In this series, we are looking at how physical security can support the security needs of network operations centers (NOCs) and data centers (DCs). Today's brief note is a continuation of a sub-series on electrical power and related topics.

If you use only a portable computer, you already have a UPS: your batteries. With three batteries for my portable, I can count on around seven hours of continuous operation. In my office, though, I don't need to worry about that limit: I also have a 7 KVA electrical generator that supplies my house and office. Now, you have to understand that this is not a general recommendation for everybody's home office; I live out in farmland north of Montpelier, Vermont, and we can have power outages lasting days when the ice breaks the power lines. Worse still, we have a 130-gallon tropical fish tank that cannot fall below 75 F without starting to kill our fish. The $1500 generator and the $1,000 wiring job to put in a transfer switch just made sense for us. More to the point for this article, I definitely can run the portable computer's power transformer from the generator power without problem.

For larger, more critical applications, you should evaluate large-scale UPSs which can be hooked into your office or building electrical system. Systems for loads ranging into the hundreds of KVA can cost from $2,000 up into the $100,000 range. Some units include gasoline or diesel generators and heavy-duty flywheels or large isolation transformers to smooth out the rough waveform of the generators' output.

Never run electronic equipment directly from generators without checking the power quality carefully. If you have the gear in-house, you can check power quality directly with the appropriate power-line monitors. Otherwise, see if your friendly neighborhood computer supplier has a power-line monitor they use for site qualification studies. When I worked for Hewlett Packard in the early 1980s, we would routinely install a monitor that printed out reports on the fluctuations in power to determine if we would allow our precious equipment to be installed without an external power conditioner. The reason: long experience had taught HP that bad power equals increased repair calls B and with a fixed-cost service contract, you can understand how seriously we took this kind of environmental report card.

Ordinary household generators of the kind sold in hardware stores for your country cabin can destroy your computer equipment within seconds. In my case, I discovered that the household generator I use has such a jagged (sawtooth) waveform that it cannot be used to supply my UPS even through the power conditioner. I just shut down my system once the batteries in the UPS approach the end of their storage capacity.

The manufacturer explained that they have had trouble hooking domestic generators up to their equipment unless the generator is running at no more than one-third its rated capacity. In other
words, in order to use their equipment, we are expected to buy a generator three times larger than we would normally expect to need. I was not pleased, but I didn't replace my generator, either.

Keep these problems in mind if you are shopping for a generator and avoid the hassles of trying to hook up incompatible devices.

Next time, some advice about protecting the electrical equipment itself.

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