

Power over Ethernet: One cable fits all

* What is Power over Ethernet?

By Currid & Company and Michael Day | Follow

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Until now, the thought of adding an IP-enabled camera to an existing cabled network meant consideration of not only camera placement, but knowing where the nearest 110-volt outlet was as well - unless you are outside of North America, in which case you would be searching for the nearest 220-volt supply.

To help solve the problem the IEEE last year ratified 802.3af, one of the latest in the 802.xx series of Ethernet standards, which has the potential to make the power dilemma go away. The 802.3af standard specifies how switches, routers, and hubs should deliver power over standard Ethernet cabling to devices like IP phones, security systems and wireless LAN access points. In fact, Power over Ethernet, or PoE, will work with existing cable, including Category 3, 5, 5e or 6.

Like many good ideas that are executed before being standardized, PoE started off with custom implementations as varied as the companies implementing them. The RJ-45 connectors' pin-outs varied from manufacturer to manufacturer. And if that weren't dangerous enough, the voltages being pumped over those little wires ranged from as little as 3.3 volts to as much as 48 volts. Now that there is an industry standard, consumers will be able to buy off-the-shelf equipment and be assured that the different manufacturers' products will interact with each other.

The standard dictates that over the maximum recommended run of Ethernet cabling, there will be a guaranteed continuous power of up to 12.95 watts at each node, taking into account power loss due to leakage. (As a point of reference, IP phones and wireless access points consume anywhere from 3.5 to 10 watts.)

This also means that an entire network segment can be served by a single uninterruptible power supply, since the power requirements are so minimal. The cost savings in back-up power systems alone could easily justify

A major concern might be the ability to safely mix legacy and PoE-compatible devices on the same network. The standard addresses such an issue by specifying that only PoE-enabled devices receive power through network power controllers, known as "injectors," by blocking power to incompatible legacy devices. The complement to an injector is the "tap," or "picker," as some call it. The tap sits inline, before any connected legacy device, and removes the power, piping it to the device requiring it and at the same time preventing any legacy device from receiving the potentially damaging charge.

To date, PoE has been deployed in two very different ways: as end-of-run devices where the technology is actually embedded into new hubs or switches, or as stand-alone midspan hubs. The latter allows existing networks to implement the PoE standard without upgrading existing switches or hubs. With such a large base of wired networks already installed, retrofitting existing LANs with midspan devices makes up about 90% of the implementations in existence.

In less than a year, the PoE market is already pretty well established. Some estimates suggest that over 20 million ports have already shipped worldwide. And the application of this technology won't be limited to wireless access points and IP phones. Other applications already in the works include:

- * Keypads.
- * Security devices, like retinal scanners or fingerprint readers.
- * Point-of-sale systems.
- * Lighting control.
- * Home automation systems.
- * Factory floor monitoring networks.
- * Security cameras.

The list is almost endless now that the industry can unite around an international specification. And because it is an international standard, PoE could become the universal power jack that continent-hopping travelers have yearned for.

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Learn more about this topic

[Network World Fusion Encyclopedia: PoE \(http://www.nwfusion.com/details/4681.html\)](http://www.nwfusion.com/details/4681.html)

[Power over Ethernet generates buzz \(http://www.nwfusion.com/news/2003/1124infrapoe.html\)](http://www.nwfusion.com/news/2003/1124infrapoe.html)

Network World, 11/24/03

[803.3af powers new switches \(http://www.nwfusion.com/weblogs/routers/004207.html\)](http://www.nwfusion.com/weblogs/routers/004207.html)

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[What is Power-over-Ethernet \(PoE\)? \(http://www.hyperlinktech.com/web/what_is_poe.php\)](http://www.hyperlinktech.com/web/what_is_poe.php)

[PoE resources on the Web \(http://www.poweroverethernet.com/\)](http://www.poweroverethernet.com/)

[PowerDsine \(claims to be the PoE "pioneers"\) \(http://www.powerdsine.com/\)](http://www.powerdsine.com/) [New server chips carry hidden cost \(http://www.nwfusion.com/news/2004/071904multicore.html\)](http://www.nwfusion.com/news/2004/071904multicore.html)

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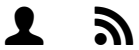
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