for these newsgroups at www.google.com/groups.
- 6.4** Software developers' websites may also carry **updated versions** of applications software, or special 'patches' or 'fixes' you can download to deal with bugs.

- Only add a patch if you are suffering from the problem it was designed to fix.

6.5 Try to keep your software **up to date** unless there are specific reasons why you need to stick with an older version.

- Hold back a few weeks before installing a new software update. This gives others time to find and iron out any major bugs.

6.6 To remove an application, always use 'uninstall' or the option to 'add/remove' programs offered in the Control Panel. This should remove all traces of an application.

- Do not just delete the folder where the software is stored, as this can cause problems by leaving files littered around in several different folders.

7 Viruses and Internet security

Using email and the Internet can open your system to external threats. You should take precautions.

7.1 Install **anti-virus software** on all your PCs.

Respected products include Symantec, Sophos and McAfee.

7.2 **Minimise the risk** of viruses entering your system.

- Always buy your software from reputable distributors.
- Do not allow your employees to load any unauthorised software or data.
- Ban employees from opening any attachments to unexpected emails, whatever their apparent source.
- Make sure every disk from outside your company is checked for potential viruses.

7.3 If you have a broadband 'always on' Internet connection, **consider installing a firewall**.

- Firewalls prevent outside users gaining access to, or hacking into, your system.

7.4 Email and Internet **filters** can prevent you from wasting computer and other resources.

- Anti-spam software blocks unsolicited junk mail from your system.
- Internet content filters restrict employees' access to inappropriate or time-wasting websites.

Expert contributors

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Further help

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