

GREEN IT POWER MANAGEMENT



A Triumphant White Paper

Executive Summary

IT equipment has become the third largest source of power demand in the commercial sector, accounting for more than 10% of an organization's energy use. In fact, IT and related communications technologies now account for more than 2% of all global CO₂ emissions. Yet improving the energy efficiency and environmental friendliness of your IT Department can be a real challenge.

For most organizations, the easiest way to reduce energy costs is to implement an easy and cost-effective PC power management solution. According to the Gartner Group, PC's (and their monitors) consume almost twice the electricity of servers, and enterprises waste nearly \$4 billion each year powering PC's that are not in use. Gartner estimates that organizations can save up to 50% of their power costs and related CO₂ emissions on PC's alone.

As adults, most of us would not argue with our parents' constant reminder to "turn off the lights when you leave the room." Unfortunately, the majority of PC's are kept on 24 hours per day, 7 days per week, year round, even when not in use. Most users believe (incorrectly) that IT needs PC's to be turned on at all times in order to have access for maintenance or critical updates. However, since typical business hours account for less than 30% of total hours each year, a PC left on 24x7 is wasting energy more than 70% of the time.

Most PC users don't take advantage of even minimal power management settings. Even when the monitor is turned off on a desktop PC, or when it is set to Standby, a PC will consume almost as much energy as a fully-powered but idle PC. And a PC with a screen saver will actually consume significantly more power than an idle PC. Multiple studies have shown that almost one-third of the energy consumption of an organization's PC population is wasted as a result of PC's that are unused but still turned on. With the appropriate Green IT power management solution, organizations find that a minimal investment will allow them to save between \$20 and \$60 per PC, per year. This translates not only into a significant financial savings on electricity bills, but also a significant reduction in the related pollution emissions from reduced electrical generation. And it requires no additional IT staff, no change to operating hours, and best of all, adds value directly to the organization's bottom line.

The Challenge of Power Management

A typical PC consumes between 400 kWh (kilowatt hours) and 600 kWh of electricity each year, depending on the brand, how it is equipped (e.g. LCD or CRT monitor), and how hard the CPU is working. In January of 2008 the average cost of a kilowatt hour of electricity in the United States averaged \$.0898, and ranged from \$.0533 (Idaho) to \$.2536 (Hawaii). Assuming all computers in a 10,000 machine environment are left turned on all of the time these rates would result in an annual cost for electricity of somewhere between \$1,867,632 and \$13,329,216. If you consider that 50% of all PC's are left on both overnight and on weekends (70% of the total hours each week), it's reasonable to expect that actively implementing effective power management policies across your organization can result in savings of up to 35% (i.e. 50% of 70%) on your PC-related electrical bill.

Given the magnitude of these numbers, it is not difficult to understand how the savings resulting from more efficient power utilization in computers could easily exceed a million dollars per year. Since the cost of electricity

is continuing to rise, these direct savings are likely to grow significantly over time. In addition, given the heat generated by a PC, reducing the number of hours that each PC is turned on each day will reduce the cost of electricity for air conditioning in warmer months. And your organization may also be eligible for tax savings based on your reduction in energy usage.

The Opportunity for Change

The Triumphant Green IT Power Management™ Option Pack is designed to provide an intelligent, highly automated mechanism for reducing computer power consumption without impacting computer use or administration. It is based on the Triumphant Resolution Manager™ software platform, and provides the following enhanced power management capabilities:

- Policy-driven management of Windows (XP and Vista) power configuration settings, enabling IT administrators to easily establish and maintain a desired power scheme or plan across a distributed computing environment.
- Policy-driven power state management that allows computers to be driven to low power states during scheduled intervals, i.e. non-business hours.
- A Wake-on-LAN capability that allows computers that have been shut down to be automatically returned to a ready state so that scheduled maintenance activities can occur.
- A rich set of reports that allow administrators to measure the effects of power management policies and to identify and remediate computer configurations which are not compliant with power management policies.
- Maximized energy savings without negatively impacting user productivity or IT maintenance processes. It is easy to implement, easy to maintain, and typically generates a positive ROI (Return on Investment) within 6 months.

Remotely Managing Power Management Settings

There are a number of power management configuration settings implemented in Windows operating systems. These settings enable more efficient power utilization by automatically transitioning the computer to low power states when it is not being actively used. The Triumphant Green IT Power Management Solution transparently controls power management settings using Resolution Manager policy templates.

Windows Vista supports power management via group policy, so registry keys have been predefined by the operating system for this purpose. Unfortunately Windows XP does not support power management via group policy. To overcome this problem, Triumphant has defined a set of registry keys to represent the power management configuration settings for Windows XP. The Resolution Manager agent periodically reads these registry keys and configures the actual power settings using the appropriate Windows Application Programming Interface (API). Using Resolution Manager Policy templates allows power management settings for a group of computers to be established and maintained in a simple and straightforward manner.

Note that this process is completely consistent with the manner in which Resolution Manager establishes and enforces all other policies. This allows the Triumphant Power Management Solution to fully leverage features of the Resolution Manager platform such as remediation tracking, compliance reports, transaction reports, known error reports, etc.

Remotely Managing Power States

The Triumphant Power Management Solution is able to change the power state of a computer either according to a schedule or on demand. To change the power state according to a schedule, a Resolution Manager policy template is created to define the desired power state, the time of day that the power state transition should occur, and an optional warning message to the user. This policy template is automatically applied to each group of computers. Each computer in the group is then checked on a daily basis to ensure that it conforms to the power state policies defined by the policy template. Any non-compliant computers are automatically remediated.

In addition, Resolution Manager provides on-demand power state controls for individual computers via a web based interface, allowing IT administrators to remotely cause a PC to Shut Down, Hibernate, Stand By, or Reboot.

Wake-on-LAN Capabilities

The Triumphant Power Management Solution includes a Wake-on-LAN feature that allows a group of computers to be automatically transitioned from a hibernating, stand by, or shut down state to a ready state. This is accomplished by broadcasting a “Magic Packet” across the network to the target computers. A computer with a compatible network interface card can detect the Magic Packet, check its contents, and switch on the computer if the message is valid.

The Wake-on-LAN feature is administered using the Resolution Manager Task scheduler. Using the task scheduler in this way provides a number of important benefits including:

- **Simplicity** – The task scheduler is a wizard-based interface with help panels at every step.
- **Editing** – Wake-up tasks can be easily edited to change execution frequency, execution date/time, and target computers.
- **Error Reporting and Tracking** – Double clicking on a wake-up task provides information on the last time the task ran and any errors it may have encountered.
- **Concurrency** – It is possible to execute multiple wake-up tasks in parallel.

Reports

The Triumphant Green IT Power Management Solution offers a wide range of predefined reports, and also supports the ability to create custom reports:

- **Power Consumption Over Time** – Shows the estimated power consumption for a selected group of computers over a specified time interval.
- **Power State Distribution** – For a selected group of computers shows the percent of computers in various power states over selected time intervals.
- **Power Savings** – Provides an estimate of the savings enjoyed as a result of implementing power management policies.
- **Selected Known Errors** – Identifies machines that exhibit known errors related to power management.
- **Selected Known Errors Over Time** – Enables trend analysis of known errors related to power management.
- **Compliance By Machine** – Shows the extent to which a selected set of computers is compliant with power management policies. The report is organized by machine.
- **Compliance By Rule** – Shows the extent to which a selected set of computers is compliant with power management policies. The report is organized by rule.
- **Compliance Exceptions by Machine** – Shows the extent to which a selected set of computers is non-compliant with power management policies. The report is organized by machine.
- **Compliance Exceptions by Rule** – Shows the extent to which a selected set of computers is non-compliant with power management policies. The report is organized by rule.

Reports are managed with a web-based user interface. This environment provides a robust platform for automatically defining, executing, distributing, and exporting reports.

Triumphant Advantages

Unlike expensive single-point solution power management products with limited functionality and complex command line interfaces, the Triumphant Green IT Power Management Option Pack leverages the powerful Resolution Manager platform to proactively collect, analyze, adjust, and report on computer state information. This platform gives the Triumphant solution a number of subtle but important advantages that are highlighted below.

- **Ease of Administration** – The Triumphant Power Management solution provides power management policy templates right out of the box that can be easily customized. Power management settings are manipulated and applied via an easy to use graphical user interface.
- **Degree of Automation** – Once a set of power management policies have been configured, then assessment and enforcement of those policies occurs automatically every day with no human intervention.

- Interfaces to Other Service Management Systems – Resolution Manager offers interfaces to other service management systems such as trouble ticketing systems and Active Directory. This allows violations of power management policy to be reported as trouble tickets. It also means that as computers are added to a group or moved to a different group they automatically receive the proper power management policies.
- Sophisticated Power Management Actions – Many currently available power management products rely on scripts to implement power management actions such as shutting down a computer. Triumfant has implemented power management actions within the Resolution Manager agent, allowing a more sophisticated and reliable shutdown procedure.
- Coordination With Other State Management Activities – Resolution Manager provides the ability to coordinate power management policy enforcement with other state management activities such as remediating malware, enforcing security settings, and repairing applications.

Conclusion

The Triumfant Green IT Power Management Option Pack provides an easy to use and cost effective approach to improving the energy efficiency and environmental friendliness of your PC environment.

Electricity costs continue to rise, yet most PC's today are not even utilizing minimal power management settings. Deploying the Triumfant power management solution can help you:

- Identify opportunities for energy savings
- Provide centralized control over PC power settings
- Safely configure PC's for maximum energy savings
- Reduce IT energy costs by up to \$60 per PC, per year
- Deliver a rapid and verifiable ROI

Triumfant's Resolution Manager platform helps automatically discover, diagnose, and precisely repair any unwanted changes in your Microsoft Windows environment (including desktops, laptops and Windows servers). From Compliance to Security to Incident and Problem Management, and now to Green IT, Triumfant offers an easy-to-use solution that helps you reduce costs, mitigate risks and increase quality of service.

About Triumfant

Triumfant is the leading provider of proactive monitoring and control software for Windows computers. Powered by the Triumfant Resolution Manager platform, Triumfant's suite of solutions automates the process of discovering, diagnosing and repairing unwanted changes to every Windows PC, laptop and server. By ensuring strict adherence to internal controls, Triumfant helps organizations to reduce costs, minimize security and compliance risks, and increase quality of service. To learn more about how Triumfant can help your organization, please call us at 800.267.2190 or visit us at www.triumfant.com