

## Re: back-up power supply

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In article <ca3e516b.0403301642.3079c0d4@posting.google.com>, curious <heyimjustcurious@yahoo.com> wrote:

:I was thinking to get a back-up power supply for my PC and saw a book :about it (at Fry's). I read a bit to know there are mainly 3 types.

That is correct, there are three main types (there's a fourth type that gets used less often.)

:I would appreciate any suggestion on which type and in fact which :brand/model to buy as I am pressed with time to do research on that.

You first must define which dangers you need to protect your PC against and for how long.

The least expensive type of UPS is 'passive'. The mains electricity flows directly through it, getting filtered a -bit-. When the power drops, the equivalent of a solenoid acts and puts the battery into the circuit; the battery goes back out again when the power returns. It takes time for the battery to go online. As a generality, most modern desktop PCs have capacitors big enough to ride over the time required to switch in the battery... provided the UPS isn't being overloaded, provided a bunch of other things don't go wrong, and provided you are actually using a desktop machine with a power supply with meaningfully big capacitors. Could be a problem for laptops, in other words. Could be a problem if you plug your monitor and printer and speakers and everything else into your "really only big enough for the PC itself" UPS. [A good-sized monitor uses 2/3 of the power of the PC itself, so size the UPS appropriately!!!]

One issue with passive UPSs is that the electricity is not flowing through the batteries, and so the batteries tend to drain away. And if they are allowed to drain away for significant amounts of time, then if they are the typical lead-acid batteries then they lose their capacity to store electricity. If you buy a cheap UPS and not much exciting happens with the electricity source, then in 1-3 years you are almost certain to wake up to the UPS beeping every drives-me-insane number of seconds to tell you your batteries are dead beyond repair and must be replaced completely, at significant cost.

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Passive UPSs are usually NOT rated for significant surge filtering. The components they use are usually far too small and too slow to stop a big surge. The lightning just crosses the miniscule air-gap and keeps going.

Let me emphasize: If surge protection is a high priority in selecting your UPS, then do NOT get a typical 'passive' UPS!!!

The second major kind of UPS is 'line-interactive'. The electricity does keep the batteries trickle-powered for an 'line-interactive' UPS, and there's a single-acting convertor that helps make for cleaner power than the 'passive' UPS case. 'Line-interactive' UPS's kick into action —much— faster than 'passive' UPS's, but [as I recall] possibly with a bit of a surge as they do so. I did read about 'line-interactive' UPS's, but I must admit that it was not clear to me why one would not just continue on to the next and better kind, unless it be for budget reasons. But it's better to have a line-interactive than a passive, if you can afford the line-interactive.

The third major kind of UPS is sometimes called 'double-conversion' but more commonly called 'online' (or "true online"). They have a double convertor — the AC is rectified, put into the battery, and the battery power is rectified going out again. There's always power going through the batteries, which can allow them to last a lot longer than the 'passive', particularly if there is smart recharging. The surge resistance and other kinds of filtering on online UPSs is usually orders of magnitude better than for passive UPS. On the other hand, online UPS's are often orders of magnitude more expensive.

If you have a 'data centre' then don't consider less than a line-interactive facility. And make sure you allow lots of spare supply for the expansion that is going to happen (and for the fact that the vendors themselves often miscalculate the necessary loads); and make sure your system is going to keep your equipment up for as long as is going to be reasonably needed. If you are seriously thinking in terms of kilowatts of backups, or in terms of keeping equipment running for hours, then Research Research Research!

If you have equipment that doesn't run at 108–120V, or which doesn't take a standard US/Canadian 15 amp three-prong plug, then check all the specs for all of the equipment \*several\* times, and then have someone else check it twice, and then read the specs backwards just in case you missed something in other cross-checks — because the differences between various models can be very hard to find and can end up being really obscure. For example, we were forced to disqualify one major vendor just because they were unable to supply a \*non\*-locking 20-amp connector in one of their distribution panels — they just kept quoting the \*locking\* 20-amp connector every time we asked, and we had to push the issue with them firmly to find out that it wasn't just a careless typo: that they just couldn't provide that one kind of connector we needed.

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To the best of my knowledge, the three UPS manufacturers that have the largest North American market share, are APC, Powerware, and Liebert.

APC does a --lot-- of mass-market UPS's, and also has some very quality products suitable for E911 centres, operating rooms, and such -- places where you want redundancy on your redundancy. My observations would tend to lead me to believe that there are multiple divisions within APC, and that the "put redundancy on redundancy" engineers are not actively involved in planning the mass-market UPSs.

Powerware has a noticeably smaller product line than APC, and, their prices sometimes appear suspiciously inexpensive compared to APC's prices. If you compare Powerware side by side with APC, you may end up with a really nagging feeling that you are missing something important as it can be very difficult to find significant differences... if they do the same thing, there must be a catch behind them being so much less expensive, right? The differences --are-- there, they just take time to dig out: they are in matters such as whether the UPS has a 12 year MTBF or a 20 year MTBF (Mean time between failure), and whether the [hot swappable] logic boards have dual control circuits in case of failure or just single control circuits. The fine fine details of the APC specs in their high end systems do come out better, so if you need to plan in the once-in-50-year scenarios then look very very hard at what you get. But if you only need once-in-10-year quality, then powerware might prove very interesting. And if you happen to need true online UPS's in the fractional-kilowatt playing field (from 700 watts up) then powerware makes nearly the only ones I could find.

Liebert... well, Liebert probably doesn't want your business. Not unless you are building a new building or doing major retrofits. If you're in the game of worrying about how to cool and make fire-safe the new IBM mainframe or supercomputer you're putting in that's going to take half a warehouse floor and punt you a few levels up in the corporate--electricity bulk--discount rates, then you'd better talk to Liebert. Perhaps think of them as being the equivalent of truck dealers...

Just as long as you also remember to think of the \$20 UPS you see in the local electronics store as not being much better than a toy radio-controlled model police-car when it comes to really \*protecting\* your PC against serious systemic electricity problems.

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Positrons can be described as electrons traveling backwards in time. Certainly many Usenet arguments about the past become clearer when they are re-interpreted as uncertainty about the future.

-- Walter Roberson