Physical Security:
Electricity (7)

by M. E. Kabay, PhD, CISSP
Security Leader
INFOSEC Group
AtomicTangerine, Inc.

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 the last in a sub-series on electrical power and related topics.

I'm sure some of you recall my cryptic comment last time about stopping an accidental electrocution. No, this isn't a reference to *The Green Mile* or a political polemic about capital punishment. It's about what you would do in case one of your colleagues touches a live 120V wire and their hand clenches rigidly onto the power source?

One hopes that there would be an easy way to cut the power: that's one of the purposes of the panic button we discussed in the last contribution to this sub-series.

But if someone were in the process of being electrocuted in your computer room and for some reason you didn't have a panic button, what would you use to move them off the live wires? You're supposed to use a non-conductor such as wood or plastic. Some data centers have a wooden cane for this purpose hung on the wall along with fire extinguishers and other emergency equipment. Don't forget to train your staff, though, or the cane will simply sit on the wall while several people electrocute each other in turn. And issue a firm injunction against all Charlie Chaplin imitations during working hours.

If for some reason you want to shut off your computer equipment automatically or to shutdown and start it up remotely, you can install inexpensive switches to do both. There are switches with serial ports that allow a computer to send a signal which will power down all systems on the switch. Thus your system could shut itself off at the end of its nighttime processing.

Contrariwise, there are switches that sit on the phone line; when they sense a modem or FAX signal, they can turn on the power to whatever equipment you connect to them. For those people who insist on powering off their equipment overnight, some switches can even be programmed with a timer so that your system can be up and running in the morning when you arrive at work.

However, it is my understanding that shutting off the power to computer equipment is not recommended unless you intend to leave it off for an unusual length of time. The way it was explained to me by an electrical engineer is that the repeated thermal contractions and expansions caused by powering off computer systems actually causes more harm than simply leaving everything on standby. One of the consequences of the shrink/expand cycles seems to be that improperly-installed chips with cold-solder joints can actually work themselves loose enough to start causing intermittent problems. This advice was bolstered by a study (to which I alluded in an earlier article in this series) in a large firm with several thousand PCs that were divided into always-on and shut-off-at-night groups. The study supposedly showed that powering down at
night and powering up in the morning was correlated with increased hardware problems.

Unfortunately, I have lost the reference to this study and, despite a serious effort to locate information in my databases and on the Web, am unable to find documentation that supports these long-standing beliefs of mine. Do any readers out there have some published reference material bearing on the advisability of powering off versus staying on? If so, please write to me and I'll follow up with another column reporting your findings.

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Mich Kabay can be reached by e-mail at <mkabay@atomictangerine.com>. He invites inquiries about a wide range of information security courses he would be delighted to deliver to your employees at your site and at your convenience.

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