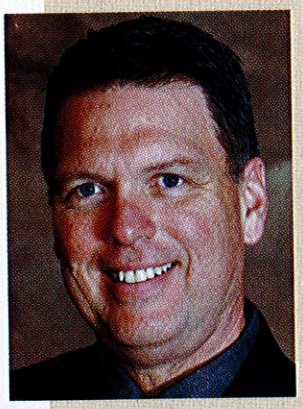
# New Standard Boosts PoE

By Steve Bowcutt

Power over Ethernet (PoE) is being widely advertised as a panacea for access control system users. Certainly, we have all looked forward to the day when a single network drop at the door will replace the multitude of cables currently needed for card reader communications, requests to exit, door position and lock power.



The primary objective of any PoE system is to reduce costs. Stringing wire throughout a building for a proprietary access control network is often the most expensive part of the total system. If any system commonly found in today's modern building needs an alternative to standard AC power, it is the access control system.

A basic PoE system will consist of powered devices (PD) and power sourcing equipment (PSE). A typical example of a PD is PCSC's door interface module, which distributes power to the card reader, the locking mechanism and request-to-exit (REX) device. A typical example of PSE is a PoE switch.

## RELEVANT STANDARDS

Since 2003 the applicable IEEE standard for PoE has been P802.3af. This standard permits use of Cat-3 cable, but limits power per port to a maximum of 12.95 watts. As PoE has become more popular, the power limitation of this standard has stifled device manufacturers' ability to meet marketplace demands.

> The new standard nearly doubles the power from the older AF standard.

The new PoE Plus standard (IEEE P802.3at, also known as Hi PoE) is nearing completion and is expected to be ratified soon. Draft 3.0 of the new standard, dated March 2008, nearly doubles the power from the AF standard. However, the standard will require the use of Cat-5 (or better) cable. The eight wires of Cat-5 cable versus the four of Cat-3 allow more power to be transmitted. The AT standard also requires PoE Plus equipment to be compatible with existing AF equipment.

Table 1 shows power requirements for PDs vary according to the device type, manufacturer, load, cable length and other factors. PCSC's door interface module, for example,

*continued on page 34*

**Table 1: Power Required at the Door**

| Powered Device at the Door | Required Power |
|---|---|
| Door interface module | 2.4 watts |
| Reader | 3 watts |
| Lock | 6 watts |
| REX device | 1 watts |
| Total power requirment | 12.4 watts |

**Table 2: Powered Device Classification**

| PD Classification | Power Available for the PD |
|---|---|
| "Default, Type 1" | 0.44-12.95 watts |
| Type 1 | 0.44-3.84 watts |
| Type 1 | 3.84-6.49 watts |
| Type 1 | 6.49-12.95 watts |
| Type 2 | 12.95-25.5 watts |

requires 200 mA at 12 vdc or 2.4 watts. A typical door locking mechanism may require 500 mA at 12 vdc or 6 watts. A REX sensor may require another watt. A card reader may require 3 watts. Even without allowing for environmental factors and cable length, a fully loaded access control system can easily start to approach the upper limit of the older AF standard.

Table 2 shows the powered device classification defined in P802.3at. Minimum power available for PDs, factoring in cable length and environmental factors, is shown.

Type 1 PDs, or IEEE P802.3af devices, have a maximum wattage requirement of 12.95W. Type 2, or IEEE P802.3at devices, have a maximum wattage requirement of up to 25.5 watts.

PoE is quickly becoming a viable alternative for access control system designs. Well-designed PoE-based access control systems will comply with the new IEEE P802.3at standard by incorporating Cat-5 or better cable and Hi PoE power availability; consist of PDs that have been designed and tested to meet the PoE Plus standard; and incorporate power back-up systems that keep the access control functioning during a power failure.

The long awaited panacea for access control systems may very well be a reality given the new, soon-to-be-ratified, IEEE P802.3 at PoE specification. Be careful when looking through the marketing hype to identify those access control system and PoE device manufacturers that understand and conform to the developing industry standards.

*Steve Bowcutt (sbowcut@1pcsc.com) is business development manager at PCSC Inc.*