



HOW IS YOUR UPS*?

* UNINTERRUPTIBLE POWER SUPPLY

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AFTER SEVERAL RECENT ISSUES WITH FAILED UPS', WE WANT YOU TO BE AWARE OF THE IMPORTANCE OF THE UPS ON YOUR SERVER AND THE NEED FOR PERIODIC INSPECTION AND TESTING.

Anyone who has ever had a computer toasted by a lightning strike, or who has lost a morning's work to a sudden blackout, knows that all too well. But even with the increased awareness of the need to protect computers from power problems, many people still believe their vulnerability is limited to the occasional storm or utility outage. You are responsible for the health and safe operation of your equipment.

FINAL DATA FROM A MASSIVE FIVE-YEAR SURVEY OF POWER QUALITY IN NORTH AMERICA CONDUCTED BY THE NATIONAL POWER LABORATORY INDICATES THAT THE AVERAGE COMPUTER SITE IS SUBJECT TO 289 DISRUPTIVE OR DESTRUCTIVE POWER DISTURBANCES PER YEAR.

From keyboard lockups and hardware degradation, to data loss or burnt motherboards the effects of power problems are numerous. Workstations or non-critical equipment may be fine with a Level 3 UPS; however it is recommended for Servers and other critical equipment to use a Level 9 UPS with a minimum of acceptability of a Level 5 UPS.



WHAT HAPPENS DURING A POWER OUTAGE?

When a significant voltage difference develops between two devices, the difference will "equalize" as an electrical impulse travels on the cable. This voltage difference can result in a scrambling of the data carried on the cable. If the voltage potential is large enough, it can even damage I/O cards (printer ports, keyboard ports, mouse ports).

WHERE POSSIBLE, KEEPS THE VOLTAGE DIFFERENTIAL FROM DEVELOPING BY PLUGGING ALL DEVICES INTO A SINGLE GROUNDING POINT, SUCH AS A LEVEL 5 OR LEVEL 9 UPS. THE EXCEPTION IS LASER PRINTERS THAT SHOULD BE PLUGGED INTO THEIR OWN DEDICATED UPS BECAUSE OF THEIR CURRENT DRAW.

Another common sign of power problems is the tendency of Servers or Workstations to freeze. While many factors can cause this sort of lockup, random system crashes are often a sign of low voltage sags or sub cycle power failures that have sapped electronic components of the voltage they need to operate properly.

Electronic chips operate on very low voltages, typically just 5 volts. DC. Manufacturers' tolerances for electronic circuit voltage are fairly tight. When voltage drops below 4.75 volts, RAM errors start to increase. If low-voltage sags or sub cycle outages starve the computer's power supply, it may be unable to maintain the proper electronic voltage, and the system crashes.

WHEN AN I/O CARD, MOTHERBOARD, POWER SUPPLY, OR OTHER VITAL COMPONENT SUDDENLY FAILS FOR NO APPARENT REASON, THE FAILURE IS OFTEN BLAMED ON MANUFACTURING DEFECT. IN REALITY, THE QUALITY CONTROL AND BURN PROGRAMS OF MOST REPUTABLE MANUFACTURERS MAKE BUILT-IN DEFECTS A RARITY. THE REAL CAUSE IS MORE LIKELY TO BE LATENT CHIP DAMAGE CAUSED BY A HIGH VOLTAGE SPIKE, LINE NOISE OR HARMONIC DISTORTION.



SURGE PROTECTORS AND SUPPRESSORS

You say you've protected your Server with a surge protector and you are still getting component failure? Surge protectors may protect against spikes, but do nothing for line noise and harmonic distortion. It is possible that the surge device itself has become the victim of repeated lightning strikes, especially if it is one of the cheap hardware store varieties. Be sure that all network devices are protected by high-quality, multi-stage surge suppressors, which carry a UL 1449 rating; many Level 3, 5, and 9 UPS devices carry this rating.

Sudden power loss can be especially dangerous to hard drives. If power fails during a read/write operation, the heads can drop precipitously onto the disc. This power loss can damage the delicate magnetic medium and create bad sectors. If this damage occurs in the wrong place, disk boot failures may be the end result. Use a quality UPS system to provide enough backup power to allow you to do an orderly shutdown of the system.

Many computer users have experienced the horror of turning on their computers and finding out it's suffering from amnesia. It no longer remembers how many drives it has, what kind of monitor it's supporting, or how much memory is on its motherboard. Again, bad power may be the culprit.

Surge suppressors and many UPS systems are now available that include phone line and network cable jacks. These devices can stop many of the impulses that travel on any electrical lines. You simply plug the cable into one jack and run another cable from the second jack to the wall connection. Give one of these devices a try if aborted data transfers are a recurrent problem. Be certain the device you select is designed with a single grounding point for both the electrical, modem or data line connections.

SELECT THE RIGHT UPS LEVEL

One additional way that bad power can affect disk drives is to interfere with the rotation speed of the disks themselves. Proper drive access depends on the correct rotation rate. Under voltages can cause the drive to try to read or write data in the wrong sector. Lost or garbled data or actual drive failure can result.



Level 3 UPSs are standby or offline designs that are intended to provide a low price solution for power failures, power sags and power surges. Utility power is provided during normal operation. Utility voltage and frequency changes are not regulated by the level 3 UPS and will pass through to the equipment. When voltage or frequency changes become too severe, the Level 3 UPS inverter converts DC battery power to AC power to run the equipment.

Level 5 UPSs offer line-interactive technology and provide basic power protection at mid-range prices. In addition to protection against power failures, power sags and power surges, Level 5 UPSs protect against under voltage and overvoltage. This design offers low-grade voltage regulation by "bumping" the utility voltage up or down before passing it through to your electronic equipment. During the UPS voltage changes, the Level 5 uses the battery for regulation.

Level 9 UPSs are designed to provide complete power protection. These Online UPSs protect against all types of power problems by continuously using the inverter to create 100% new, clean, regulated AC power for your systems. Equipment is isolated from all types of power problems when supplied by an Online double conversion UPS.

HOW TO MAKE YOUR UPS BATTERIES LAST?

Most UPS batteries should last three to six years. There are many factors which affect battery life including environment and the number of discharges. Below are some guidelines to ensure optimum life expectancy:

1. Make sure that you keep your UPS in a cool, dry location with plenty of ventilation. Ideally, the temperature where your UPS is kept should not exceed 75°F (24°C). Also, for ventilation purposes leave roughly one to two inches on each side for proper airflow.



2. The optimum operating temperature for a lead-acid battery is 25 Deg C (77 Deg F). Elevated temperatures reduce longevity. As a guideline, every 8 Deg C (15 Deg F) rise in temperature will cut the battery life in half.

3. Do not store UPS batteries for extended periods of time. New batteries can be stored for 6 to 12 months from date of purchase. After this period, the battery should be used or it will lose a great deal of its charge. It is not advisable to store batteries that have already been in use.

4. Do not exceed 80 percent of a UPS unit's rated capacity due to the reduction in run time. When you increase your load, your runtime lessens. In the event of a power failure, a UPS loaded to full capacity will drain and discharge it's battery quickly and will lessen the life expectancy.

Keep these factors in mind when operating the hardware at your office or at your home and you will enjoy your better performing equipment longer. If you have any questions about additional hardware issues feel free to call us at WAC Consulting Group a call at 508-393-7731.