



FARONICS™

Intelligent Utilities for ABSOLUTE Control

Faronics Power Save: A Technical Perspective

WHITE PAPER

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Faronics Power Save

Introduction

This document was created to provide IT Administrators with the technical details for Faronics Power Save for Windows and Mac.

Power Save uses intelligent energy management to ensure workstations are available when system resources are required, but conserving power during productivity downtimes. Power Save provides organizations with savings of \$15 per year for every computer deployed, as well as centralized workstation power status control. Plus, Power Save is environmentally responsible and offers a complete return on investment within the first year of deployment. With features such as real-time savings reports, policy scheduling, and customizable activity settings based on CPU, disk, and application activity, organizations today have found Power Save to be energy management they can bank on.

System Requirements

Windows

The Power Save console computer requires .NET 2.0, MMC 3.0, Windows XP SP2 or Windows 2003 Server. The client computer requires Windows 2000 SP4 or Windows XP SP2.

It is highly recommended that all components be installed using a Windows Administrator account.

Mac

Power Save Mac requires OS X 10.3 and higher.

Central Console

Windows

The central console is an MMC3. MMC is a Microsoft framework that provides administrators with a flexible common user interface to configure and monitor systems; this is the user interface framework used by the Power Save Central Console.

Mac

Power Save Mac does not include its own Central Console; however Apple Remote Desktop (ARD) can be used to control enterprise deployments of Power Save Mac.

Client Installation

Windows

The client file is a .msi file. When installed, it runs as a service on the workstation. It only reports to the console when it takes action. The size of the packages it delivers are about 1kb.

Mac

The client file is a .pkg file. When installed it is available under System Preferences/Other.

Inactivity Timeout Actions

Actions that Power Save can perform when a workstation becomes inactive are:

Windows

Turn off monitor

Standby – the computer is turned off but able to activate on command

Hibernate – the operating system is suspended by storing memory on the hard disk before powering down

Shut down

Mac

Monitor Sleep - Put the monitor into Sleep mode when the computer is inactive

CPU Sleep – put the CPU into sleep mode when inactive

Shut down

Inactivity Definitions

Windows

The definition of what makes a workstation inactive are based on the following parameters:

Disk Utilization – user defined measurement of disk (hard drive) utilization; if the disk utilization is lower than this defined amount, the workstation is considered inactive and power saving actions will occur

CPU Utilization – user defined measurement of CPU utilization; if CPU utilization is lower than this defined amount, the workstation is considered inactive and power saving actions will occur

Applications Running – user defined list of applications; if no application from a user defined list is running, the workstation is considered inactive and power saving actions will occur

Mac

The definition of what makes a workstation inactive are based on the following parameters:

Disk Utilization – user defined measurement of disk (hard drive) utilization; if the disk utilization is lower than this defined amount, the workstation is considered inactive and power saving actions will occur

CPU Utilization – user defined measurement of CPU utilization; if CPU utilization is lower than this defined amount, the workstation is considered inactive and power saving actions will occur

Network Activity – user defined measurement of Network Usage; if Network Usage is lower than the defined amount in kb/s then power saving actions will occur

Applications Running – user defined list of applications; if no application from a user defined list is running, the workstation is considered inactive and power saving actions will occur

Communication from Client Computer to Console

Windows

Power Save uses Windows Management Instrumentation (WMI) for communication. Detailed information regarding WMI can be found at:

<http://www.microsoft.com/whdc/system/pnppwr/wmi/WMI-intro.msp>

WMI uses DCOM (Distributed COM - a Microsoft technology) for its network communication. DCOM, in turn, uses RPC (Remote Procedure Call - another earlier technology) to establish the network connections.

RPC listens for connections on port 135 (TCP and UDP) for incoming connection requests and then dynamically assigns a new port for the actual communication.

Also, DCOM connections are authenticated which means that when machine A connects to machine B with DCOM, machine A must supply Windows login credentials that are valid on B.

The default set of ports that Power Save sends the WOL magic packet to is:

65535, 80, 25, 21, 7, 40000

However, this list can be customized by adding the following registry values on the Console computer only:

Registry Key: HKEY_LOCAL_MACHINE\SOFTWARE\Faronics\Power Save Console

Value Name: WolPortsList

Value Data: a comma-separated list of port numbers with no spaces between them (i.e. 1,2,3)

WMI Packet Size

Tables 1 and 2 show the amount of data added to each WMI packet for Power Save. The message may break into multiple packets depending on how the WMI providers are sent out.

Console to Workstation Message Sizes

Command	Payload Size (Bytes)	Comments
Shutdown	12	
Restart	12	
Configure Power Save	2410	This is the number of bytes in the xml representation of the default configuration. Other configurations will vary slightly in message size.
Enable/Disable Power Save	8	
Configure Event Reporting	84	
Update Power Save	Size of Workstation Installer.msi ~ 3.3 MB	Since the .msi file must be pushed to the workstation before executing it, the contents of this .msi file will be the great majority of this message's size.

Workstation to Console Message Sizes

Command	Payload Size (Bytes)	Comments
Update Last Known Status	306	The 'Last Known Status' information is the workstation status information that is displayed on the console. This information is sent from each workstation to the console every n seconds (where n is the reporting period) or whenever the workstation's state changes (whichever is less frequent).
Update Event	162	Update events are sent from a workstation to the console whenever Power Save takes an inactivity action on the workstation (i.e. turn of monitor, shutdown computer, user activity after Power Save action, etc.)

Mac

Apple Remote Desktop handles all communication with the Power Save client workstation.

Console User Account

Windows

When workstations connect to the console to send it their current status, the workstations must provide login credentials for a Windows account (username and password) that is valid on the console. This console account is created the first time the console is run. The workstations know these credentials because they are embedded into the workstation installer (.msi file) which can only be created after the console login account has been created.

The console also needs to know the credentials of a Windows account on each of the workstations if it is to be able to connect to those workstations and send them commands. If the credentials of a user currently logged onto the console machine are also valid on the workstations (such as with a domain admin account) then the console user does not need to do anything further. Otherwise, if there is no domain account that will work on all workstations, then the console user must enter in the workstation credentials manually.

Mac

The first time the Power Save preference pane is accessed it is necessary to create a Username/Password. Security is for protecting the Power Save settings only.

Command Line Control

Windows

Power Save command line control offers network administrators increased flexibility in managing Power Save workstations by allowing for control of Power Save via third-party management tools and/or central management solutions. The following functions are available: Silent Install/Uninstall, Enable/Disable/Update Power Save, Display Local UI.

Mac

Power Save Mac provides built-in tasks via the Assistant. These tasks can be used to control Power Save Mac via ARD or can be run with several different third-party enterprise management tools and/or central management solutions.

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About Faronics

Faronics delivers market-leading solutions that help manage, simplify, and secure complex IT environments. Our products ensure 100% workstation availability, and have dramatically impacted the day-to-day lives of thousands of information technology professionals. Fueled by a customer-centric focus, Faronics' technology innovations benefit educational institutions, healthcare facilities, libraries, government organizations and corporations.

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