



## **Enterprise-wide computer power management**

### **GO GREEN, SAVE GREEN**

Successful power management policies deployed at enterprise scale promise numerous benefits, including power cost savings, environmental dividends, rebates, and integration with other processes. However, multiple roadblocks—users who change power policies, patches and updates during off hours, computers that need be available 24/7, OS power management complexities, and problems measuring power consumption—exist that inhibit the consistent, aggressive implementation of power management strategies.

The BigFix Power Management solution includes features to address all of the complexities involved in successful power management. The solution enables IT organizations to apply conservation policies infrastructure-wide, while providing granularity that enables application of power management policies to a single computer in a global infrastructure.

Key features of the BigFix Power Management solution include the ability to maximize power policy deployment, minimize end user impact, and increase end user buy-in through an “opt-in” approach and client-side dashboards. Graphical, web-based reports keep stakeholders informed of Power Management efforts and progress, and a “what-if” scenario calculator projects potential savings for proposed policy changes.

Implementing the BigFix solution allows enterprises to “go green” in two ways: through significant cost savings and alignment with green initiatives.

### **Benefits of and Roadblocks to a Successful Power Management Implementation**

Today’s computers and operating systems have built-in power management features. Furthermore, almost all computer users are familiar with controls to automatically shut off the monitor or hard drive and put the computer into a low-power “standby” or “suspend” mode.

Unfortunately, these power conservation features are often underutilized by end users and rarely centrally managed by enterprise IT organizations. The challenge of power management at the enterprise level lies not in implementing new technology, but in managing existing system features more assertively and consistently across an organization while maintaining optimum computing uptime and not interfering with regular system service and maintenance processes.

#### **Benefits**

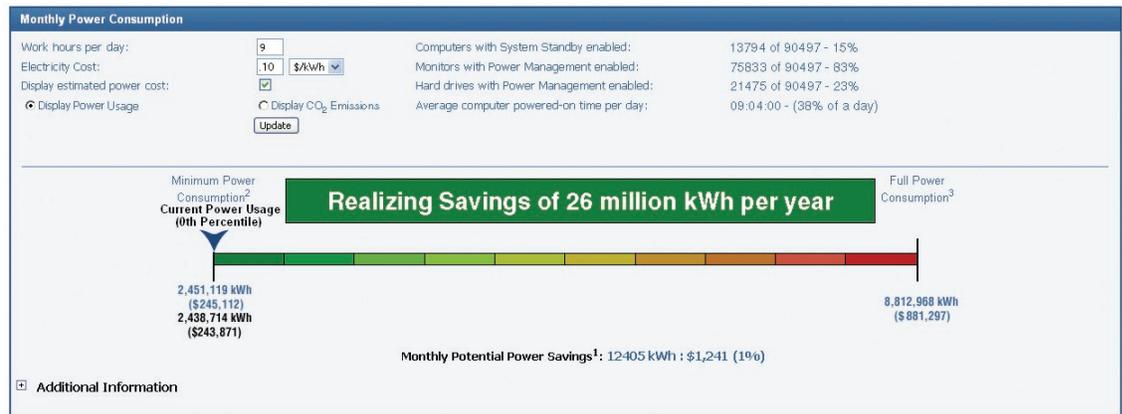
The benefits of power management are clear:

**Power cost savings.** Each moment that a computer uses less power translates directly into reduced electricity costs. The amount of potential savings varies depending on the cost of power, computer type (server, laptop, desktop), processor type, monitor type (CRT or LCD), power draw of the particular model, and so on—but on average, a power management strategy can save \$10-80 annually per computer.

**Environmental dividends.** Electricity generation is a significant source of greenhouse gases. By reducing electricity used, organizations can lower their impact on the environment. Whether measured in tons of CO2 saved per year, equivalent number of cars generating the same amount of CO2 per year, or acres of trees needed to absorb CO2 per year, a consistent power management policy can show dramatic results.



Actual Customer Report: Before Power Management



Actual Customer Report: After Power Management

**Utility company rebates.** A growing number of electricity companies offer rebates to companies that use centralized power management products. These one-time cash grants, in the range of \$3–25 per computer, can significantly defray the first-year cost of an enterprise license for power management.

**Integration with other processes.** The same technologies used to see, control, and report power conservation can be extended to perform other high-value enterprise IT security and system management functions. Here, power management can act as a gateway for tool and process consolidation, further trimming IT infrastructure costs of ownership while increasing IT staff productivity and effectiveness.

Roadblocks

Contrasting these benefits is the reality that many organizations do not deploy a consistent, enterprise-wide power management strategy. Several factors prevent organizations from realizing the full benefit of enterprise-scale management:

## The Real Cost of Poor Power Management

Most computers are used during the work week only. Even diligent employees will actively use their machines no more than 35-50 hours per week. With 168 hours in a week, a computer without properly implemented power management could spend 60-80% of the time consuming power in the end user's absence.

A desktop computer and monitor can consume 140 watts when powered on, generating an annual electric bill of \$110 if left on all the time. By comparison, during a work week when an employee is using the computer, the annual cost is only \$30. Multiply the cost difference by the number of computers in an enterprise, and the costs quickly mount up. An organization with 1,000 computers could save as much \$80,000 annually, while an organization with 100,000 computers could save as much as \$8,000,000, simply by assertively applying power management.

**Users changing power policies.** Even when power management policies are put in place, users often disable power-saving modes. Additionally, some applications change power policies to prevent the computer from going into low-power mode.

**Patches and updates that occur during off hours.** Many IT departments perform backups, apply patches, update anti-virus signatures, and conduct other crucial tasks during nighttime and weekend hours. These tasks cannot be completed if the computer is powered off or in low-power mode. Conventional wake-on-LAN capabilities that rouse computers to enable service and maintenance don't work well beyond local populations of computers and cannot be actuated at enterprise scale.

**24/7 requirements.** Computers that support mission-critical 24x7 services, or are involved in controlling experiments or crunching numbers for a complex design project, should never be turned off.

**Remote users connecting to corporate computers.** Some organizations allow users to remotely connect to their corporate desktop when they are outside the network. If the computer is powered off or in low-power mode, remote users cannot connect.

**OS power management complexities.** Companies that wish to implement power management are often faced with the problem that different operating systems have different power management modes. For example Windows Vista, Windows XP, and Mac OSX all have different power-saving options that are configured in different ways. Additionally, some hardware devices and drivers require additional configurations to allow the system to go into low-power mode.

**Measuring power consumption/compliance.** Most organizations don't have the proper tools to manage their power policies, measure power consumption, or determine compliance. Without this visibility into the state of their computers, there is often internal confusion as to which power settings are currently configured on the systems and how much power can be saved.

## Power Management Implementation Options

Enterprises have a great deal of flexibility in implementing power management policies on individual computers. Although some methods, such as turning off monitors after a period of inactivity, may appear to save only moderate amounts of electricity, the savings add up over time—and these methods can be applied during business hours without seriously disrupting end user productivity.

Two main strategies exist for implementing power management on individual machines:

**Power computers off,** either by asking users to do so or by using a centralized tool to forcibly power computers off when they are not in use. Power-off maximizes cost savings, because computers in standby mode still consume a small amount of power to keep subsystems ready to revive when full power comes back on. Power-off also provides maximum coverage, because some computers, primarily older models, don't support standby appropriately or have issues recovering from standby.

**Use power-saving modes built into the computer** such as “monitor standby,” “computer standby mode,” “hard drive spin down,” and “hibernation.” Standby leaves the computer session in-memory and ready to restore when users return to their computer, so users can pick up their work just where they left it. This helps prevent users from losing unsaved work, restarting the computer, and then spending time opening applications and files. Most computers recover from standby in a few seconds rather than waiting minutes for full boot-up.

Standby mode can be actuated after a set amount of time since last user keystroke, mouse click, or other system input. For an enterprise-wide deployment, this can be more flexible than shutting down a computer at a given hour. For example, if a user is working late, he or she won't have his or her computer suddenly shut off; likewise, if a user leaves early, his or her computer can go into low-power mode right away, rather than waiting until the set shut-off time.

Wake-on-LAN features require that computers operate in some kind of standby mode. In most cases, wake-on-LAN requires a real-time command from an external source to actuate. However, standby modes can be configured to wake the computer up at predefined times. This enables system administrators, for example, to schedule patch and anti-virus update distributions at set periods when the computers wake up, check for updates, and then return to standby.

### Power Management at the Subsystem Level

In addition to putting an entire computer into standby mode, system managers can selectively power down specific computer subsystems. This can be useful in reducing power consumption during working hours. Subsystem shutdowns may be used in wake-on-LAN situations to keep a limited number of computers functional enough to receive and distribute wake-up alarms to other computers in deeper states of hibernation.

Two main modes of subsystem power management are available:

**Monitor power management.** Monitor power management is one of the easiest and most effective power-saving solutions for a company. Monitors require a significant amount of power during operation and sometimes draw more power than the computer itself. With monitor power management, the monitor goes into low-power mode after a specified period of inactivity. Monitor power management mode doesn't affect the underlying computer operations and has a quick recovery period after users move or click the mouse, or hit a key.

**Hard disk power management.** Most computers support an option where the hard disk will spin down into a power-saving mode following a period of inactivity. Hard disk power management—similar to monitor power management—is often easy to implement and has a low impact on IT operations and end users. However, hard disk power management saves only a small amount of power compared to other power management modes.

### By the Numbers: Going Green and Saving Green

- According to a study conducted in 2001 for the US Department of Energy, IT equipment accounts for 3% of total US electricity consumption.
- Businessweek.com calculates that energy costs comprise nearly 10% of a corporate technology budget but could rise to as much as 50% in the next few years.
- A mid-sized company will waste more than \$165,000 a year in electricity costs for computers that are left on overnight. By simply turning these computers off, companies can keep more than 1,300 tons of CO2 out of the atmosphere.
- A report conducted by the Alliance To Save Energy and 1E entitled “The PC Energy Report 2007” indicated that solutions such as BigFix Power Management can reduce a computer’s power consumption by as much as 80%, saving companies from \$25-75 per desktop per year.

### The BigFix Solution: Central Management, Flexible Reach

An effective power management solution needs to both be flexible enough to manage exceptions to the rule and, more important, be able to recognize and selectively apply custom policies to specialized computers. This selectivity can be as simple as turning off computers in multiple time zones around the world or in a large country in line with local working hours, or as complex as applying one-of-a-kind power management policies to a single computer in a 100,000-node global infrastructure.

BigFix Power Management is the leading power management solution that includes features to address all of the complexities involved in successful power management. First, the BigFix solution ensures success by enabling IT organizations to apply conservation policies infrastructure-wide. Thus, while the solution enables the IT manager to tailor power management policies to individual end user needs, it provides the essential component of giving the IT organization authority to override end user non-participation in the enterprise power conservation program. At the same time, the solution employs an end user “opt-in” strategy that helps ensure that users do not manually disable or modify enterprise power policies.

Second, since BigFix Power Management approaches power management as one component of an overall multi-function system management solution, it has the capacity to integrate power conservation measures with service and maintenance operations. Rather than getting in the way of mainstream system management operations, the BigFix power management solution works alongside them—for example, by deferring a shutdown until after a critical change management event. Finally, the advanced BigFix Power Management solution includes the ability to selectively set power management policies specific to defined groups of machines, or even to individual computers.

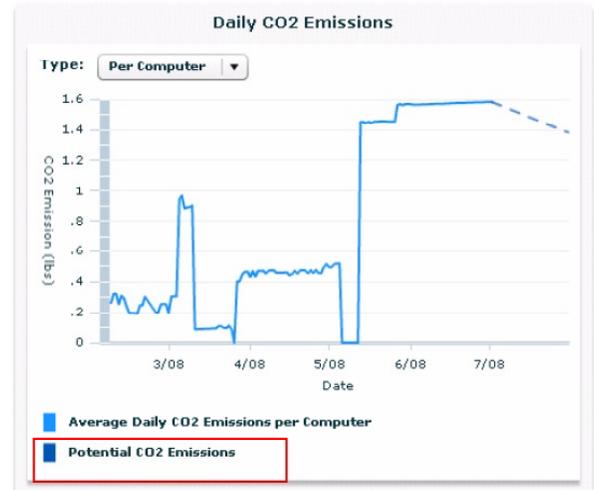
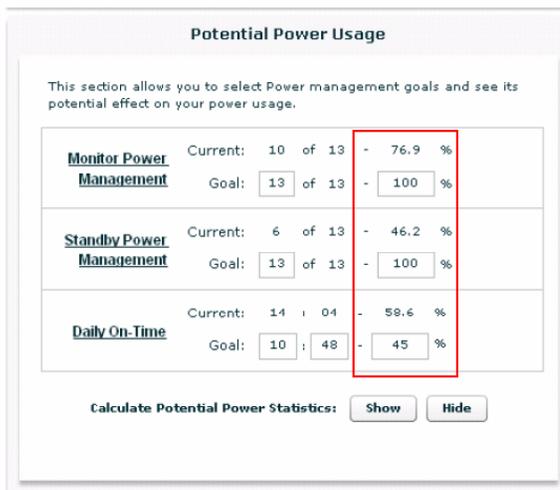
#### Key Components and Benefits

**Manage power across Windows and Mac computers.** BigFix Power Management supports both Windows and Mac computers.

**Maximize power policy deployment while minimizing end user impact through an “opt-in” approach.** IT administrators can turn on a client-side user interface that lets them make power management-related “offers” to end users. Users can determine which offers they want to accept and when they wish to do so. As an example, administrators can offer several power profiles to end users, ranging in degrees of aggressiveness. The most conservative policy could be to enforce Monitor Power Management after 15 minutes of idle time. A more aggressive option would be to enforce monitor as well as computer power management (standby mode). This highly customizable opt-in model offers end users the flexibility to “sign up” for the program best suited to their needs.

**Increase end user buy-in to sustainability initiatives through client-side dashboards.** BigFix enables administrators to offer graphical end user dashboards that provide information regarding the end user's specific power management settings and statistics, which helps get end user buy-in and to spread the culture of sustainability and corporate social responsibility. End users get to see their contribution to sustainability efforts as well as options to better manage their computing power.

**Keep stakeholders informed of Power Management efforts and progress through graphical, web-based reports.** BigFix includes a robust web reporting interface to record consumption and savings data over time, along with key deployment data including hardware and software inventory, among others. This data can be accessed using a standard web browser, allowing stakeholders to keep apprised of power management efforts within the organization.



Project potential savings of proposed policy changes using a graphical “what-if” scenario calculator.

**Easily create and deploy power profiles.** BigFix Power Management provides organizations with a great deal of flexibility in creating and maintaining several different power profiles and deploying and enforcing these profiles. The Power Profile Wizard enables administrators to quickly edit existing power profiles and allows for the creation of custom profiles. There is no limit to the number of profiles that can be created and applied to computers.

**Deploy power profiles using fine-grained targeting and scheduling mechanisms.** Power profiles can be deployed to just one computer or to the entire population of managed computers using advanced targeting and scheduling criteria.

**Use automatic groups or create custom groups.** Automatic groups can be based on any attribute of the computer such as subnet address, OS, free disk space, RAM, serial number, or CPU type. Customers have the freedom to create their own properties for use in the targeting/filtering process.



**Support variance across departments and functions.** For example, a more conservative power profile can be set to apply to a desktop user during the business day, while another, more aggressive policy could automatically take effect outside of business hours. For laptop users, BigFix can automatically detect when they are on the corporate network and the intelligent BigFix agent can apply the appropriate power profile when on the corporate network versus off the corporate network.

### **Green Two Ways: The Environment and Your Bottom Line**

The BigFix Power Management solution allows your organization to apply computer power-saving technologies while minimizing end user impact through an “opt-in” approach. This approach, coupled with a graphical end user interface, increases end user buy-in to sustainability initiatives and creates a corporate culture of sustainability. At the same time, BigFix administrators enjoy full control of the computing assets at their fingertips and are capable of handling the work of several administrators using traditional solutions.

The solution enables you to successfully manage the IT complexities of power management by providing granular controls, down to the level of an individual machine. Simple yet powerful reporting capabilities allow you to measure your power savings potential and obtain easily understandable metrics about performance. BigFix customers enjoy up-to-the-minute visibility and control of the most granular properties and processes across tens of thousands, or even hundreds of thousands, of computing assets.

The results? Significant money savings and alignment with green initiatives.

Beyond this, the BigFix Power Management solution serves as an entry point for further tool and process consolidation across the enterprise. BigFix Power Management is merely one component of a unified management platform that provides real-time visibility and control through a single common infrastructure. The integrated BigFix solution enables customers to securely manage their global IT infrastructures faster and more accurately, resulting in improved profitability, governance, control, visibility, and business agility.

### **Let Us Show You How**

Contact BigFix today to see how our Power Management solution can optimize power and cost savings for your organization. BigFix offers a free assessment of potential savings based on your organization's actual settings and consumption, as well as an investigation into utility rebates. Visit [www.bigfix.com](http://www.bigfix.com) for more information.

### **About BigFix**

BigFix®, Inc. is a leading provider of high-performance enterprise systems and security management solutions that revolutionizes the way IT organizations manage and secure their computing infrastructures.

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