

Computer Power-Management Software

The energy wasted by a single computer that remains in the full-power “on” state may seem pretty small in the overall scheme of things, no matter how long it remains idle. But it adds up—for a corporation with hundreds or thousands of workstations operating on a local area network (LAN) or a wide area network (WAN), that wasted energy translates to tens of thousands of dollars in unnecessary electricity expenditures each year.

WHY IS THIS IMPORTANT?

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Despite the fact that most of the 100 million-plus personal computers (PCs) operating in office settings in North America have the capability to shift into a low-power state after a specified period of inactivity, not all of them actually do so. The U.S. Environmental Protection Agency (EPA) estimates that if all computers and monitors in U.S. offices were set to go into a low-power sleep mode when not in use, it would lead to savings of more than 44 billion kilowatt-hours (kWh) of electricity, or about \$4 billion worth.

So why don't all computer users take advantage of power-management settings? There are a variety of reasons. Individual workers may not even be aware that these settings exist, or they simply may not care about saving a small amount of energy for their employer. Some workers with long memories may recall that early attempts at PC power management resulted in long, inconvenient waits while the PC or monitor woke up from a low-power state. In some cases, a full reboot was necessary. Another contributor is the fact that information technology (IT) staff rarely have any incentive to implement energy-saving policies. Without a directive from management, IT staffers are unlikely to enable power-management settings when deploying new computers and are even less likely to ensure that individual employees maintain those settings.

A number of software products have been developed in recent years with the common goal of simplifying the implementation of power-management policies across large numbers of networked PCs. The amount of energy savings these products can provide

depends upon the power draw of the particular computers and monitors in use, how the PCs are being used, and the aggressiveness of the power-management settings that are implemented. The potential for savings in an office that has lots of old CRT (cathode ray tube) monitors and an existing policy that discourages employees from shutting down their PCs at night will be much greater than in an office with energy-efficient LCD (liquid crystal display) monitors, laptops instead of desktop computers, and an IT staff that regularly encourages employees to use their PCs' power-management capabilities and to turn their computers off at the end of the day.

WHAT ARE THE OPTIONS?

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There are basically three approaches to harnessing energy savings via the power-management settings of networked PCs:

- Ensure that the existing power-management capabilities of PCs are enabled
- Have the IT department develop and deploy login scripts that control power-management settings
- Use third-party software to establish and implement a computer power-management policy across the company LAN or WAN

You can gain significant energy savings by verifying that power-management settings are enabled on individual computers and monitors so that they will enter sleep mode after a specified period of inactivity. Most recent desktop computers—those purchased since 2008—should have been shipped with these settings enabled. This is a simple, no-cost approach to reducing computing energy and can cut each computer’s electricity use roughly in half, saving from \$25 to \$75 annually per computer. If you need help activating power-management features on individual computers, the EPA offers detailed instructions on its website for each computer operating system (just type “computer power management” into the search bar on the [Energy Star](#) website). Some users may be concerned that automatic software updates will be inhibited if power-management settings are enabled, but that’s not the case—updates will automatically begin to download when the computer awakens from sleep mode. This savings approach is only effective if individual users don’t change the settings.

If your business uses a Windows domain-based network, you can ask your network administrator or IT staff to develop and deploy group policy objects or login scripts that control power-management settings at the server level. This approach has the advantage of being an enforceable savings standard that computer users can’t tamper with, and it offers IT staff the flexibility to create groups of users with similar computing habits to accommodate different operating needs. If implemented with care, group policy objects and login scripts can be a cost-effective strategy because they ensure that power-management settings will be enabled and maintained at the appropriate level for each user without the need to purchase additional software. If network administrators need help creating group policy objects, the EPA offers a free tool, [EZ GPO](#) , to assist them.

If your business has multiple types of hardware and operating systems on the same network, consider purchasing a computer power-management software solution (**Table 1**). This software is installed on individual machines and is centrally controlled by the IT staff via the Internet or the company network. Depending on the program used, IT staff can manually wake up computers for maintenance, monitor energy consumption and savings, and apply different settings to different groups of computers. These programs generally run from \$10 to \$20 per computer and are often available at discounted rates for bulk purchases. With average annual savings ranging from \$25 to \$75 per machine, the payback period is typically less than a year for a desktop computer. Because the software is sold on a per-computer licensing basis, it’s roughly as cost-effective in a small business as it is in a large corporation. And although maintaining this software does require some

time commitments on the part of a network administrator, it's well within the means of even modestly sized organizations. As a rule, if a company is large enough to have at least one designated IT staffer, it's probably large enough to consider computer power-management software as a means of cutting costs.

Table 1: Network-based power-management software solutions

There are a variety of software packages that manage power consumption in networked computers. Each product has unique capabilities, and any one of them might turn out to be the most appropriate solution for a specific organization. For example, if your workforce has diverse schedules and computer-usage patterns, a package that offers group-specific power-management settings may be the most appropriate choice.

Company name	Software package	Compatibility
Verdiem	Surveyor	All Windows systems except NT
U.S. Environmental Protection Agency	EZ GPO	Windows 2000, XP, and 7
Microsoft	Windows Vista	Windows Vista
1E Ltd.	Night-Watchman	Windows NT, 2000, XP, Vista, and 7
IBM	Tivoli End Point Manager	Most Apple and Windows systems
Faronics Corp.	Faronics Power Save	Windows XP, Vista, 7, and XP service pack 3 and higher; Mac OS X
Apple	Apple Remote Desktop	Mac OS X version 10.4.11 and 10.5.7 or later
EMCO	EMCO	Windows 2000, XP, 2003, Vista, 2008, and 7
Verismic	Verismic Power Manager	Mac OS, Windows 7, and Android
ePlusGreen	Green Power Analyzer	Windows XP, Vista, and 7

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HOW TO MAKE THE BEST CHOICE

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Choose software that allows you to estimate energy savings and payback. You need to collect information about all of the PCs on the network to determine what the best power-management strategy is before you begin an implementation. Some software packages can track the time each computer spends in each operating mode—active, low power, hibernate, or off—and use these data to estimate the energy savings that would result from a range of policies before the network administrator implements any one of them. The reported data can also help the administrator accurately determine energy savings after a policy has been implemented.

Choose software that permits different settings for different users. A one-size-fits-all approach to PC power management will rarely be successful because employees have differing work schedules and ways of using their computers. Ignoring this fact and trying to implement a policy that works for everyone will either be so lenient that it leaves a lot of potential energy savings on the table, or it will be unduly restrictive for some users, negatively affecting their productivity and leaving them frustrated.

Some power-management software packages allow the network administrator to define multiple groups of workstations and to establish different power-management settings for each group. For example, one group might consist of workers who are at their PCs continuously on a regular 9-to-5 schedule. Another group could include factory workers who need to intermittently monitor a production process that runs three shifts per day, and a third group could include staff who monitor real-time data on PC screens but only infrequently use the keyboard or mouse. And if the organization wishes to allow it, another profile could be established for specific employees who would be permitted to opt out of the PC energy-savings program.

Choose software that identifies the hardware and operating system used at each workstation.

This information is critical to determining groups of similar machines and identifying machines for which power management is inappropriate. For example, machines running the Windows NT operating system have no low-power modes, and, for some older machines, enabling power management may lead to unacceptable delays when a user needs to “wake up” a computer from a low-power state.

Choose software that can shut computers down. In addition to controlling the amount of idle time after which PCs will enter a low-power state, some software packages can implement a turnoff schedule. In most cases, the shutdown procedure is terminated if any application running on a computer offers an “unsaved data” prompt. The shutdown feature can be

used even with PCs running operating systems that are incompatible with power management (such as Windows NT), to ensure that those PCs are not left on overnight or over the weekend.

Consider “wake-on-LAN” capability. This feature can bring a networked computer into the active state from the off state. Wake-on-LAN capability is built into most newer computers, and some software takes advantage of it. Because wake-on-LAN gives network administrators access to any computer at any time, it overcomes one of the most common obstacles to using power-management software: the need to install software patches and updates on networked computers when they aren’t in use.

WHO ARE THE MANUFACTURERS?

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- 1E Ltd.
- Apple Remote Desktop
- IBM
- EMCO
- ePlusGreen
- EZ GPO
- Faronics Corp.
- Verdiem Corp.
- Verismic

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