PoE Optimizes Security Systems
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Power-over-Ethernet (PoE) technology is poised to revolutionize security systems design with its innovative, efficient, cost-effective, interoperable, and easily upgradable power solutions. PoE allows power and data to be carried over a single Ethernet cable and was initially employed for VoIP phones to enable all the phones to work even when the power went out. With the ratification of the higher power standard IEEE802.3at, also known as PoE Plus, and the new Ultra-PoE, the technology is now the smartest solution for powering sophisticated surveillance cameras equipped with features like tilt and zoom and on-board heaters and illuminators, while also providing the user with the opportunity to converge all necessary security systems on the same network for ultimate security coverage and management. Additionally, PoE fundamentally eliminates the need for Electricians to install and provides the system with a robust architecture that can keep all connected devices operating when the power goes out.

The newly ratified power standards have enabled PoE to supply reliable, uninterrupted power to a number of critical security devices including clusters of PoE- and non-PoE enabled video surveillance cameras, access control systems, CCTV, badge readers, RFID scanners, special-purpose radios, motion and heat sensors, fire detectors, biometric identification devices, and a number of surveillance camera accessories including heaters, microphones, and illuminators. The ability to backup these systems onto one network via PoE offers a number of advantages, the primary one being the ability to monitor and maintain operation of all security systems when the power goes out. The PoE power solution is also a cost-effective one, cutting thousands of dollars from installation costs, as installation can be completed using any number of interoperable off-the-shelf switches and midspans that do not require expensive professional installation and that support a variety of plug-and-play equipment. Midspans enable networks to be flexible and easily upgradable, allowing users to add devices without calling an electrician, which allows for continued, lower-cost system enhancements that support the initial investment.

For many businesses, PoE is the single most cost-effective way to install and network their security systems. AC outlets are not always available or able to be placed exactly where they are needed, especially with regards to surveillance cameras, and the cost required to wire and install additional AC outlets can total thousands of dollars and leave the user with less than ideal placement options and inflexibility in their system design. With PoE, however, security devices can be powered through the same, generally pre-

existing, Ethernet cabling infrastructure that transmits surveillance data with the installation of a few standard, readily available, and relatively low cost midspans without having to replace existing switches. Using PoE to power security systems not only saves businesses money on installation and system upgrade costs, but can also provide them with detailed power consumption information for their security system via Simple Network Management Protocol (SNMP) remote management, standard on a number of high-quality midspans, that prevents the business from expending additional funds on extraneous backup UPS power.

In addition to cost-effectiveness, Power-over-Ethernet technology provides simple implementation, interoperable, flexible design, and near-unmatched reliability. Because PoE doesn't require professional installation and can be implemented using readily available, off-the-shelf materials, installation and implementation can be achieved much quicker than with AC power wiring. Additionally, most PoE products are fully interoperable and will integrate seamlessly into existing networks, making dual-use of the pre-installed Ethernet cabling by injecting it with power as well as data. The non-restrictive nature of PoE allows security devices to be positioned where they are most needed versus where an outlet exists or could be placed.

Networks using POE also offer flexible systems designs that are able to meet the needs of any business, regardless of its size and security needs, with standardized, readily available equipment that supports easy and cost-effective upgradability options. Furthermore, the advanced features of PoE midspans are able to significantly simplify the ongoing maintenance of the security network, which helps to ensure incredibly reliable, continuous security system operation. The reliability of PoE is further enhanced due to the fact that power is delivered to security devices from a common, preexisting source, which eliminates the ground loops and power disruptions that come standard with AC power.

Remote management via PoE also provides security-specific solutions. A number of PoE midspans are SNMP-enabled for use in managed networks. SNMP is especially critical to security operations because it allows network administrators to remotely manage, monitor, troubleshoot, diagnose, and reset any of the devices on a security network, as well as monitor total system power consumption. Alerts are immediately transmitted to the network administrator in response to changes in the status or power consumption of network devices, which enables the administrator to remotely reinstate the proper status of individual or system-wide devices. This feature proves to be a particularly convenient solution to the common problem of digital security cameras going dark, which requires them to be reset in order to continue surveillance.

When security cameras relying on AC power go dark, they must first be discovered, as network surveillance often isn't as centralized as PoE security networks, then physically found, reached, and reset, which not only requires the expenditure of effort and time, but can also cause significant gaps in security coverage. PoE, on the other hand, enables faulty cameras to be reset immediately and remotely via the Internet. With SNMP, the network administrator can also remotely alter surveillance camera positions to accommodate special security needs or to better investigate and document a perceived threat. Surveillance cameras running off of AC power generally need to be manually adjusted in order to accommodate such security needs, which is not only inefficient, but can present safety hazards due to the power source and location. SNMP also allows for easy, centralized monitoring of multi-building installations and numerous remote locations, which, along with the other benefits of PoE SNMP, may even improve business security levels.

Additionally, PoE provides protection for networked security devices and simplifies uninterruptable power supply (UPS) backup in order to maintain consistent security coverage even in the event of power failures or outages. PoE midspans offer line detection, a feature that protects expensive and imperative security devices against overloads and short circuits resulting from incompatible connections or faulty devices, by detecting and refusing power to the incompatible or faulty device to mitigate or even avoid costly damage. PoE can also provide uninterrupted power backup that is able to serve the entire security network via a single, easily implementable UPS on the Ethernet switch, which saves money as well as ensures uninterrupted security coverage. Security devices that rely on AC power typically employ battery back-up power, which often proves insufficient for maintaining critical security components including surveillance cameras, access systems, and door locks.

PoE is clearly a superior power sourcing option for security networks of all sizes due to cost-effectiveness, reliability, and ease of implementation. In the case of Power-over-Ethernet, the simplest and most affordable solution is the most effective and practical option.