

California Computer Care

News,
Views,
Tips and
Cool Techniques
for CCC Members

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We
speak
Geek,
so you
don't
have to.

Surge Suppression

Electronic equipment depends on a consistent electricity supply. But, the vagaries of the real world prevent consistency where it is most needed. PG&E tries as hard as practical to produce electricity that is consistent and reliable in voltage and power, but they can't prevent cars from felling power poles, storms from arcing wires or, hardest of all, re-write the laws of physics.

Computers are the most sensitive of all electronic devices. We need to be our Mac's last defense against electrical damage.

There are three major sources of danger:

- 1) **Power outages.** From tripping over the power cord to natural disasters, your Mac sees them all the same. This is unlikely to cause physical damage to your Mac, but damage to your software and data is almost guaranteed. Such damage is usually not critical and goes unnoticed.
- 2) **Power surges.** Electrical voltage should be in the 105–120 volt range. However, voltage can surge as much as hundreds of volts for a fraction of a second. The result can range from data loss, to slow deterioration, to complete destruction of your Mac's hardware and software.
- 3) **Undervolt.** When electrical supply voltage is less than 100 volts, your Mac's hardware is at great risk. Overheating and component failure are unavoidable if prolonged. Your software and data can also be harmed. Severe undervolt will cause a dimming of room lights (if you see this happening, take action immediately). Most undervolts are subtle and unnoticed, but no less damaging.

You have the power to prevent power problems. To do so, you may need to change some hardware and some personal habits.

Of the three danger sources, **power outages** are the most obvious. We've all experience them, but seldom suffer any lasting damage. When a power outage occurs, switch all of your computer components to *off* (this is good for your TV and other electrical appliances, too). You do not want your monitor, printer, etc. to be on when power is restored as that is always in

the form of a huge electrical surge. If you have a good quality surge suppressor (more about this below), it is not necessary to unplug your computer and accessories during a power outage.

However, if you normally experience power outages more than one or two times a year, you need to protect against them. The best tool for this is a UPS (Uninterruptable Power Supply). See the Undervolt section below.

Power surges are the most common danger but are invisible to you. Power surges can burn up delicate computer components, make memory unstable and damage data and software. Power surges are responsible for most computer instability and mysterious crashes. Surge suppressors are crucial for stopping power surges.

A surge suppressor looks like a glorified, multi-outlet, extension cord. Sadly, most surge suppressors are exactly that and offer no protection. Good surge suppressors can be found in the same places as worthless ones. A good indicator of quality is price. Anything cheaper than \$25.00 is most likely junk. Good brand names are *APC*, *Belkin*, *Kensington* and *PanaMax*. Look for models that include warning lights to let you know when the surge suppressor is working properly and if your home or office's electrical wiring is adequate. Properly grounded electrical outlets are essential, without them, your surge suppressor cannot protect your Mac without destroying itself.

Undervolt is common in rural areas and older buildings with sub-standard wiring. Tell-tale signs are dimming electrical lights and monitors or TVs that show a smaller than usual picture on screen. Severe undervolts are commonly referred to as "brownouts." An electrician can check to see if you have the problem.

Correcting this, short of rewiring your building or, perhaps, the whole neighborhood, requires a UPS (Uninterruptible Power Supply). A UPS is a high quality surge suppressor with a large battery inside. The battery charges itself from your electrical wall outlet, and your Mac runs off of the battery. In this way the UPS isolates your Mac from the building's electrical system and supplies consistent power.

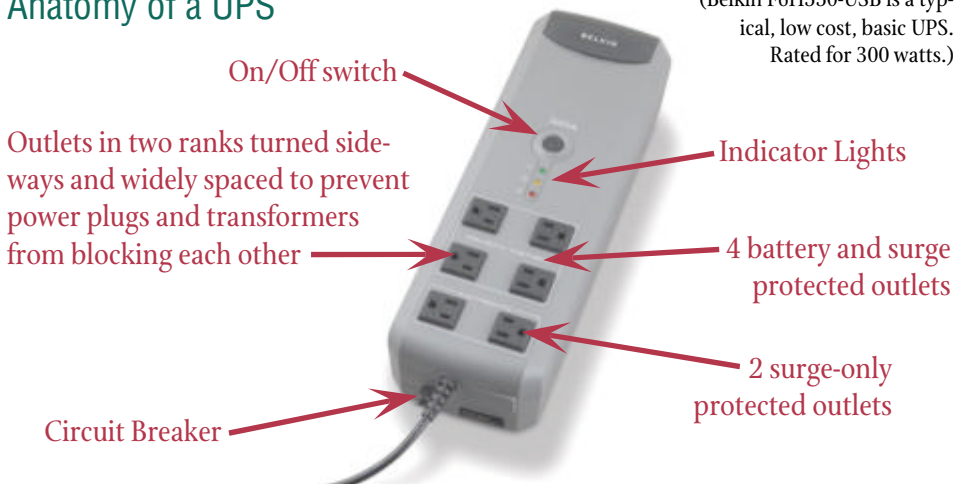
Most UPSes can also provide up to fifteen minutes of electricity during a power outage. This gives you time to save your files and safely shut down your Mac. Most modern Macs and many UPSes can be connected with a USB cable. This allows the UPS to shut down your Mac safely during a power outage if you aren't around to do so.

Buying a UPS is a little tricky. It is necessary to match the UPS with your Mac's electrical requirements. To pick a UPS, figure out what components you want to protect (perhaps Mac, monitor, cable modem and printer). Add up the power used by each component (you will usually find this in the component's documentation and/or printed on a plate attached to the component, often near the power connection). The power rating is usually given in watts. Now that you know the total power necessary, choose a UPS that will provide

that much power plus another 25%. For example, an iMac G5 is rated for 180 watts, an average ink jet printer 30 watts, a cable or DSL modem 12 watts. Added up that equals about 220 watts. Fudge in another 25% (55 watts) for a total of 275 watts. A UPS rated for 275 watts or more will do the job. Good brands are *APC* and *Belkin*. Prices range from \$60.00 up. If your budget allows, a higher wattage will mean that you will get longer run times during power outages or the ability to protect more accessories (but not both!).

It is very important that you protect your Mac and accessories. Everyone must have a good surge suppressor. But, if you have electrical supply problems, a UPS is great insurance for peace of mind. And, if you would like a check of your electrical requirements, potential problems and level of protection, that is just a *California Computer Care* service call away.

Anatomy of a UPS



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Like an
auto club
for your
computer.

February Tip

File compression (using software to reduce a file's hard drive space-filling size) was once a big issue for computer users. When hard drives were tiny and email was delivered over dial-up connections, it was important to compress files to save space and transmission time.

Today, these issues are mostly unimportant. However, file compression can still be useful to keep your email attachments from becoming corrupted during delivery.

Mac OS X 10.3 and 10.4 have file compression built-in. To compress a file, click once on the file and then choose *Create archive of...* from the *File* menu. A new icon will appear named with the original name plus *.zip*.

Compressing your email attachment serves two purposes. One, the file reduces in size by as much as half for faster transmission. Two, this protects the file like a stainless steel envelope would protect a letter sent through the post office.

There is a downside. The received attachment must be decompressed before it can be read or viewed. All computers, for at least the last five years, come with decompression software built-in, so this should be OK.