Power Management Capabilities

PowerPlug Pro 5.0

Vs.

Microsoft Windows OS

(Windows 7 / 10 / 11)

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Table of Contents

Introduction

PC power management is a highly effective way for organizations to reduce their power consumption and energy bills related to computers. By implementing power management strategies, a computer's overall power consumption can be reduced by 60% to 70% compared to an "always on" computer, resulting in annual savings of **80 to 150 Euros per PC**, depending on energy prices.

Aside from saving money and reducing energy consumption, PC power management also offers other benefits such as extending the lifespan of computers, improving network security, and decreasing the load on air conditioning systems, leading to additional savings.

Despite the compelling advantages of PC power management, effectively implementing it at the organizational level can be a challenge. Enterprises that roll out power management for their computers quickly discover that the requirements of an organization greatly differ from those of a single computer.

This document outlines why PowerPlug Pro is the best solution for managing PC power consumption compared to the options available in native Microsoft Windows operating systems.

Power Management in Microsoft Windows OS

Windows 98 was the first version of Windows to support the ACPI 2.0 standard for managing computer power consumption, which included power management capabilities. As Windows versions progressed, Microsoft added various features to enable individual users to alter the power consumption of their personal computers.

While the native power management features in Windows are useful for individual users, they may not be sufficient for managing the power consumption of an organization's computers.

Power Management Capabilities in Windows 7

The Windows 7 operating system introduced several significant improvements in power management compared to previous versions. Some of these improvements had already been made available in Windows Vista, but it did not achieve widespread adoption.

Among the important power management improvements introduced in Windows 7 were:

- The ability to change power management settings using group policies

- The addition of a Hybrid Sleep state, a combination of Sleep and Hibernate

- The ability to control power consumption by external devices, such as USB devices

- The addition of conditions for disabling power savings, such as when the media sharing is active

- The activation of the power savings plan by default during system installation

These changes marked an improvement over Windows XP, but organizations looking to manage power savings for their Windows 7 PCs still encounter the following problems:

- Lack of visibility into the outcome of power management settings and any errors that prevent computers from performing them. Windows allows the setting of power management settings but has no way to verify what is happening at each PC and whether they are actually performing the saving they should.

- Complicated and unfriendly management through group policies, requiring scripts for any changes, even temporary ones, and redeployment of policies.

- Inability to distinguish between work and non-work hours, as Windows only enables one power management setting that is active 24x7. There is no way to designate times when the savings plan is inactive or to define different settings for work hours versus off hours.

- Inability to handle application-level problems. Any application that has issues with entering power-saving or resuming from suspend mode will generate a support ticket as the user will not be able to resume work.

- No wake-up abilities. The IT department loses the ability to run software and antivirus updates or other maintenance programs during off-hours because computers are unavailable when set to power-saving modes.

- No remote connections, making it impossible to support remote users looking to connect to their PCs because computers are unavailable.

- No reports, as there is no built-in ability to indicate how successful the savings plan is, what the actual power consumption is, and how much power and money have been saved.

- PC insomnia. Since Windows is a general-purpose operating system, it must function in many different scenarios and working modes, including an organizational desktop, a personal laptop, a media server in the living room, an internet kiosk, and more. Windows power management must address all these work modes. For example, an internet browser playing a video will cause Windows to disable all power management operations, a phenomenon known as "PC insomnia."

Power Management Capabilities in Windows 10 & 11

Windows 10, released in July 2015, brought significant improvements to power management capabilities that focused mainly on mobile devices such as laptops, tablets, and phones. These improvements aimed to maximize battery life and enhance the user's experience. However, the power management features for desktop computers remained unchanged from Windows 7 and Windows 8.

New Features in Windows 10 & 11

Windows 10 has introduced a variety of helpful features to improve power management for both mobile devices and desktop computers. Users can access the traditional Sleep settings and power options menu to choose how long their computer should stay awake when not in use. Additionally, the new battery saver feature can limit push notifications and background app activities, much like battery-saving modes found on smartphones and tablets.

One notable addition to Windows 10 is the scheduled restart after an update. Unlike earlier versions that would commence a countdown after announcing a restart to apply updates, Windows 10 allows users to set a specific time for the update to be installed after downloading. Windows 10 Pro and Enterprise users can also block restarts during work hours or on specific dates, even if an update has already been downloaded.

However, Windows 11 did not significantly improve Power Management over Windows 10. In fact, many advanced power management features are hidden in the user interface, requiring users to find the old control panel applets to change settings.

Power Management in PowerPlug Pro

PowerPlug Pro is a software solution that enables organizations to effectively manage PC power consumption, resulting in significant reductions in electricity costs. The software offers advanced capabilities for defining and managing power-saving plans, as well as comprehensive monitoring of power consumption and actual power savings, including an overall energy efficiency index for the organization. PowerPlug Pro is adaptable to the organization's needs, allowing for significant power savings without interrupting end-users' productivity or IT maintenance tasks.

Full Visibility of PC Usage, Power Consumption and Saving

Effective power management of computers is only possible when accurate and comprehensive data is available on how those computers are being used. Data gathering is crucial because it provides the necessary insights into usage patterns, energy consumption, and potential savings opportunities. With accurate data, organizations can develop and implement a targeted power management strategy that is tailored to their specific needs. However, tracking PC usage data on an ongoing basis and automatically identifying problems is equally important. PowerPlug Pro enables organizations to monitor their PC usage, track the effectiveness of their energy-saving efforts, identify problems, and optimize results over time. By analyzing the data on an ongoing basis, organizations can adjust their strategy as needed and maintain maximum savings.
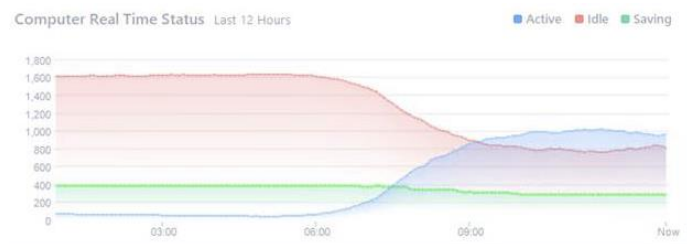
Centralized Power Policy Management

PowerPlug Pro simplifies the process of creating customized power-saving plans. With just a few clicks, administrators can create a plan and associate it with individual computers, groups, or existing Microsoft Active Directory Organizational Units (OUs). This allows each computer, group, or OU to be assigned the best-fit power-saving plan, without the need for scripting or configuration changes.

Power Saving Plans Adapted to Users' Working Hours

PowerPlug Pro provides administrators with the ability to create power saving plans that are customized and optimized for end-users' work habits, ensuring that power management does not interfere with their work. Administrators can configure computers to not save power at all during work hours or to enter savings mode only after extended periods of inactivity. During off-hours, computers can follow a more stringent power-saving plan, resulting in substantial power savings without any disruption to the end-users.

Defining a Working Computer

PowerPlug Pro enables administrators to precisely determine when a computer is in use and performing business related operations, and when it is idle and should enter power savings mode. These settings can include user activity, CPU usage, disk and network operations level, and process level activity including process running, CPU consumption, and I/O levels. For instance, an administrator can specify that after 6:00 pm, a computer should only enter power savings mode if no user activity has been recorded in the last hour, overall network level is below 20 KB/sec, and the Anti-Virus process is not scanning the hard drives for viruses (process I/O less than 10 KB/sec).

Custom Code (Scripts) on Power Events

PowerPlug Pro allows system administrators to attach custom code to be executed before and after power events. This feature enables the execution of maintenance operations as part of the system, such as performing a virus scan after wake-up if it is a specific day and time. Additionally, it allows for the handling of custom applications that do not function well with power management.

Scheduled Computer Wakeup for IT Maintenance Tasks

PowerPlug Pro lets IT departments schedule computer wakeups for maintenance tasks, using both wake timers and Wake-on-LAN, without interrupting users or conflicting with power savings. This feature can also wake up computers before employees arrive at work, and keep them running, so they are ready for use by the employees.

On-Demand Computer Wakeup

PowerPlug Pro allows for on-demand PC wake-up using Wake-on-LAN (WOL) technology, which can wake up PCs from any state, including shutdown, when properly configured. Moreover, with the WOL Mesh technology, PowerPlug Pro can maintain its wake-up capabilities even in complex network topologies with multiple VLANs, eliminating the need for network or router configuration.

PowerPlug Pro Wakeup Portal

The PowerPlug Pro Wakeup Portal leverages the product's advanced Wake-on-LAN (WOL) capabilities, allowing end-users to remotely wake up their computers. To make the process even more streamlined, PowerPlug Pro automatically matches users with the computers they work on, ensuring that only the relevant computers are displayed to each user, without requiring additional work or matching from the IT team.

Periodic Windows Restart

Performing a regular Windows restart is essential for the proper functioning of power-saving operations and the computer itself. PowerPlug Pro provides the ability to define a periodic Windows restart as part of the power-saving policy to ensure that computers operate at their best and power-saving actions are performed on a fresh computer. This feature also ensures that pending restarts caused by Windows Updates are performed outside of normal work hours, preventing the computer from waking up periodically and wasting power and money.

Automatic Configurations

Using PowerPlug Pro for power savings offers the added benefit of automating all the necessary configurations and settings required to implement company policies. The PowerPlug Pro Agent handles tasks such as configuring mouse and keyboard devices to wake the computer from standby and setting network cards to support Wake-On-LAN, without requiring any manual intervention from the IT staff.

Self – Calibration for PC Consumption Levels

PowerPlug Pro offers an optional hardware device called the PowerPlug Power Meter, which can be attached to a computer to measure its consumption levels in different power states (Work, Idle, Standby, and Shutdown). The Power Meter communicates with the PowerPlug Pro Agent, via USB, which sends data to the PowerPlug Pro Server, where it is applied to all computers of the same make and model. This unique hardware device makes PowerPlug Pro the only self-calibrating PC Power Management solution and allows organizations to obtain accurate and reliable reports of achieved savings and carbon reduction.

Comprehensive Reporting Capabilities

PowerPlug Pro provides powerful reporting capabilities, allowing organizations to have a clear and up-to-date picture of their PC usage, PC power consumption, savings potential, and actual savings achieved through active power-saving plans. The system includes an internal report generator, enabling organizations to make informed decisions about their power management policies. Moreover, the extensive reports, combined with the support for complex power tariffs and the self-calibration of power consumption levels, make PowerPlug Pro reports highly reliable and suitable for use both internally and externally to showcase the results of the organization's power-saving efforts, in terms of energy savings, cost savings, and carbon footprint reduction.

External Systems Integration

PowerPlug Pro is designed to integrate seamlessly with various external systems, such as electronic software distribution systems and attendance management systems. The electronic software distribution integration allows for automatic wake-up of computers based on scheduled distribution jobs, and the ability to keep the computers running during the distribution process. In addition, the integration with attendance management systems provides automatic wake-up of designated computers for each employee upon entrance detection and allows for the creation of specific rules that prevent the computer from entering power-saving mode while the responsible employee is present on-site. These integrations enhance the functionality of PowerPlug Pro and provide additional benefits to organizations in terms of efficiency and productivity.

Summary

PowerPlug Pro enables effective organizational management of PC power savings while ensuring uninterrupted end-user and IT department activities. The system includes unique capabilities for organizations aiming to cut power consumption and costs, providing them with full visibility of computer usage, power consumption, power savings, and cost savings (including real-time data). It offers powerful saving policies that are much more elaborate than the basic Windows mechanism, better accuracy, better Wake Up capabilities, and better reporting capabilities.

With this set of features, PowerPlug Pro ensures that the organization can reach maximum savings without degrading end-user productivity or IT manageability and can report the achieved savings in consumption, money, and carbon footprint reduction.

Detailed Feature Comparison

Features	Windows 7 + GPO	Windows 10 / 11 + GPO	PowerPlug Pro
Power Management			
Definition of idle time for powering off monitors and computers	√	√	√
Support for standby and hibernate operations	√	√	√
Support Hybrid-Sleep	X	√	√
Support for shutdown	X	X	√
Ability to define Power Savings Plans	Script based	Script based	√
Central management of power savings plans	Script based	Script based	√
Association of computers and OUs/Groups to power savings plans	√	√	√
Ability to set an exact definition of a working computer	X	X	√
Definition of different settings for work and non-work hours	X	X	√
Built-in support for periodic computer restart	Script based	Script based	√
Display of a message to end-users before entering saving	X	X	√
Schedule a message for display to end-users at specific times	X	X	√
Define applications that will prevent power savings operations	X	X	√
Define emergency plans apart from regular savings plans	X	X	√
Execution of custom code (scripts) before and after power events	X	X	√
Creation of custom conditions through scripts	X	X	√
Wake-Up Support			
Ability to schedule wake-up events	Script based	Script based	√
Ability to define "must-on" time periods for IT operations	X	X	√
Remotely wake up computers on demand using Wake-on-LAN	X	X	√
Automatic support for Wake-on-LAN over VLANs and subnets	X	X	√
Ability to recover from complete power failure for all computers	X	X	√
Automatic configuration of Wake-on-LAN support in Windows	X	X	√
Real-time display of computer status (Work / Idle / Savings)	X	X	√
Remotely shutdown, restart, or standby computers on demand	Script based	Script based	√
Power Consumption, Cost & Savings Calculation			
Definition of consumption data by computer type (laptop/desktop)	X	X	√
Ability to set power consumption levels for each computer model	X	X	√
Ability to set power consumption levels for individual computers	X	X	√
Automatic updates for power rates data	X	X	√
Calculation of power consumption based on real-time data	X	X	√
Ability to calculate potential power savings (without savings enabled)	X	X	√
Calculate achieved power savings - consumption and cost	X	X	√
Distinguish between user-generated and policy-generated savings	X	X	√
Calculate cost and savings using time-of-use tariffs	X	X	√

PowerPlug

Features	Windows 7 + GPO	Windows 10 / 11 + GPO	PowerPlug Pro
Reporting Capabilities			
Out-of-box reports for potential savings	X	X	√
Out-of-box reports for actual power consumption & cost	X	X	√
Out-of-box reports for actual power savings achieved	X	X	√
Out-of-box reports for emissions and environmental impact	X	X	√
Out-of-box reports for usage patterns analysis	X	X	√
Out-of-box reports for computer hardware	X	X	√
Ability to customize reports & save report definitions	X	X	√
Detailed Wake-up Operations Event Log Screen and Report	X	X	√
Export to PDF, Microsoft Excel, CSV	X	X	√
Ability to schedule report generation and send them via email	X	X	√
End-User Capabilities			
Ability to show/hide the end-user user interface	n/a	n/a	√
Display Power Savings Plan details to the end-user	X	X	√
Provide the option for end-users to suspend power-saving features	X	X	√
Allow end-user to abort / suspend a power savings operation	X	X	√
Display custom messages to end-users	X	X	√
Allows end-users to remotely wake up their computer(s)	X	X	√
Integration Capabilities			
Automatic integration with Microsoft SCCM	X	X	√
Direct computer wakeup from corporate portals	X	X	√
Computers wake-up from external systems using APIs	X	X	√
Ability to export information to external reporting / BI systems	X	X	√
Automatic integration with organization's attendance system	X	X	√
Auto-calibration of computer power consumption levels	X	X	√