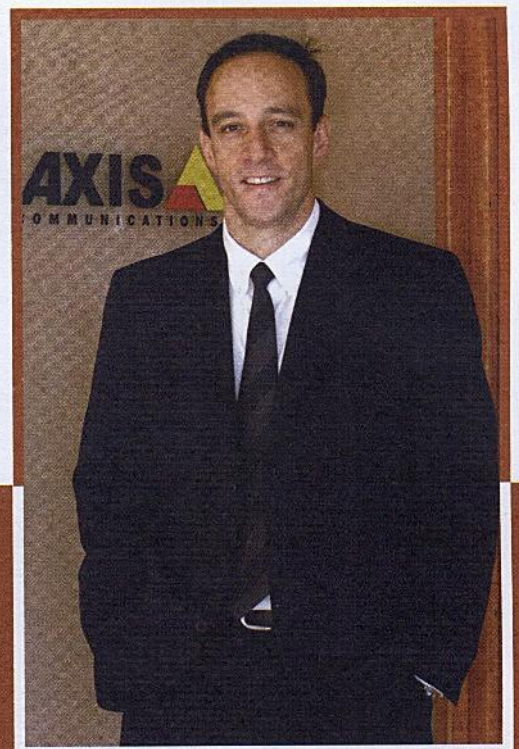


Power over Ethernet –

light at the end of a dark tunnel

By RoyAlves

Not so long ago the dark ages befell South Africa, sending everyone into a frenzied search for alternative power solutions. Consumers invaded generator resellers all over the country while IT managers stocked up on UPS systems.



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For the head of security that runs a network or IP camera system, both alternatives, i.e. generators and UPSs (uninterrupted power supplies), provide a solution to keep his surveillance system running even if the power supply is interrupted. This is because IP cameras can draw power either directly from the main electric grid or indirectly through the network to which they are connected. The latter is referred to as PoE (Power over Ethernet), a technology that makes it easier to provide backup power to network cameras via UPSs.

How it works

Like all networked products, IP cameras require a network connection to transmit data as well as a power supply. However, with PoE these functions are combined into one cable, i.e. the network cable, providing a simultaneous transmission of data and power through one cable

Two things are needed to set up a PoE system. One is the power supply equipment and the other is a network powered device.

The power supply equipment could either be a network switch with built-in PoE functionality, referred to as an endspan, or a standalone injector that adds power to a network cable. This is also referred to as a midspan.

The network powered device can either be a network camera with built-in

PoE functionality or one that uses an external splitter, which is a small unit that splits the network into two separate functions and provides PoE functionality to products without built-in support for PoE.

When a PoE system is set up and a camera is added, the camera is not instantaneously powered. The system first detects whether the connected device, in this case the camera, is PoE compatible. Once the device's PoE compatibility is confirmed, only then is it supplied with the necessary power. This all happens automatically in a matter of seconds.

Not only does this process ensure that the right power specification is sent to the camera, it also ensures that any device that is not PoE compatible and connected to the network cable does not receive the power that may potentially damage it.

When a powered camera is removed from the network connection, the system will disconnect the power within 300 - 400 milliseconds. This is also to protect any non-PoE compatible devices that may be connected after a powered device is removed.

PoE benefits

The obvious benefit of PoE is the save in cabling costs. Through PoE, both power and network connectivity is supplied through one cable, mitigating the need to run separate cables for both functions.

PoE also allows for increased flexibility

in camera setup. Because the cameras are powered through the network cable, which can run up to 100 metres, they are not limited by the need for proximity to the power outlet. This means that cameras can be set up at any location, as long as it is in reach of the network cable.

Adding backup power such as UPS systems is made easier because the system is centrally powered.

There are also certain limitations to the use of PoE to power surveillance systems. When powering outdoor cameras that require special housings with built-in heaters and fans, PoE can be used to get power to the camera but the current provided this way may not be enough to power the fan or heater needed to regulate the temperature in the housing. The same applies to powering PTZ (Pan, Tilt and Zoom) cameras. The current supplied over the network cable is not enough to power the motors that drive the camera's pan, tilt and zoom functionality.

Powering wireless cameras also poses a challenge for PoE. By their very nature, wireless cameras are wirelessly connected to the network and can therefore not leverage PoE.

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