

Client Software Installation and Administration Guide

Release v5.4.0.5932 December 2015



© Data Synergy UK Ltd 2007-2015. All rights reserved.



About Data Synergy



Data Synergy is a British company based in Sheffield. We have over fifteen years' experience developing and supporting software solutions for enterprise PC deployment and management. We do not resell other vendors' products and do all our development, sales and support from our UK base.

Our products have evolved through listening to customer ideas and applying our unrivalled knowledge of PC internals. If you have a suggestion for a new product or feature we would love to talk to you.

Data Synergy UK Ltd Cooper Buildings Sheffield Technology Parks Arundel Street Sheffield S1 2NS Website: <u>www.datasynergy.co.uk</u> Email: <u>sales@datasynergy.co.uk</u> Telephone: 08456 435 035

Registered in England and Wales Company Number 06682095 VAT Registration GB 939 7559 56



Contents

PowerMAN Overview	8
PowerMAN and PowerMON Products	8
New in PowerMAN v5.3 / v5.4	9
PowerMAN Basics	13
Advantages over Windows built-in power management – Why PowerMAN?	13
Low power modes - Shutdown, Hibernate and Sleep (S1-S5)	13
Idle-based power management versus scheduled power management	15
Default, No User, and specific-user idle policies	16
Multiple Policies – Precedence order	16
Policy enforcement feature (Anti-Insomnia)	16
Monitoring progress with PowerMAN reporting	17
Power Management Event Log	18
Separate AC (mains) and DC (battery) policies	19
Product Installation	19
Installation Prerequisites	20
Getting to know your hardware	20
Deployment Preparation	22
Preparation for PowerMAN reporting (Optional)	23
Microsoft Windows Group Policy Deployment Method	25
Making effective use of policy inheritance (Larger networks)	25
Group Policy Worked Example (Windows Server 2003 and later)	26
PowerMAN Configuration	32
Alternative SMS / XCOPY Deployment Method	36
Deploying PowerMAN in a pre-built software image 'Ghost'-style deployment	37
Deploying PowerMAN updates	37
Removing PowerMAN (Uninstallation)	
PowerMAN Configuration	39
Product Licensing	39
Power Management Reporting	39



	Default and No User Power Settings	. 41
	Scheduled Actions	. 43
	Scheduled Wake (Resume)	. 43
	Scheduled Suspend / Reboot / Shutdown	. 45
	Global Power Settings (Power buttons, lid switches etc.)	. 47
	Protected Objects (including maintenance windows)	. 47
	Resume Configuration Feature	. 49
	Power Policy Enforcement / Anti-Insomnia Feature	. 49
	Hardware Device Power Management Settings	. 50
	User Interface Settings	. 51
	PowerMAN User Interface Icon	. 52
	Miscellaneous Power Settings	. 53
	Custom Actions	. 55
	Policy Preferences Feature (Advanced)	. 55
	Advanced Settings	. 59
	Distinct User Power Policies	. 61
Ģ	etting the most from PowerMAN	.62
	Baseline existing environment	. 62
	Typical deployment phases	. 62
	Idle or schedule-based power management?	. 63
	Complementary PowerMAN features	. 63
	Maximizing Savings	. 64
	Practical tips for an effective PowerMAN deployment	. 65
	Common Scenarios	. 66
	Example Settings	. 67
	Excluding Specific Computers via a protected 'marker' file (Alternative method)	. 69
	Viewing PowerMAN statistics	. 70
	Calculating actual energy consumption	. 70
Н	ow PowerMAN Works	.71



Additional PowerMAN Features7	72
WakeMyPC - External PC wake-up gateway	72
PowerMAN on Windows Vista / Windows 7 / Windows 8 / Windows 10	73
Troubleshooting	74
Problem: PowerMAN does not deploy correctly using the GPO method	74
Problem: The PowerMAN application appears to deploy okay but the configured policy doesn't seem to dep consistently	loy 75
Problem: PowerMAN appears to be deployed okay and the required settings are displayed in the Control Panel Pow Management applet but the computer does not shutdown/hibernate/sleep as expected	ver 76
OR PowerMAN reports event #2003: The computer is being prevented from entering the idle state by an unknow program	wn 76
Problem: A Hard Disk (HDD) spin-down policy has been applied but doesn't seem to do anything. The hard disk alwa remains powered on	ays 77
Problem: After enabling a Hard Disk (HDD) spin-down policy the system may sometimes freeze momentarily	78
Problem: PowerMAN reports that there are fewer computers than expected in the site	78
OR PowerMAN reports many more computers than expected in the site	78
OR PowerMAN reports unexpected duplicate computer names within the same site	78
OR PowerMAN reports computers that seem to be on more than 24 hours a day!	78
OR PowerMAN is deployed using an image based Windows installation and only one client is reported. The servi appears to be operating okay on each computer	ice 78
Problem: PowerMAN is installed but the computers are not showing up on the reporting system	79
OR Power Management Event Log reports Event #6015: Downloaded XML was corrupt	79
OR Power Management Event Log reports Event #6032: Server failed to respond	79
OR PowerMAN Enterprise Server logs show frequent truncated XML uploads (typically around 1,400-1,500 bytes in siz	ze) 79
OR PowerMAN reporting fails to work consistently with M86 Security / Trustwave web content filter when split pack detection is enabled	ket 79
OR PowerMAN reporting previously worked but the PID key expired or the workstation was turned off for a prolong period and reporting subsequently fails to work or work consistently	jed 79
Problem: Windows Power Management applet reports blank or incorrect status for a power action or power timeout	82
Problem: The PowerMAN service (or power configuration) is applied using a logon script but does not consistently we	ork 82
Problem: The 'Managed' power scheme does not appear in the Windows Control Panel	82
OR The settings in the Windows Control Panel do not match those configured	82
Problem: Sleep has been configured (suspend to RAM). The power saving is not as great as expected	83
Problem: A scheduled wake policy has been configured but nothing happens	83
Problem: The computer is configured to hibernate or sleep. Sometimes the previous user leaves the workstation with logging off and this can lock the workstation for the next user	out 84
Problem: Windows displays a pop-up message during hibernation - Insufficient System Resources Exist to Complete t API	the 84
Problem: PowerMAN appears to be installed but will not start	85
OR PowerMAN service starts and then stops again	85
OR The event log reports a problem with the Terminal Services service (TermService)	85
Problem: PowerMAN works correctly on some computers but gives inconsistent results on others. The settings used a the same in both cases	are 85



Problem: Some computers lait to suspend / resume reliability and consistently. Problem: Some computers lait to suspend / resume reliability and consistently. Problem: Unable to resume PC using a USB keyboard / mouse. OR Unable to resume PC using a USB keyboard / mouse. OR Unable to resume PC using Wake-On-Lan (WOL). OR Unable to cesume PC using Wake-On-Lan (WOL). OR Unable to configure Device Manager power management remotely. Problem: Network drive is disconnected after system has resumed Problem: Power Management event log reports event #402: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl succession. Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl succession. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power Management event log reports event #4050/4059. Problem: Power Management event log reports event #4050/4059. Problem: Power Ma	Droblem: The re-	war naliou dooon't wark oo ovported. The Llard Diak / Manites times with lass that the state the	ou*
Problem: Some computers value-up (resume) mexpected y Problem: Some computers fail to suspend / resume reliability and consistently. Problem: Unable to resume computer using selected input / button method. OR Unable to resume PC using a USB keyboard / mouse. OR Unable to cresume PC using Wake-On-Lan (WOL). OR Unable to configure Device Manager power management remotely. Problem: Network drive is disconnected after system has resumed. Problem: Network drive is disconnected after system has resumed. Problem: Shutdown scripts are ignored on Windows 2000/XP/2003 Problem: Shutdown scripts are ignored on Windows 2000/XP/2003 Problem: Power Management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem: Power management event log reports event #4042: The managed Earonics TM Deep Freeze TM . Micr Steadystate or similar system restoration / system security software. OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature. sing the debug log to investigate problems. ther Deployment Resources. pendix A – PowerMAN Command line options	Problem: The pov	wer policy doesn't work as expected. The Hard Disk / Monitor timeout is less than the idle time	out
Problem: Sume Computer using selected input / buton method	Problem: Some C	computers wake-up (resume) unexpectedly	
Problem: Order to resume PC using a USB keyboard / mouse. OR Unable to resume PC using Wake-On-Lan (WOL). OR Unable to configure Device Manager power management remotely. Problem: New Management event log reports error #1019 - Product key has expired. Please contact your representative to obtain an updated product key. The software will continue to function in reduced functionality mode Problem: Power Management event log reports error #1019 - Product key has expired. Please contact your representative to obtain an updated product key. The software will continue to function in reduced functionality mode Problem: Power Management event log reports event #4042: The managed power policy has been repeatedly appl succession. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: </td <td>Problem: Uppblo</td> <td>to recurse computer using selected input / button method</td> <td></td>	Problem: Uppblo	to recurse computer using selected input / button method	
OR Unable to resume PC using Wake-On-Lan (WOL)	OR Linable to res	ume PC using a LISB keyboard / mouse	
OR Unable to configure Device Manager power management remotely	OR Unable to res	ume PC using Wake-On-I an (WOI.)	
Problem: Network drive is disconnected after system has resumed. Problem: Network drive is disconnected after system has resumed. Problem: Power Management event log reports error #1019 - Product key has expired. Please contact your representative to obtain an updated product key. The software will continue to function in reduced functionality mode Problem: PowerMAN is installed but not in the path (64-bit systems). Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] . Micr Steadystate or similar system restoration / system security software. OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature. sing the debug log to investigate problems. ther Deployment Resources. Deendix A – PowerMAN Command line options Install. Remove. Start. Status. Makeguid. License. Forceupload Hibercheck. Sleepcheck. Info Supportdump. Help. Deendix B – PowerMAN Configuration with Novell ZENworks Deendix C – PowerMAN Configuration with RM Community Connect 3/	OR Unable to cor	nfigure Device Manager power management remotely	
Problem: Power Management event log reports error #1019 - Product key has expired. Please contact your representative to obtain an updated product key. The software will continue to function in reduced functionality mode Problem: Shutdown scripts are ignored on Windows 2000/XP/2003. Problem: PowerMAN is installed but not in the path (64-bit systems). Problem: PowerMAN is installed but not in the path (64-bit systems). Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem with the policy settings. This warning may also be generated if multiple policy changes are for very succession. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] . Micr Steadystate or similar system restoration / system security software. OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature. sing the debug log to investigate problems. ther Deployment Resources. Pendix A – PowerMAN Command line options	Problem: Networ	k drive is disconnected after system has resumed	
Problem: Shutdown scripts are ignored on Windows 2000/XP/2003 Problem: PowerMAN is installed but not in the path (64-bit systems) Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem with the policy settings. This warning may also be generated if multiple policy changes are for very succession. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power requently re-imaged and this interferes with the PowerMAN reporting feature Sing the debug log to investigate problems	Problem: Power representative to	Management event log reports error #1019 - Product key has expired. Please contact obtain an updated product key. The software will continue to function in reduced functionality	your s mode
Problem: PowerMAN is installed but not in the path (64-bit systems) Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem with the policy settings. This warning may also be generated if multiple policy changes are for very or succession. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power management event log repeatedly record warning events #4030/4059. Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] , Micr Steadystate or similar system restoration / system security software. OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature. sing the debug log to investigate problems . ther Deployment Resources. Dendix A – PowerMAN Command line options . Install Remove. Start	Problem: Shutdo	wn scripts are ignored on Windows 2000/XP/2003	
Problem: Power management event log reports event #4042: The managed power policy has been repeatedly appl successive times. This may indicate that another program (or user) is changing the policy settings. It may also indic problem with the policy settings. This warning may also be generated if multiple policy changes are for very succession	Problem: Power	MAN is installed but not in the path (64-bit systems)	
Problem: Power management event log repeatedly record warning events #4030/4059 Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] , Micr Steadystate or similar system restoration / system security software. OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature. sing the debug log to investigate problems	Problem: Power r successive times. problem with the succession	management event log reports event #4042: The managed power policy has been repeatedly. This may indicate that another program (or user) is changing the policy settings. It may also policy settings. This warning may also be generated if multiple policy changes are for	/ appli indica very c
Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] , Micr Steadystate or similar system restoration / system security software OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature sing the debug log to investigate problems	Problem: Power r	nanagement event log repeatedly record warning events #4030/4059	
OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting featuresing the debug log to investigate problems	Problem: Power Steadystate or sir	reporting is inconsistent or intermittent when installed alongside Faronics [™] Deep Freeze [™] nilar system restoration / system security software	, Micro
sing the debug log to investigate problems	OR Workstations	are frequently up income devide interference with the Device MANI reporting frequence	
ther Deployment Resources		are frequently re-imaged and this interferes with the PowerMAN reporting feature	
Install	sing the debug	l log to investigate problems	
Remove	sing the debug ther Deployme	PowerMAN Command line options	1
Start	sing the debug ther Deployme Dendix A – F	PowerMAN Command line options	1
Stop. Restart	sing the debug ther Deployme Dendix A – F Install	PowerMAN Command line options	1
Restart Status Makeguid License Forceupload Hibercheck Sleepcheck Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks Dendix C – PowerMAN Configuration with RM Community Connect 3	sing the debug ther Deployme Dendix A – F Install Remove Start	are frequently re-imaged and this interferes with the PowerWAN reporting reature	1
Status Makeguid License Forceupload Hibercheck Sleepcheck Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start	are frequently re-imaged and this interferes with the PowerWAN reporting reature	1
Makeguid License Forceupload Hibercheck Sleepcheck Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks Dendix C – PowerMAN Configuration with RM Community Connect 3	sing the debug ther Deployme Dendix A – F Install Remove Start Stop Restart	I log to investigate problems	1
Forceupload Hibercheck	sing the debug ther Deployme Dendix A – F Install Remove Start Stop Restart Status	I log to investigate problems	1
Hibercheck Sleepcheck Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start Stop Restart Status Makeguid	I log to investigate problems	1
Sleepcheck Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start Stop Stop Restart Status Makeguid License	I log to investigate problems	1
Info Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start Start Status Makeguid License Forceupload Hibercheck	I log to investigate problems	1
Supportdump Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start Start Stop Restart Status Makeguid License Forceupload Sileepcheck	I log to investigate problems	1
Help Dendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – F Install Remove Start Start Start Status Makeguid License Forceupload Hibercheck Info	I log to investigate problems	1
pendix B – PowerMAN Configuration with Novell ZENworks	sing the debug ther Deployme Dendix A – I Install Remove Start Start Start Status Makeguid Forceupload Hibercheck Sleepcheck Supportdump.	I log to investigate problems	1
bendix C – PowerMAN Configuration with RM Community Connect 3	sing the debug ther Deployme Dendix A – I Install	are requently re-imaged and this interferes with the Powenvian reporting reature	1
Jenuix C – Powerman Configuration with RM Community Connect 3	sing the debug ther Deployme Dendix A – I Install	PowerMAN Configuration with Novell ZENworks	1
	sing the debug ther Deployme Dendix A – F Install	PowerMAN Configuration with Novell ZENworks	1



109
109
110
112
114
115
117
117
118
egistry
egistry 120
egistry 120
egistry 120 121 122
egistry 120 121 122
egistry 120 121 122 122
egistry 120 121 122 122 124 125
egistry 120 121 122 122 124 125 126
egistry 120 121 122 122 124 125 126 127
egistry 120 121 121 122 124 125 126 127 128



PowerMAN Overview



Data Synergy PowerMAN Power Manager is an advanced software product giving organisations of all sizes a simple and effective solution to manage PC running costs. PowerMAN complements the built-in power management features of Microsoft Windows® by providing:

• Comprehensive, centralised, configuration of PC power management

• Web-based, organisation-wide reporting of PC usage and costs

PowerMAN's innovative approach allows PC power features to be simply and centrally managed using familiar Windows tools. This dramatically reduces implementation time and delivers rapid results. PowerMAN's unique web-reporting system allows both IT and non-IT staff to monitor progress and identify areas for improvement.

The PowerMAN software is lightweight and scales very well. The client software (power policy implementation) is configured using standard registry based settings or Windows Group Policy. This does not normally require any additional server resources and will scale to the largest Windows based networks with ease. The PowerMAN reporting (server) software is only used for reporting and can handle > 50,000 computers on a single server. PowerMAN imposes minimal network bandwidth requirements and is designed to work alongside exist proxy and firewall systems. Typically, the standard power reporting feature generates less than 500 bytes of network traffic per day and the optional live reporting feature 2-4 KB/day depending upon activity.

This document explains how to install and configure PowerMAN Power Manager. This document is intended for a system / network administrator.

PowerMAN and PowerMON Products

PowerMAN software is distributed in two forms - **PowerMAN** and **PowerMON**.

The full software product is known as PowerMAN. This allows power management policies to be applied and power usage information to be monitored. PowerMON is a limited feature version of the same software that is used only for power monitoring. The same executable is used for both products. The term PowerMAN is generally used in the documentation. The supplied license key and ADM/ADMX files are different. Some sections in this document refer to features only available in PowerMAN.



New in PowerMAN v5.3 / v5.4

The PowerMAN v5.4 release includes several significant new features. Some of these are available immediately upon installation whilst report related features also require PowerMAN Enterprise Server (PMES) v5.3 to be available. This release of PowerMAN is fully backwards compatible with previous releases of PMES. The following new features are present:

- 1. PowerMAN now supports Windows 10.0. The features available are identical to PowerMAN running on Windows 7/8.x.
- 2. PowerMAN now supports optional **Live Reporting** when used with PMES v5.3. This shows the current workstation status across the selected reporting site and optionally all sub-sites. This feature requires minimal additional network bandwidth to provide an instant understanding of the current operational situation. It is ideal for display on departmental dashboards or similar.

Note: Live reporting requires a new client product key. This is available free-of-charge to PowerMAN customers with current software assurance agreements.



3. PowerMAN now incorporates **Availability Reporting** when used with PMES v5.3. This report shows workstations that are available for use and those already in use broken down by reporting site. This feature is intended for use on operational dashboards and organisation intranets:

Live Activity Breakdown

University of New Town Live Statistics

Detailed Activity Report



Sub-Site Computer Availability



4. The PMES v5.3 reporting engine has been updated to provide more granular information. In particular reports now distinguish between workstations that are idle because no user is logged on and workstations that are idle but logged on. This information can be extremely useful when designing a suitable remedial power policy. The PowerMAN client "No User" policy can be used to specifically target this scenario:



5. The workstation detail report has been redesigned to distinguish periods when the workstation was shutdown, suspended or forced awake by an application. This allows a detailed understanding of the workstation lifecycle to be formed and power management designed accordingly. In addition periods when the workstation is continually shutdown / suspended are now specifically distinguished in the report:



- *Report in local time. Includes 0.0 nour(s) time bias.
- PowerMAN now supports a Protected Users feature. This allows exceptions to the power management policy to be centrally configured on a per-user basis. This complements the Protected Workstation feature that was introduced in release v5.2.8.



7. PowerMAN scheduled policies (sleep, shutdown, reboot and wake-up) may now optionally be configured to only apply on specific days of the month:

🔙 Scheduled Suspen	d/Reboot/Shutd	own	1	J×
📷 Scheduled Susper	nd/Reboot/Shutd	own	Previous Setting Next Setting	
O Not Configured	Comment:			<u> </u>
Enabled				
O Disabled				-
	Supported on:	Windows 2000 or later		
				-
Options:			Help:	
Day(s) Everyday Only Date(s)(Optiona Time (hh:mm) 23:00 Mode Prompt User Action Hibernate Resume if necessary	(Allow cancel)		Define time/days system will automatically suspend, reboot or shutdown. Time is 24-hour local system time. Multiple dates may be separated with a comma () character. e.g. To wake on 1st and 10th of month specify '1, 10'. Leave dates blank if not required. If necessary the system can resume to perform operation. This may be useful to transition from one sleep state to another at a specific time. Some systems do not support wake from some sleep states Use the appropriate mode to avoid inconvenience to users.	3

- 8. PowerMAN may now optionally collect workstation hardware information. This may be useful when auditing an existing estate of workstations. This feature requires PowerMAN Server v5.3 or later and is enabled by default unless the computer identity is hidden. Information reported includes:
 - a. Number of CPU sockets / cores / logical processors
 b. Estimated CPU speed (MHz)
 c. CPU make / model
 d. Installed RAM

 - e. Motherboard make / model
 - f. BIOS make / version / release date
 - g. Number of hard / optical disks

Site	Data Synergy UK		
Computer	ENGAGE		
Created	04/06/2013	MAC Address	00-90-F5-A7-EF-EF
Last Status	05/05/2014	Client Version	5.2.8.5829
Supports States 🕥	S345	Windows® Version	6.1.7601 Service Pack 1
Supports Wake 🕡	S123	Timezone 🕡	1.0 hour(s) UTC
Disk Standby	Supported	Hardware buttons	Power Sleep Lid
System HDD Free	50,963 MB	Hibernation File (S4)	Present
Battery	Battery supported (Portable)	Platform	x64 (64-bit)
CPU Sockets/Cores/Logical	1/2/4 2261 MHz	CPU Model	Intel(R) Core(TM) i3 CPU M 350 @ 2.27GHz
System RAM	3892 MB	System Model / Vendor	W760 / CLEVO Co.
Fixed / Optical Drives	1/0	BIOS Vendor	Phoenix Technologies LTD

Data Synergy UK / ENGAGE



- 9. The PowerMAN client has been improved to support:
 - a. Ignore phantom (optical) mouse input when no user logged on
 - b. Refresh user desktop upon resume
- 10. The PowerMAN user interface has been extended with the following new optional features:
 - Opt-out and keep-awake selection may be discarded on logout or reboot
 - Notification of recent power events via the UI tray icon may now be disabled
 - Exit menu option may be disabled

These changes are designed to increase power management compliance by avoiding unnecessary user distractions and discourage long-term abuse of the UI features.

- 11. PowerMAN now includes a separate PowerINFO tool for power management debugging. This tool is also available as a free download on the Data Synergy website. The INFO command-line tool now reports additional wake timer information for Windows Vista and later.
- 12. **Protected programs** may now optionally include a minimum CPU activity threshold of 10-100%. Programs running below the threshold are treated as unprotected. This more granular configuration is intended to reduce cases where power management is unnecessarily disabled due to an idle protected program. This feature is backwards compatible with existing policies.
- 13. The "Protected Server Service" feature has been expanded to permit granular protection of just file and/or printer shares. This is intended to reduce cases where power management is unnecessarily disabled on systems that share resources. This feature is backwards compatible with existing policies.
- 14. The PowerMAN client now supports both Spanish and Italian language UI display.



PowerMAN Basics

PowerMAN offers many power management and reporting features. This section explains the key features and terminology used throughout the rest of this document:

Advantages over Windows built-in power management – Why PowerMAN?

Microsoft Windows includes a basic, built-in, power management system. This can be used to configure the computer to enter a low-power mode after a period of time. This feature has evolved with each version of Windows but remains limited. PowerMAN adds several important extensions:

- Central configuration of all power management features
- Multiple policies per user or computer
- Specific policy when nobody is logged on
- Multiple scheduled sleep, hibernate, shutdown or wake-up policies
- Option to logout or shutdown on idle
- Powerful, enterprise-wide, power management reporting

PowerMAN's unique benefit is that it places all of these features in one place and allows them to be used in any appropriate combination. This allows effective power management strategies to be created for every organisation that meet user requirements and maximize energy saving. The inclusion of a built-in reporting suite means that progress can be monitored and policies fine-tuned as necessary.

Low power modes - Shutdown, Hibernate and Sleep (S1-S5)

Modern PCs can offer several different power-saving modes. The PowerMAN site reporting tool can be used to find which states are available on each PC. Not all modes are available on all systems and each has some advantages:

- Shutdown (Power Off) The most efficient (and extreme!) method of power saving. This is generally not appropriate for situations where a user is logged on as it will result in loss of the user's session. Some environments, such as shared access areas, may invoke a complete shutdown after sufficient warning to deter users from leaving computers on and unattended
- Hibernate (S4) This consumes the same amount of power as shutdown but allows the user session to be restored with a short delay (usually about 30 seconds). This is appropriate for computers that are used long term by the same user and where it would be inconvenient to shut down the PC. Typically this policy would be used in an office environment.
- Sleep (S1-S3) This consumes slightly more power than hibernate but allows the user to become productive again after only few seconds delay. Typically a PC in this state requires less than 5% of the operating energy. Three different sleep modes (S1-S3) are available. Each offers increased levels of energy saving. In most cases the available options may be changed by using the appropriate BIOS setting.

In order of decreasing energy consumption the available states are as follows:



S1 Sleep (Smaller saving)	System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode. To maintain the user's session the power supply must remain connected.
S2 Sleep	System appears off. The CPU has no power; RAM is refreshed; the system is in a lower power mode than S1. To maintain the user's session the power supply must remain connected.
S3 Suspend (Bigger saving)	System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode. This mode is also referred to as 'Save To RAM'. To maintain the user's session the power supply must remain connected.
S4 (Hibernate) (Biggest saving)	System is off. The CPU and RAM have no power. This mode is also referred to as 'Save to Disk'. The power supply may be disconnected without any loss to the user's session.
S5 (Shutdown)	System is off. There is no user session. NB: A system in the shutdown state may still consume some energy if connected to the mains supply. In most systems there is no measurable difference in power consumption between hibernate and shutdown. In some cases support for Wake-on- LAN can slightly increase S4 power consumption.

The hibernate and sleep low-power modes **do not log out the current user**. This can result in the next user being unable to logon as the workstation is locked by the previous user. Therefore these methods are not appropriate for systems in public access areas unless combined with an enforced user logout policy. PowerMAN will use the most energy efficient state supported by the hardware. S3 is more efficient than S1



DMCMOS32.EXE Application Data Synergy also supplies an enterprise tool for deploying BIOS settings. If you require this utility to quickly deploy hardware settings to multiple computers please contact your sales representative.



Idle-based power management versus scheduled power management

→
conserve energy. Make a plan its power settings. <u>Tell me more</u>
Change plan settings
Change plan settings
Change plan settings
mption on capable
Change plan settings
where possible.
∥

PowerMAN allows power management actions to be triggered in two different ways:

- When the system is idle
- At a specific scheduled time

Basic idle based power management is available from the Windows Control Panel. This can be used to configure the computer to enter a low-power state (sleep or hibernate) after a pre-set period of idleness.

PowerMAN extends idle management to provide different policies for different users, times of the time and additional idle actions (logout, shutdown and reboot).

The computer is idle when no user activity occurs (keyboard or mouse activity) for a pre-set time and no important programs are running.



Scheduled power management allows the system to enter a low-power state or resume to a working state at a pre-set time.

Idle and scheduled can both be useful. Some organisations select an idle driven approach whilst others are more comfortable with a scheduled system.

Remember: Idle-based approaches generally offer greater energy savings because they allow each computer to respond dynamically to the environment. Scheduled approaches are more appropriate for environments with a rigid and predicable operating pattern. A timetabled school classroom is a common example.

In some cases it may be beneficial to use a mixture of approaches. PowerMAN fully supports this.



Default, No User, and specific-user idle policies

PowerMAN provides several different types of idle-based policies. Each has a specific use:

- **Default policy** Applies whenever another policy is not applicable. This is ideal if only one policy is required or to define a fall-back policy for use when no other is relevant
- No User policy Applies specifically when no user is logged on. This may be used to define
 a more aggressive power management strategy for this scenario. If a 'no user' policy is not
 present then the default policy applies
- **Specific user policy** Applies when a specific user or user group member is logged on. This allows a policy tailored for the user to apply. If no user policy is defined then the default policy applies.

Multiple Policies – Precedence order

PowerMAN allows multiple policies to be defined for each of the default, no user and specific user categories. Each policy may have an optional start/end time and apply only on certain days. Either of the time fields may be left blank. PowerMAN processes the policies in **strict order** and will apply the first applicable policy at any given time.

📔 Default Power Settings		
	Setting	State
#2	E Default Power Settings	Enabled
	Default Power Settings Additional #1	Enabled
Display <u>Properties</u>	Default Power Settings Additional #2	Enabled
Requirements:	📄 Default Power Settings Additional #3	Not configured
Windows 2000 or later	🖹 Default Power Settings Additional #4	Not configured
Description: Power settings that apply to all users (including when nobody is logged on) unless user specific settings are also present. The time settings are in local system time and may be blank.		

Policy enforcement feature (Anti-Insomnia)

Windows uses an idle countdown timer to track the last significant system activity. When this timer reaches zero the computer normally enters a low-power state (suspend). Activity such as keyboard/mouse or CPU usage can reset this timer and postpone the low-power state.

The Windows timer can also be inhibited or reset by applications. Applications legitimately do this when performing a critical task (such as an update) or when it would be inconvenient to the user for the system to enter a different power state. For instance, the idle timer is disabled when Microsoft PowerPoint is performing a slideshow.

In some circumstances applications may make excessive use of this feature. This is sometimes known as PC 'insomnia' and results in the selected power management policy not performing as expected. This will reduce system energy efficiency and increase operating costs. Depending upon the installed applications this phenomenon may almost never happen or may be a constant problem. PowerMAN includes a powerful policy enforcement feature that can be used to overcome this undesirable behaviour.







The PowerMAN reporting system marks periods spent in this 'forced awake' state with an exclamation mark (!) symbol. This will result in increased energy consumption if it occurs during otherwise inactive (red) periods.

There are several signs that policy enforcement may be required:

- Computer power settings often fail to behave as configured
- Power Management event log reports event #2003: 'The computer is being prevented from entering the idle state by an unknown program'
- The historic report for a computer include significant periods marked 'forced awake' indicated with the exclamation mark (!) symbol character

The PowerMAN Policy Enforcement feature allows you to configure a further 'grace period' timeout in **addition** to the standard timeout setting. When this time has expired PowerMAN will force the configured power action to occur. This works alongside the Protected Programs/Files feature and will not enforce a power action whilst protection is active.

The Policy Enforcement feature is enabled by default with a grace period of 15 minutes. This means that the assigned idle policy is enforced a maximum of 15 minutes after the last user activity. We recommend that this feature is not disabled to ensure maximum compliance. If necessary this feature may be configured or disabled.

Monitoring progress with PowerMAN reporting

PowerMAN allows PC operating information to be logged on a per-computer basis. This information is aggregated for each site and may be used to understand the usage profile of managed PC equipment, create a tailored management policy and monitor the on-going effectiveness of the policy. This process is fully described in a separate PowerMAN Server Platform guide. This section is designed to give you a brief overview of the features available.



The PowerMAN reporting platform is available as either stand-alone, PowerMAN Enterprise Server, software or as a hosted service. Both product editions offer the same reporting features.

The system presents PC power related information in a variety of graphical and tabular formats. The reporting system has the following key features:

- Rank computers by inactivity level and highlight the most and least wasteful computers
- Group similar computers, display summary information and drill-down to individual PCs





- Minimal network overhead at <0.5KB per PC/day. Only anonymous data is logged
- Addition 2-4KB per PC/day if live reporting feature is also enabled
- Download data in Excel compatible format

Tip: We recommend that each physical or functional area is reported on separately. We also recommend that each area with a distinct power management strategy is reported on separately. This will allow the effect of the strategy to be clearly measured.

Information is collected in an **anonymous format** that cannot be used to identify a specific user or the activity the user was performing. The information is uploaded in XML format using the industry standard HTTP POST protocol that is designed to work with proxy servers and network filtering. The protocol of the transmitted data is available, upon request, from PowerMAN Technical Support.

The statistics for a site can be viewed by visiting a specific URL on the PowerMAN logging server. The default hosted server provided with PowerMAN is <u>www.pmstats.org:443</u>. Detailed logs are normally retained for at least three months and after this period summary information is retained for at least a further year

Power Management Event Log

PowerMAN incorporates a powerful power management event logging feature. This can be accessed with the standard Windows event viewer tool **Eventvwr.exe**.

The event log combines relevant power related events together with PowerMAN activity in chronological order. This information can be extremely useful when investigating power management problems or fine tuning settings. There is a summary of the most commonly logged events in an appendix at the end of this document.

PowerMAN event log on Windows Vista/7/8/10 (under Application and Services Logs):

🛃 Event Viewer (Local)	Power Management Number of events: 2,027				
Custom Views Windows Logs	Level	Date and Time	Source	Event ID	Task Category
Applications and Services Logs	 Information 	09/04/2013 14:12:47	PowerMAN	6016	Reporting
Hardware Events	 Information 	09/04/2013 13:17:56	PowerMAN	4033	Policy
😭 Internet Explorer	 Information 	09/04/2013 13:17:16	PowerMAN	3004	Session
😭 Key Management Service	 Information 	09/04/2013 13:16:58	PowerMAN	4033	Policy
Microsoft	Error	09/04/2013 13:16:58	PowerMAN	6013	Reporting
🛃 Microsoft Office Alerts	🕕 Error	09/04/2013 13:16:58	PowerMAN	6032	Reporting
😭 Power Management	(i) Information	09/04/2013 13:16:58	PowerMAN	1002	Service
Windows PowerShell	(i) Information	09/04/2013 13:16:58	PowerMAN	6022	Reporting
Saved Logs	(i) Information	09/04/2013 13:16:58	PowerMAN	6003	Reporting
Subscriptions	(i) Information	09/04/2013 13:16:58	PowerMAN	6006	Reporting
	1 Information	09/04/2013 13:16:58	PowerMAN	6008	Reporting



PowerMAN can be configured to log additional information using the appropriate option under Advanced/Event Logging. The PowerMAN service must be restarted or the computer rebooted for this change to become effective.

Computer Management (Local)	Туре	Date	Time	Source
System Tools	Information	25/10/2008	19:33:51	PowerMan
Event Viewer	🔾 Information	25/10/2008	19:33:50	PowerMan
Application	🔥 Warning	25/10/2008	19:27:48	PowerMan
	Information	25/10/2008	19:27:48	PowerMan
Power Management	(Information	25/10/2008	19:27:48	PowerMan
Suctem	🔥 Warning	25/10/2008	19:27:48	PowerMan
Shared Folders	🔥 Warning	25/10/2008	19:17:48	PowerMan
Indicational Sector Secto	Information	25/10/2008	19:17:47	PowerMan
Performance Long and Alerty	Information	25/10/2008	19:17:47	PowerMan

PowerMAN event log on Windows XP/2003 (under Event Viewer):

Separate AC (mains) and DC (battery) policies

PowerMAN provides separate power management policies for systems running on AC (mains) and DC (battery) power. This feature is commonly used to provide for greater power saving on battery powered systems. PowerMAN uses the term AC to refer to mains power and DC to refer to battery power.

Tip: DC policies are ignored by default. This feature may be enabled by using the policy located under in the miscellaneous section. This feature may be ignored for desktop



Product Installation

Installation Prerequisites

PowerMAN supports the following platforms:

- **PowerMAN Client** Windows XP Professional, Vista, Windows 7, Windows 8.x and Windows 10.0
- **Reporting Server (optional)** Windows Server 2003, 2008 and 2012

The PowerMAN client is a common executable (EXE) on all supported versions of Windows. The client software is available in both 32-bit and 64-bit formats. The 32-bit version may be used in mixed 32/64-bit workstations estates and offers identical features on 64-bit systems.

In most cases the client software offers identical power management features on every supported Windows version. There are some minor differences between operating systems due to operating system design. Where necessary these are highlighted in this guide. In all other circumstances features and configuration are identical.

PowerMAN is designed to integrate seamlessly with a **Windows Active Directory / Group Policy** (GPO) infrastructure and can, in many cases, be configured and deployed in less than one hour.

Alternatively, PowerMAN may be installed with a variety of alternative deployment and configuration methods. Common examples are:

- ZENworks
- LANDesk
- RM Community Connect
- Altiris
- HP OpenView
- SMS
- SCCM
- XCOPY installation (single self-installing EXE)

The following sections explain the two most common deployment methods using Windows GPO and an SMS/XCOPYinstallation. It also explains how the registry settings may be created, without an Active Directory infrastructure, using a standard Windows XP or later client computer. The appendices at the end of this guide cover more specific installations for ZENWorks and RM Community Connect.

Windows 2000 Support: PowerMAN previously supported Windows 2000. This feature has been removed in v5.4.0. Please contact Data Synergy if you required Windows 2000 support for further information.



Getting to know your hardware

Before commencing a live PowerMAN deployment we recommend you spend some time investigating your PCs to understand what power management features they support. This information can be invaluable later when planning a power management strategy or troubleshooting a problem.

The following checks may be performed using the PowerMAN.exe located in the Standalone folder of the product distribution.

1. First, check the power management capabilities of a sample PC with the command:

POWERMAN INFO

PowerMAN will display useful technical information about the PC. The power capability information is located at the end of the display. A typical abbreviated output would be:

1
1
0
0
1
1
1
S3 (Standby/STR)
Unspecified
Unspecified

The five `Supports Sx' fields indicate which low-power state are supported. Generally support for any one of S1-S3 (sleep) and S4 (hibernate) is desirable. In some cases it may be possible to change the modes supported by amending the appropriate BIOS setting.

The 'Min RtcWake state' field indicates the maximum low-power state that the system may self-resume (automatically wake) from. This is usually S1-S4. If you intend to use the scheduled wake-up feature you should consider this field when determining which low-power states to use.

2. Secondly, you can check that the computer can sleep/hibernate and then self-resume about one minute later by using the following two commands:

POWERMAN SLEEPCHECK

or

POWERMAN HIBERCHECK



Deployment Preparation

Before starting on a PowerMAN deployment there are a few essential steps to prepare:

- 1. **Obtain a unique product key** There are two different types of product keys available:
 - PowerMON (Reporting only) PC power usage information is reported a PowerMAN server for analysis and display. This is ideal for environments with an existing power management system or for long-term audit purposes.
 - **PowerMAN (Full product)** In addition to the reporting features above, all power management features are enabled. PowerMAN can apply and manage all power policies.

For the purposes of this document the following *fictitious* information is used:

Organisation: Example Corporation Limited Product Key: XGHK-GABQ-GDTH-UJKQ-HYJK-DBKY

NB: This product key is a demonstration key and will not function on a live system. Please remember the client product key and the server product key **are different.**

PowerMAN **evaluation product keys** are designed to expire. When this happens PowerMAN stops applying new power settings and stops reporting usage information to the reporting server (if applicable). The PowerMAN service continues to run and internally cache PC usage information. In a normal configuration the log data is retained, by default, for 28 days. If a new product key is applied PowerMAN resumes normal operation following the next system reboot.

There is **no user pop-up** when the product key expires and the process is transparent to the user. PowerMAN continues to report in the event log.

- 2. Select a PowerMAN reporting strategy PowerMAN may be used with three different reporting strategies:
 - **No reporting** Power management only
 - Hosted power reporting Running on Data Synergy or partner servers
 - Private reporting Local PowerMAN Enterprise Server software

The hosted reporting system minimises installation time and avoids the need to provision a private server. The reporting features available are identical to the standard PowerMAN Enterprise server environment.

- 3. Determine if PowerMAN live reporting is required PowerMAN v5.3 and later includes optional support for additional "live" power management reporting. This additional reporting feature provides contemporaneous throughout the day at the cost of 2-4KB of additional network traffic. This feature is only available if normal PowerMAN reporting is also enabled.
- 4. Select a deployment method PowerMAN may be deployed using a variety of methods. The two most common methods, Windows Group Policy and an XCOPY style deployment are described in the following sections. The appendices at the end of this document contain worked examples for other installation methods.



- 5. **Select a deployment strategy** PowerMAN works best if it is used progressively to introduce power saving. The recommended approach for a new installation is as follows:
 - Initially deploy with monitoring enabled but no active power management
 - Wait several weeks for a usage pattern to emerge (two complete weeks is usually sufficient)
 - Activate some modest power settings. Typically these may include turning off PC's that are not logged on and turning off monitors after a few minutes. Wait another period to observe the effect of these changes before proceeding. This initial policy need not be visible to users.
 - Apply some more aggressive power settings. There are a number of approaches to this depending on the operation scenario. For example, some organisations hibernate computers that are not being actively used after 30 minutes. In a public access area, where a user should not be left logged on for prolonged period of inactivity it may be appropriate to shut down the computer (with suitable warning) after 10 minutes.
 - If appropriate consider communicating the strategy and on-going progress to the users. Some sites have reported that user participation may itself contribute significantly to real energy savings. It is even possible to create league table of the most wasteful users or departments!
 - Consider applying other settings that may be beneficial to users such as automatically starting PCs at a certain time in the morning. Please remember, of course, that in some scenarios with irregular usage patterns (such as libraries) this may result in a significant increase in energy consumption
 - Consider enabling the PowerMAN user interface icon. This may be used to permit some users to opt-out of the managed policy or to view their personal workstation PowerMAN statistics.
 - Continue to monitor the site periodically and ensure that the current settings are working effectively.

Preparation for PowerMAN reporting (Optional)

PowerMAN reporting complements the PowerMAN client software by providing powerful, enterprisewide, reporting of PC energy usage, costs and waste. The reporting software is available as both a hosted environment or traditional PowerMAN Enterprise server software running on an in-house server.

The reporting is optional – the PowerMAN client software will function fully without it. However, the reports can be extremely useful to monitor the on-going effectives of your PowerMAN installation and determine where further improvements can be made.

PowerMAN reporting is simple to configure but will work best if the reporting strategy is planned in advance. PowerMAN refers to groups of associated computers as a 'Site' and uses a unique identity, called a SiteGUID, to associate the workstations for reporting purposes. The SiteGUID must be registered with the reporting server for the data to be correctly attributed. Each site may also be given a friendly description.

Tip: PowerMAN Enterprise Server v5.2 and later supports automatic creation of reporting sites based upon the Active Directory membership of each workstation. To use this feature deploy **a single 'root' SiteGUID** to all workstations and enable automatic site creation on the server. Please see the PowerMAN Enterprise Server documentation for further details.



To prepare for reporting proceed as follows:

1. **Identify a group or multiple groups of PCs for deployment** – Each group of related PCs is known as a PowerMAN 'site'.

An **ideal site** is a group of similar PC's within a defined environment such as an office, department or computer room. It is also good practice to use a separate site for areas with **distinct power management strategies**. This will allow you to compare areas.

A typical site can have from 20 to several hundred computers and will be **suitable for managing as a single entity**. After deployment you should try not to change the scope of the site (it is easy to create another one) as this may reduce the quality of the report data gathered.

You can easily create additional sites to logically divide your estate of managed computers and nest sites within one another to reflect your organisation structure.

There is no limit on the number of sites supported.

2. If using <u>manual site creation</u>, allocate a unique SiteGUID for each site – A SiteGUID may be generated on the PowerMAN reporting website using the Add/Move Site link:

Example Corporation Limited

Organisation	Example Corporation Limited	OU=Desktop,DC=cor	rp,DC=local		
Created	01/01/2009	First Data	25/02/200	8	
Expires	Never	Last Data	25/04/200	9	
Min. Data Retention 😯	Unlimited	Total Computers	104 <u>Expor</u>	t	
		Total Sub-Sites	2 Export	Add/Move Site	

It may also be generated by a standard GUID generation program or by using the makeguid command built-in to PowerMAN:

D:\>POWERMAN MAKEGUID

{f2822500-7128-48ac-89c4-f9a15274afbd}

A SiteGUID created using this method MUST be registered on the server by using the Add/Move Site link before reporting can function.

Tip: PowerMAN software evaluations are usually supplied with an initial **Root SiteGUID** for the hosted reporting system.

This may be used directly to for basic reporting. In this case you do **not** need to create a new SiteGUID. Larger organisations may wish to create a hierarchy of sub-sites allocated each area separate SiteGUID. In this case the Root SiteGUID may be ignored.

 Alternatively, if using PowerMAN Enterprise Server v5.2 or later with <u>automatic site</u> <u>creation</u> enabled, determine the root SiteGUID from the server and deploy this to all workstations – This is the SiteGUID associated with the reporting location you wish to treat as the AD root. All further reporting sites will be automatically created below this level.



Microsoft Windows Group Policy Deployment Method

The most common way to deploy the PowerMAN client software is using Windows Group Policy. This feature is available on any network running Windows 2000 Server or later. The example below uses the Group Policy Management Console (GPMC) which is available from Microsoft as a free download (this is built into later versions of Windows 2003 Server and later). If GMPC is not available then the older GPEDIT tool (which is built in to Windows) may also be used.

Group Policy Management Console (GPMC) is available from:

http://www.microsoft.com/downloads/details.aspx?FamilyID=0A6D4C24-8CBD-4B35-9272-DD3CBFC81887&displaylang=en

PowerMAN client deployment requires two core files. These are the only files you need to perform an installation:





PowerMAN Setup.msi contains the PowerMAN program in a deployable form. This may be installed manually or via Windows GPO. This file also deploys the separate PowerSTART application that may be used to launch programs that require the system to remain active.

PowerMAN5.adm / PowerMON5.adm is an Administrative Template that is loaded onto the Windows Server and used to configure the PowerMAN or PowerMON software. An **ADMX** file is also provided for use on Windows 2008 and later servers. The policy features available are identical.

Making effective use of policy inheritance (Larger networks)

The supplied ADM/ADMX file can be used for both deployment and configuration. The basic example below assumes that there is only a single Organisation Unit (OU). However, PowerMAN fully supports operation in a diverse, multi-OU, network.



The ADM/ADMX file may be used to create several Group Policies to deploy unrelated settings at different OU levels. By default Group Policy will automatically propagate policies using inheritance so that lower objects receive the combination of higher level policies.

A common approach is to deploy the software and common settings (for instance the PID key) at the top level and apply more specific policies for child OUs.

Policy elements may be freely mixed in this way. The only requirement is that a specific policy setting must only be applied once.

Tip: A common configuration mistake is to create a separate PowerMAN policy for each distinct OU and duplicate settings. In a small Active Directory this may be acceptable but generally it should be avoided. If you find yourself duplicating the same setting several times this may indicate that the policy strategy selected is not making best use of policy inheritance.



In a network with multiple policies and/or reporting units, and where policy inheritance is not blocked, we recommend that policies are applied in three distinct layers:

- 1. **Common policies** License PID key etc. that apply globally
- 2. Reporting unit policy Reporting settings applied on a per location/site basis
- 3. **Power management policy(s)** Actual power management policies created for each scenario and linked to appropriate management units as necessary

Group Policy Worked Example (Windows Server 2003 and later)

To install PowerMAN using GPO on Windows 2003 Server proceed as follows. The procedure for Windows 2008/2012 Server is almost identical:

1. Open the Group Policy Management Console (GPMC.MSC):

Run	? ×
-	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:	gpmc.msc
	OK Cancel <u>B</u> rowse

 Locate the Organizational Unit (OU) that you wish to deploy the software to. The example deploys the software to a OU called Public Access Room





- 3. Right click the OU and select Create and Link a GPO here
- 4. Enter a name of the new policy and click **Ok**. The example creates a policy called **Software – PowerMAN Power Manager**.

New GPO		x
<u>N</u> ame:	Software - PowerMAN Power Manager	
	OK Cancel	

5. Select the newly created policy, right click and select Edit



6. The **Group Policy Object Editor** should open. This is used configure the deployment. Navigate to the **Computer Configuration** section and expand **Software Installation.** Right click and select **New/Package**:



Software - PowerMAN Power Mar	lager		
🖃 📄 Software Settings			
🕀 💼 Windows Settings	<u>N</u> ew	×	<u>P</u> ackage
Administrative Templates Gradient Configuration	⊻iew	×	
 	<u>P</u> aste Refresh Export <u>L</u> ist		
	P <u>r</u> operties		
	Help		

Remember: Most PowerMAN settings are made in the Computer Configuration section of the Group Policy Editor. This is because the software must be deployed to a computer (and not a specific) user. It is possible to assign individual policies to specific users or groups of users but this should only be done in an advanced installation. It is normally possible to achieve very good results without this extra complication.

7. Browse to the network share that contains the PowerMAN Setup.msi file and press Open.

Open						<u>? ×</u>
Look jn:	😂 Packages		•	G 🦻 🛛	• 🖽 🕈	
	PowerMAN5.ms	i				
My Recent Documents						
Desktop						
My Documents						
I						
My Computer						
- S						
My Network	File <u>n</u> ame:	\\win2003r2\Packages\Pow	verMAN5	.msi	<u> </u>	<u>O</u> pen
Places	Files of <u>type</u> :	Windows Installer packages	(*.msi)		•	Cancel

Remember: The MSI file should be placed in a **share** on the server that is accessible to the destination computers. A common technique is to grant **Domain Computers** read access of the share and underlying file system. This is explained further in the troubleshooting section below



8. Select **Assigned** as the deployment method. PowerMAN is a system application and therefore it is not appropriate to 'publish' it to users:

9. Right click on the newly created package and select **Properties**:



10. Select the **Deployment** tab (Advanced in some earlier service pack revisions) and tick **Uninstall this application when it falls out of the scope of management**. Click **Ok**:



PowerMAN Power Manager Properties
General Deployment Upgrades Categories Modifications Security
Deployment type
C <u>P</u> ublished
Assigned
Deployment options
Auto-install this application by file extension activation
Uninstall this application when it falls out of the scope of management
Do not display this package in the Add/Remove Programs control panel
Install this application at logon
Installation user interface options
C Basic
C Maximum
Ad <u>v</u> anced
OK Cancel Apply

11. Navigate to the **Computer Configuration / Administered Templates**, right click and select **Add/Remote Templates**:



12. Click **Add** and locate the **PowerMAN5.adm** file supplied. When this is completed click **Close**. It may be helpful to remove the other administrative templates present using the **Remove** button. These are not required for PowerMAN.

Tip: An ADMX file is provided for use on servers running Windows Server 2008 and later. It provides the same features as the ADM file. To install the policy files copy the **ADMX file** and **en-US** folder to the **\Windows\PolicyDefinitions** folder on the server and re-open the Group Policy editor. Please see the following microsoft documentation for further information:

http://msdn.microsoft.com/en-us/library/bb530196.aspx



13. The Group Policy editor should now contain a section for **PowerMAN Power Management** (other sections may be present depending on server configuration). When using the ADM file method this is located under **Administrative Templates.**

Select the PowerMAN Power Management section:



14. The right hand pane will display a list of the available policy settings:

Setting	State
Policy Preferences	
Custom Actions	
Protected Objects	
Miscellaneous Power Settings	
Device Power Settings	
Scheduled Actions	
No User Power Settings	
Default Power Settings	
🚰 Product Licensing	Not configured
🛐 Power Management Reporting	Not configured
🚳 Resume Configuration	Not configured
🚳 Advanced Settings	Not configured
🛐 Enforcement / PC Insomnia	Not configured
🚰 Global Power Settings	Not configured
🚰 User Interface	Not configured



PowerMAN Configuration

The following PowerMAN configuration sections are available:

Section	Meaning
Policy Preferences	Settings to manage lists of power policies that may optionally be selected by the user or external logic.
Custom Actions	Configure actions that occur during suspend and resume.
Protected Objects	Settings to configure a list of protected programs, files and times that, when present, ensure the system does not enter a low power state.
Miscellaneous Power Settings	Miscellaneous settings for power management
Device Power Settings	Settings to configure device support and behaviour in a power managed environment.
Scheduled Actions	Configure the system to shutdown, suspend, hibernate, reboot and resume at specific scheduled times.
No User Power Settings	Power settings that apply when no user is logged on (logon prompt screen)
Default Power Settings	Power settings that apply unless a more specific policy applies
Product Licensing	Product key settings. These are required for PowerMAN to fully function.
Power Management Reporting	Reporting site configuration information and report server settings
Resume Configuration	Configure system behaviour after automatic resume (auto wake-up or Wake-on-LAN)
Advanced	Advanced configuration and debug settings used to investigate problems
Enforcement / PC Insomnia	Settings to ensure other programs or Windows cannot override the selected power policy
Global Power Settings	Power settings that apply to all users
User Interface	User interface settings

A basic PowerMON or PowerMAN deployment, operating in reporting-only mode, requires **only five** settings:

- Registered organisation name
- Registered product identification key (PID key)
- SiteGUID You can generate this on the reporting system
- Logging server name The default hosted server is **pmstats.org**
- Logging server port The default hosted server port is 443. The default PowerMAN Enterprise Server port is 8080

To configure the product licensing proceed as follows:

- 1. Open the PowerMAN Group Policy previously created
- 2. Select Product Licensing, right click and select Properties
- 3. Select Enabled, carefully enter the product details supplied with the software, and click Ok



💭 Product Licensing	
Froduct Licensing	Previous Setting Next Setting
O Not Configured Comment:	
Enabled	
C Disabled	
Supported on:	Windows 2000 or later
Options:	Help:
	Estavasida en esta de la contra
Registered Organisation	most PowerMAN Power Management to function. Release v5.3.1
Example Corporation Limited	
Product Key	
XGHK-GABQ-GDTH-UJKQ-HYJK-DBY	

To configure the optional PowerMAN reporting settings proceed as follows:

- 2. Select Power Management Reporting, right click and select Properties
- 3. Select **Enabled** and configure the appropriate SiteGUID (including start and end brace characters) and reporting server details. For instance:

💭 Power Managemei	nt Reporting		
📷 Power Manageme	ent Reporting	Previous Setting Next Setting	
 Not Configured Enabled Disabled 	Comment: Supported on:	Windows 2000 or later	A F A F
Options: Site GUID {ca3fed90 Server pmstats.org Server Port 443 Proxy Proxy Port 8080	-8095-4eab-a21f-	Help: f4b6406b9bdz Configure settings used for power management reporting. The SiteGUID should be contained within braces {}. It is not necessary to prefix the server address with http://. The log backup file may optionally be used to store a duplicate copy of the power usage log. This may be useful for computers that are frequently reinstalled. If not required this may be blank. Hiding the PC identity will prevent the computer name and hardware MAC address from being reported. This will prevent this information from being used for Wake-on-LAN and for persistent ClientGUID generation. Live status reporting requires an additional product license.	Å





Optionally, you may also wish to enable hardware information and live reporting:

Include Hardware	Data Enable		•
Report live status	Enable	•	
Hide PC Identity	Disable	•	

More advanced installations may also require the following:

- Proxy server name
- Proxy server port
- Log Backup File

These settings may be ignored if they are not required. Please remember to ensure that your site firewall / proxy server will allow **http protocol** traffic to the logging server.

To complete the basic configuration click **Ok**

- 4. Close the Group Policy Object Editor and test the policy works by restarting a computer in the relevant Organisation Unit.
- 5. As the computer starts you should see the PowerMAN Power Management application install prior to the display of the logon prompt. If this does not happen please consult the troubleshooting section below.

Tip: Depending upon server configuration, timing and any other pending updates a second reboot may sometimes be necessary for the client software to complete installation. This is completely normal.

Whilst on Windows 7 and later the following dialogue is displayed during installation:





On Windows XP, for example, the following dialogue is displayed:



6. Confirm that the service has fully installed by opening the Computer Management Console (compmgmt.msc) and checking the status of the **PowerMAN Power Management** service. The service should be already **Started** as shown below:

🛃 Computer Management									
File Action View Help									
Computer Management (Local)	Name 🔺	Description	Status	Startup Type	Log On As				
🖃 🎁 System Tools	Reer Name Resolution Protocol	Enables serverless	Started	Manual	Local Service				
🕀 🕒 Task Scheduler	Reer Networking Grouping	Enables multi-party	Started	Manual	Local Service				
🛨 🛃 Event Viewer	🔍 Peer Networking Identity Manager	Provides identity se	Started	Manual	Local Service				
🕀 🛐 Shared Folders	Reformance Counter DLL Host	Enables remote use		Manual	Local Service				
E Second Users and Groups	Reformance Logs & Alerts	Performance Logs		Manual	Local Service				
E Service Measure	🔍 Plug and Play	Enables a computer	Started	Automatic	Local System				
	🔍 PnP-X IP Bus Enumerator	The PnP-X bus enu		Manual	Local System				
Disk Management	Republication Service	This service publish		Manual	Local Service				
Elsk Handgement	Rortable Device Enumerator Service	Enforces group poli		Manual	Local System				
Image: Service of the Application Service Image: Service of the Application Service	Rower	Manages power pol	Started	Automatic	Local System				
Services	RowerMAN Power Management Service	Provides advanced	Started	Automatic	Local System				
🕋 WMI Control	Rint Spooler	Loads files to memo	Started	Automatic	Local System				
🕀 🙀 SQL Server Configuration	Reports and Solutions Control Panel S	This service provid		Manual	Local System				
🕀 🗑 SQL Server Configuration	Rogram Compatibility Assistant Service	This service provid	Started	Automatic	Local System				
-	Revealed Storage	Provides protected		Manual	Local System				
I	SEXESVC			Manual	Local System				

7. If necessary you can always verify the version of the PowerMAN service by locating the program in the **\Windows\System32** folder (or \Windows\SysWow64 for 32-bit PowerMAN installed on a 64-bit platform):

🕌 System32									
Computer → Local Disk (C:) → Windows → System32 →									
Organize 🔻 🗊 Open Burn New folder									
🔆 Favorites	Name -		Date modified	Туре	Si	ze			
Downloads Desktop Recent Places Desktop Desktop Desktop Desktop Desktop	r powertracker.d	I	09/01/2015 03:14	DLL File		29 KB			
	OwerMAN.exe		29/09/2015 11:18	Application		1,376 KB			
	e powercpl.d powerMAN.exe Properties		×	475 KB					
🥽 Libraries	🗾 powercfg.e 🗮	a da am		1		70 KB			
🌗 Apps	🔊 powercfg.cj	General Compatibili	ty Security Details P	revious Versions	- 1	170 KB			
Documents	Documents 💽 pots.dll	Property	Value			27 KB			
Music PortableDe PortableDe Videos PortableDe PortableDe	Description				214 KB				
	📧 PortableDev	File description PowerMAN Service			166 KB				
	📧 PortableDev	Туре	Application			215 KB			
🤣 Homegroup	🔹 PortableDev	File version Product name	5.4.0.5924 PowerMAN Power Mana	gement Service		219 KB			



Alternative SMS / XCOPY Deployment Method

PowerMAN supports a variety of deployment methods. The so-called **XCOPY** method describes the most basic, manual, technique for installing the program. This may be adapted for environments such as SMS as required. This section explains the key features of such a deployment

- Obtain the PowerMAN installation file and install on the destination PC. There are several alternative ways for an Administrator level user to do this:
 - Double click the MSI file and follow the on-screen prompts



• Install the silently with the following command line:

MSIEXEC /I:"PowerMAN Setup.msi" /qn

Locate the PowerMAN.exe file in the Standalone folder (supplied with the PowerMAN distribution) and copy it to the \Windows\System32 folder on the destination computer:



This last method requires the service to be separately installed. This is only required the first time. Log on with an account that has administrative rights and execute the following command:

POWERMAN START

The PowerMAN.exe file is the **ONLY** file required on the client computer.

You may optionally wish to use the separate PowerStart.exe program. This can be installed by simply copying it to the \Windows\System32 folder.

Remember: The PowerMAN service must be installed by a user with local administrative rights. It is not possible to install PowerMAN using a logon script (which runs as a user). It is possible to install PowerMAN with a computer start-up script. See the following web page for an example:

http://technet.microsoft.com/en-us/library/cc779329(WS.10).aspx


Deploy the required configuration settings using the Windows Local Group Policy, REG.EXE or **REGEDIT** tools. The section 'Alternative Configuration Method - Local Group Policy / Registry Settings' at the end of this document explains how this may be done. As noted above the minimal required settings are normally:

- Registered organisation name
- Registered product identification key (PID key)
- SiteGUID You can generate this with the MAKEGUID command
- Logging server name The standard server is pmstats.org
- Logging server port (usually 443 for hosted system and 8080 for PMES)

Deploying PowerMAN in a pre-built software image 'Ghost'-style deployment

PowerMAN fully supports deployment in a pre-built software image. This is sometimes known as a 'Ghost'-style deployment. Typically, in this scenario, PowerMAN is manually installed on a master computer. In some cases some initial settings may be configured using Local Group Policy or similar. This computer is then cloned on to multiple destination computers. There is one important thing to remember when performing such a deployment:

Remember: The ClientGUID value is used to uniquely identify each computer. This is automatically generated and should not be cloned from one computer to another. If this field is removed PowerMAN will generate a unique new ClientGUID. If the same ClientGUID is present on multiple computers this will prevent the reporting feature from operating correctly. Please remember to remove the ClientGUID prior to creating the master software image. The easiest way to do this is to stop the PowerMAN service and then use the RegEdit tool to delete the setting from the HKLM/Software/PowerMAN registry key. This step should be performed just prior to creating the software image.

Deploying PowerMAN updates

PowerMAN is periodically updated. This may be necessary to resolve minor product problems or introduce new features. For technical reasons the MSI file supplied with PowerMAN does not support in-place upgrade installations. Therefore the existing PowerMAN installation must be removed prior to installing a new one. This is a transparent process and no reporting continuity will be lost if PowerMAN is immediately replaced. There are several ways to achieve this:

- Using Group Policy for deployment (recommended method): Create a new PowerMAN policy and unlink the old one. The old installation will be removed and the new one installed the next time the workstation is rebooted. This should normally only require a single reboot.
- Using Group Policy for deployment (alternative method): Use the Group Policy update feature by amending the existing policy to update the deployed MSI file. This is supported because Group Policy automatically removes the old software before deploying the new version
- Non-Group Policy deployments (e.g. SMS/XCOPY etc.): Use a deployment script that executes the following sequence:
 - POWERMAN REMOVE
 - Copy new PowerMAN.exe to \Windows\System32
 - POWERMAN INSTALL



Removing PowerMAN (Uninstallation)

PowerMAN may be removed using the reverse of the mechanism used to install it:

- **Group Policy based deployment:** Unlink the policy. PowerMAN will be removed following the next system reboot
- Non-Group Policy deployment (e.g. SMS/XCOPY etc.): POWERMAN REMOVE

When PowerMAN is uninstalled the cached reporting information is retained in the Registry. This allows a subsequent installation to continue the reporting process with no loss in data continuity. To completely remove PowerMAN and the Power Management event log the following Windows commands may be used:

REG DELETE "HKLM\SYSTEM\CurrentControlSet\services\eventlog\Power Management" /f

REG DELETE "HKLM\SOFTWARE\PowerMAN" /f



PowerMAN Configuration

PowerMAN provides support for a wide variety of power related settings. The following sections provide a summary of the supported configuration features.

Tip: Unless stated otherwise all times are local times (to the PC) and in 24-hour format.

Product Licensing

The **Product Licensing** settings are used to configure the unique organisation product license. These **MUST** be configured for PowerMAN to function:

Setting	Meaning
RegisteredOrganisation	The organisation that PowerMAN is licensed to. This must be spelled exactly as supplied.
	e.g. Example Corporation Limited
RegisteredProductKey	The unique product key (PID) required to activate the software. This is exactly six groups of four characters separated by five dashes.
	e.g. XGHK-GABQ-GDTH-UJKQ-HYJK-DBKY

Power Management Reporting

The **Power Management Reporting** settings are used to configure site membership and reporting server. These can be disabled if reporting is not required. This is, however, not recommended, because it will mean there is no direct way to measure site performance or fine tune the configuration.

Remote Management and	Meaning
Monitoring	
Site GUID	Unique site identity used to track a group of computers that are managed as a single entity. This value can be generated on the server or with the Makeguid command.
	e.g. {5c952c78-832f-4b68-bbf3-9986262e55ed}
	PowerMAN Enterprise Server v5.2 and later supports automatic site creation. If this feature is being used then all workstations should be assigned the root SiteGUID. Please see the PowerMAN Enterprise Server documentation for further details.
Server	The address of the logging server. This can be blank if management reporting information is not required. The standard logging server is pmstats.org
Server Port	The port number of the logging server. This is usually 80, 443 or 8080. The pmstats.org hosted reporting system is available on ports 443 and 8080 . A private PowerMAN Enterprise Server may be configured to run on any port.
Proxy	The address of the local proxy server that PowerMAN must use to send management information to the logging



	server. This can be blank if a proxy server is not required.
Proxy Port	The port number of the proxy server. This is typically
	8080 and is ignored if no proxy server is configured.
Log Backup File	Some sites frequently re-install (sometimes called re-
	image) workstations to ensure a smooth user experience.
	A similar scenario occurs when system protection
	software such as Faronics Deep Freeze or Microsoft
	Steadystate is used. In such configurations the most
	recent power usage information can be lost during a re-
	Installation. This can result in the PoweriviAN reporting
	avoided by configuring PowerMAN to store a backup of
	the usage information. It is the responsibility of the system
	administrator to ensure that this file is protected during
	the reinstallation process by either excluding it from being
	over-written or by moving it to a safe location. This setting
	must refer to a <i>local</i> path.
	e.g. %windir%\system32\logfiles\PowerUsage.xml
	e.g. T:\PowerUsage.xml
	Tin: If the workstation is not frequently re-installed
	this setting may be left blank. When used with
	Faronics® Deep Freeze this file may be located in the
	'Thaw Space'. This may optionally be hidden.
Report Live Status	Report contemporaneous power status information
-	whenever a significant power management event occurs.
	This includes:
	Start-up / shutdown
	Sleep or hibernate
	Resume
	User logon / off Detters / Mains a surger sources
	Battery / Mains power source
	NB. This feature is enabled by default and will generate a
	very small amount (approximately 2-4KB) of additional
	network data per day/workstation. This feature requires
	PMES v5.3.0 or later.
Include Hardware Data	Report hardware details about the current workstation
	including:
	Number of CPU sockets / cores / logical
	processors
	Estimated CPU speed (MHZ) ODL make (model
	CPU make / model
	 IIIStalleu KAIVI Motherboard make / model
	 Woulderboard Make / Model BIOS make / version / release date
	 DIUG IIIake / Veision / Telease date Number of hard / optical disks
	NB: This feature requires PMES v5.3.0 or later
Hide PC Identity	Do not report the computer name or MAC address. This
	may be desirable to further anonymise the PowerMAN
	data collected. Enabling this feature will make it
	impossible to determine which workstation generated the
	data.



Default and No User Power Settings

The **Default Settings** and **No User Power** features allow idle policies to be configured for all users and when nobody is logged on respectively. If a 'No User' policy is not specified then the default policy also applies when nobody is logged on.

In some situations it may be desirable to employ a separate, often stricter, policy when no user is logged into the computer. For instance, it is often acceptable to shut down a computer when no user is present although this may be unacceptable for a user is logged in. The **No User Power Settings** section allows you to configure a separate policy for this situation. The majority of the settings are comparable to those available in the Windows XP control panel applet (Powercfg.cpl).

Tip: In addition to supporting distinct policies for different user scenarios, PowerMAN also allows different policies to be active at different times. These features may be combined to create a layered power management strategy where different policies apply at different times and to different users. PowerMAN prioritises the policies in numerical order and implements the first applicable policy.

Setting	State
🔚 Default Power Settings	Enabled
🔝 Default Power Settings Additional #1	Enabled
📔 Default Power Settings Additional #2	Enabled
📰 Default Power Settings Additional #3	Not configured
🔚 Default Power Settings Additional #4	Not configured

Tip: Take care to avoid overlapping policy times. PowerMAN will always use the first applicable policy and therefore will normally ignore an overlapping policy.

Default Power Settings	Meaning	
Logout Timeout AC	The inactive time in minutes, when running on AC (mains	
	power), that will trigger the user to be logged out.	
Logout Timeout DC	As above but applies when running on battery power.	

The following settings are available for both the Default and No User configurations:

Default and No User Power Settings	Meaning
Policy Name	A name to identify the policy. This is displayed in the
-	Control Panel power applet and also used in the power
	management event log. The policy name is mandatory.
Idle Action AC	The action to take (shutdown, suspend, hibernate,
	nothing) upon entering the idle state
Policy Applies	The days that the policy will apply
Start Time (hh:mm) (Optional)	The time of day the policy starts to apply. This may be
	blank. A blank time is treated as 00:00.
End Time (hh:mm) (Optional)	The time of day the policy ceases to apply. This may be
	blank. A blank time is treated as 23:59.
Idle Timeout AC	The inactive time in minutes, when running on AC (mains
	power), that will trigger the idle action.
Idle Action DC	As per Idle AC but applies when running on battery power.
Idle Timeout DC	As above
Monitor Off AC	The inactive time in minutes, when running on AC power,
	before switching the console monitor off.
Monitor Off DC	As per Monitor Off AC but applies when running on
	battery power.



HDD Off AC	The inactive time in minutes, when running on AC power,
	before switching the hard disk off.
	NB: This policy may not be very effective on many
	systems that perform frequent background tasks. See
	troubleshooting section for further information.
HDD Off DC	As per HDD Off AC but applies when running on battery power.
CPU Performance AC	The processor throttling policy to apply when running on AC power:
	Adaptive – Match performance to demand
	Degrade – Maximize energy saving by reducing CPU performance
	None – Maximize performance (increased energy consumption)
	Processor throttling is not available on all hardware and is ignored if it is not supported. Energy consumption can be dramatically reduced when CPU Performance is set to degrade. This is especially useful when no user is present as it unlikely to have any adverse impact. See the following for additional information:
	http://www.microsoft.com/whdc/archive/winpowmgmt.mspx
CPU Performance DC	As per CPU Performance AC but applies when running on
	battery power.
Preference Tag (optional)	See policy preferences section for further information. This setting may be blank.

Power Options Properties	Power Options
Power Schemes Alarms Power Meter Advanced Hibernate	Advanced settings
Select the power scheme with the most appropriate settings for this computer. Note that changing the settings below will modify the selected scheme.	Select the power plan that you want to customize, and then choose settings that reflect how you want your computer to manage power.
Power schemes	Change settings that are currently unavailable
Managed policy for James	Managed policy for James [Active]
Save As Delete	Additional settings
- Cattings for Managed policy for Lange power scheme	Hard disk
When computer is: 2 Plugged in 19 Running on	Wireless Adapter Settings Sleen
	Sleep after
Turn off hard disks: After 15 mins 🗸 After 15 mins 🗸	Hibernate after
	Plugged in: 15 Minutes
System standby: After 30 mins 👻 After 30 mins 💌	IUSB settings
System hibernates: Never Vever	Restore plan defaults
OK Cancel Apply	OK Cancel Apply
PowerMAN running on Windows 2000 / XP	PowerMAN running on Windows Vista/7/8/10



Scheduled Actions

The **Scheduled Actions** feature allows specific power management actions to occur at specific times. This can be used to shutdown, reboot or suspend the PC and optionally resume it again. Multiple scheduled actions may be configured to run concurrently.

Setting	Meaning
Randomly Distribute Wake Times	Allow wake-up times to be distributed a few seconds either side of the specified time. This is option is designed to avoid power surges that could result from many computers simultaneously resuming at the same time.

Scheduled Wake (Resume)

The **Scheduled Wake** option allows you to configure a time that the computer will automatically wake from the sleep or hibernated states:

Scheduled Wake	Meaning
Days	The weekdays that the scheduled wake policy will apply (typically All or Mon-Fri). This option may be extended by editing the ADM file. See appendix for further details.
Only Dates (optional)	The days of the month that the scheduled action will apply. This works in combination to the weekdays specified and may be left blank if not required. e.g. To wake on the 1 st ,8 th , 15 th and 29 th of each month at 23:00 - specify: 1, 8, 15, 29 and set days to "Everyday" Day(s) Everyday Only Date(s)(Optional) 1, 8, 15, 29 Time (hh:mm) 23:00
Time (hh:mm)	The local time that the computer is scheduled to wake. Typically this value is set to be a few minutes before the user requires the computer. Remember that, depending on other power settings, the computer may shutdown or sleep if no activity occurs within the timeout period.



PowerMAN uses two complementary systems for PC wake-up.

The scheduled wake-up feature uses the timer built-in to most modern computers. This more reliable than Wake-on-LAN (WoL) techniques and does not require any network communication. You can test this feature on a PC by using the SLEEPCHECK or HIBERCHECK commands. The scheduled wake feature is not suitable for ad-hoc wake because the timer must be configured before the PC enters the low-power state.

The PowerMAN server system also allows you to perform ad-hoc system wake-up. This can be accomplished by clicking the link provided on the server reports or by manually forming the required wake URL. This feature requires the Data Synergy WakeMAN software.

To use a WoL based technique some computers will need this feature to be enabled. This configuration is usually accomplished in two phases:

1. Wake-on-LAN must be enabled in the BIOS. The Data Synergy DMCMOS32 tool may be used to automate this process

2. The network card must support WOL and this must be enabled in Windows Device Manager

Remember: Not all computers supports scheduled wake. This is because it requires certain circuitry to be present on the computers motherboard. In practice most modern computers do have this function. In some cases it may be necessary to modify the BIOS settings to enable this feature. PowerMAN is capable of reporting if the computer *believes* it is capable of automatic wake. This reporting information is, however, not always accurate. If in doubt please contact your PC vendor. PowerMAN Technical Support can provide further information on debugging automatic wake issues.

Scheduled wake can be especially useful when combined with an idle action of sleep or hibernate. Typically most modern systems cannot resume from the full power-off state but can resume from sleep/hibernate. This means that a system can be automatically made available at a specific time of day such as the start of a school day.



Scheduled Suspend / Reboot / Shutdown

The **Scheduled Suspend/Reboot/Shutdown** feature allows you to specify a scheduled time that the system will automatically enter a power saving state, reboot or shutdown. This approach is generally not as power efficient as idle based approaches but may be appropriate in classrooms or similar where a predictable outcome is desirable:

Scheduled Shutdown/Sleep	Meaning
Days	The weekdays that the scheduled action will apply (typically All or Mon-Fri). This option
	may be extended by editing the ADM file.
	See appendix for further details.
Only Dates (optional)	The days of the month that the scheduled
	action will apply. This works in combination to
	the weekdays specified and may be left blank
	if not required.
	e a To sleep on the 1 st and 10 th of each
	month specify: 1 10 and set days to
	"Everyday".
Time	The local time that the computer is
	scheduled to enter the specified state.
	Typically this value is set to be a few minutes
	after the closuring of a public access area.
Mode	How to apply the specified action - This may
	be one of the following.
	1. Allow user to cancel the action (the
	user is prompted)
	2 Do not allow upor concel (the upor in
	2. Do not allow user cancel (the user is warned but cannot prevent the
	action)
	3. Only if no user logged on (the action
	is ignored if a user is present)
Action	The action to take. This may be sleep
Action	hibernate, reboot or power off.
Resume If Necessary	Allow system to wake from a low power state
	in order to perform another task or transition
	to another power state.
	This potting is typically used in any ironmente
	where Sleep (S1-S3) is used during the
	davtime but at night additional energy saving
	is desired by changing to Hibernate (S4) or
	power off (S5). If this setting is enabled the
	system will wake from one state and
	immediately transition to the specified state.
	As with the scheduled wake feature this
	tunction depends upon the hardware support
Override	I for scheduled wake-up.
	Allow Scheduled event to be inhibited by other programs or settings. This option can
	be used to prevent the event from occurring
	when a protected program or file is present.



User Prompt	The message displayed to the user (if present) when the scheduled action runs
Prompt Timeout	The time that the message is displayed to the user.
Maximum Postpone	The maximum time that the user may postpone the scheduled action (if permitted).
	with each postponement subject to the prompt timeout period.

Tip: Some organisations have found that power saving can be maximized without sacrificing usability by combining sleep and hibernate. In such a configuration sleep is configured as the 'daytime' idle action with a relatively low timeout value (for example 10 minutes). This means that the system will frequently sleep but is available almost instantly should the user require it. The user experience with such a light sleep is very similar to that when only the monitor is turned off. When this is combined with scheduled hibernation during non-operating hours (night) and wake at the start of operating hours the user may not even notice that the system is using power saving.

Scheduled Power Management [Remaining 50s]					
Ċ	The computer ha	s been configure	ed save energy	by sleeping wh	en unused
1 Minute 1 Minute 2 Minutes 5 Minutes 10 Minute 30 Minute 60 Minute 120 Minute	S S S S es	Postpone		Cancel	OK



Global Power Settings (Power buttons, lid switches etc.)

PowerMAN supports the following **Global Power Settings**. These apply to the workstation at all times regardless of which user is logged on:

Global Power Settings	Meaning
Lid Open AC	The action to take, when running on AC
	opened. Support for this feature may not be
	present on all hardware.
Lid Open DC	As above but applies when running on DC
	power
Power Button AC	The action to take, when running on AC
	power, when the power button is pressed.
Power Button DC	As above but applies when running on DC
	power
Sleep Button AC	The action to take, when running on AC
	power, when the sleep button (if present) is
	pressed.
Sleep Button DC	As above but applies when running on DC
	power
Lid Close AC	The action to take, when running on AC
	power, when the computers lid (if present) is
	shut. Support for this feature may not be
	present on all hardware.
Lid Close DC	As above but applies when running on DC
	power
Password on wake	Require a password when the computer
	wakes from sleep or hibernate. This should
	normally be enabled.
Show power meter	Show the power meter on the task bar. This
	policy should generally only be enabled for
	laptop computers.
Video Dim DC	Dim the screen when running on DC power.
	This policy is typically only supported by
	some laptop computers.

Protected Objects (including maintenance windows)

PowerMAN allows various objects to be 'protected'. When a protected object is present power management may be inhibited. The following protected objects are supported:

Protected Setting	Meaning
Protected Times (maintenance windows)	Specifies a time window that power management will be disabled. Optionally the system may be configured to resume from a low-power state to enter the protected time period.
	A protected time may optionally be specified to only apply on certain days of the month. This works in combination to the weekdays specified and may be left blank if not required.



	e.g. To apply on the 1st and 10th of each month specify: 1, 10 and set days to "Everyday"
Protected Computers	Specifies a list of computers where power management is disabled. This may be used to provide exceptions for certain computers within a policy group that generally implements power management.
Protect Computer	Protect any computer that this policy is deployed to.
Protected Programs	Specifies a list of programs that, when running, require the system to remain awake.
	Program names should be specified without a file extension.
	e.g. CMD and not cmd.exe
	To specify a minimum CPU load% threshold for the protected program use ;10%
	e.g. CMD;10
	The minimum CPU load must be 10-100%
Protected Files	As above but applies to files. When a file in the protected list exists PowerMAN will ensure that the system remains awake.
	Files should be fully qualified and include a file extension.
Protect Users	e.g. C:\CONDOR\ACTIVE.LOG

The **Protected Server Service/Shares** feature allows you to configure the client computer to remain awake (not idle) when the computer is sharing resources:

Protected Setting	Meaning	
Protected Server Service/Shares	The following options are available:	
	Server service running – This service provides resource sharing features to other computers. It is enabled by default. This option should be used cautiously as it will inhibit power management on typical systems.	
	File shares – Power management is inhibited if any file share is present	
	Print shares – Power management is inhibited if any file share is present	
	This policy also supports logical combinations of File/Print shares.	



Resume Configuration Feature

By design Windows will return to the previous low power state (sleep or hibernate) after few minutes if there is no user activity following an automatic resume. This feature is automatically disabled as soon as user activity resumes. On some systems application behaviour may interfere with this feature or it may be undesirable. For instance, this Windows feature can sometimes interfere with a scheduled Anti-virus scan.

PowerMAN's **Resume Configuration** feature allows this Windows feature to be inhibited where necessary:

Resume Configuration Setting	Meaning
Inhibit re-suspend timeout	Specifies a period of time during which PowerMAN will prevent the system from returning to the previous low power state. If no user activity occurs during this period PowerMAN will subsequently allow the PC to return to the previous low power state. This process is terminated immediately upon any user activity
Activate Display *	Allow the display to be turned on following an automatic system resume.
*This feature is not supported on some hardware platforms or graphics cards.	

Power Policy Enforcement / Anti-Insomnia Feature

PowerMAN supports a **Policy Enforcement / Anti-Insomnia** feature. This can be used to ensure that the specified idle action will occur and cannot be suppressed by Windows or another program. This is sometimes known as 'PC Insomnia' and is necessary on some systems where the installed software may periodically reset the Windows idle timer or otherwise prevent the system from idling.

Policy Enforcement Settings	Meaning		
Extra Timeout AC	The amount of time, in addition to the		
	specified idle timeout after which the idle		
	action will be forced.		
Extra Timeout DC	As above but applies when running from		
	battery power.		
Managed policies only	Apply policy enforcement to managed (PowerMAN) policies only. If this setting is set to disabled policy enforcement will be applied to the active power scheme even if it was not created by PowerMAN. This is disabled by default.		
No user policy only	Apply policy enforcement only to the 'No User' policy that applies when nobody is logged in. This is disabled by default.		

The policy enforcement feature is enabled by default with a grace period of 15 minutes. We recommend that this feature is not disabled.



Hardware Device Power Management Settings

PowerMAN allows the power management properties of some hardware devices to be configured centrally. This feature is intended to ease the transition to a power managed environment by ensuring hardware settings are consistent. Separate settings are provided for portable (laptop) and desktop computers. Portable computers are those with an internal batter. All of the following features become effective at the next reboot:

Device Power Management Setting	Meaning
Network interface power management	Specify power saving / wake mode for supported network interface devices. This may be used in preperation for a Wake-on- LAN (WoL) deployment or to disable WoL.
	The available options have the following meanings:
	Disable power management – No power saving enabled.
	Allow power saving modes – Allow device to enter low-power state
	Allow computer wake (any) – Allow any network packet to wake workstation (not recommended)
	Allow (WoL) computer wake (strict) – Allow only Wake-on-LAN packets to wake PC. This is the recommended setting.
	The 'Allow Wake (Any)' setting may cause occasional wake-up due to normal network traffic and should not be used on portable computers. This setting becomes effective on the next reboot.
	This feature supports most network interface devices. Please contact Data Synergy Support if this feature fails to work with your device for further advice.
USB Hub power management (Selective Suspend)	Configure power saving mode for USB hubs. In some Microsoft documentation this feature is known as 'selective suspend'. Allowing USB hubs to enter a low-power state can decrease overall energy consumption. However, this may also prevent a device such as a keyboard, connected to the hub from being used to wake the workstation.
	NB: The principle purpose of this feature is to disable power management for USB hubs that manage a USB keyboard where the keyboard is used to wake the PC.
HID Keyboard / Mouse wake	Configure keyboard / mouse devices to wake the PC. In some cases this may also require



	a related BIOS settings change to operate.	
	This feature is not available for legacy PS/2 devices.	
USB S3 Sleep / Wake (Windows XP/2003 only)	Allow S3 sleep mode when USB devices are configure to wake the system. On some systems compatibility problems have been found with S3 mode when using USB devices.	
	In some rare cases using this feature can result in system instability during suspend or resume if S3 is not fully supported. Please see <u>http://support.microsoft.com/kb/841858.</u>	
	This is only supported on Windows XP/2003 and may not function for all hardware.	

User Interface Settings



PowerMAN includes an optional user interface feature. This makes some convenient options available to users via an icon in the System Notification (Tray) area.

The user interface allows users to interact with the power management strategy and, within limits, customise it for their own requirements. Experience has shown that this can greatly increase user acceptance of a new power managed environment.

The user interface may be enabled only for certain users and each feature within the interface may be configured via the policy settings below:

User Interface Setting	Meaning
Display GUI	Enables sdisplay of the user interface icon. If necessary the icon can be enabled without enabling any of the other UI features.
Help Page	The URL of the power management help page. This can be the default page provided by Data Synergy or a custom page specific to your organisation. To disable this feature blank the page link. The default page is: http://www.datasynergy.co.uk/help/powermanhelp52.aspx
Allow exit	Permit user to exit the UI
Allow opt-out	Configures the opt-out menu option. When enabled this allows a user to opt-out of the centrally managed power management strategy and self-configure using the standard Windows Control Panel appley (powercfg.cpl). When this feature is enabled the Control Panel power management applet can be opened by double clicking on the PowerMAN Icon We recommend that this feature is only enabled for



	users that strictly require it.		
Allow keep awake	Configures the keep awake feature. When enabled by the user this feature will prevent the computer from entering a low power state.		
	We recommend that this feature is only enabled for users that strictly require it.		
Personal Statistics Link	Enables display of the personal statistics menu option. When selected this link will open the PowerMAN statistics webpage for the current workstation.		
	This option is intended for computers that are predomenatly used by a single user and should not be enabled for shared workstations.		

The majority of user interface settigs are available as both per-computer and per-user settings. If a user policy is specified it takes precenece over the computer policy. The behaviour of the user interface feature may be further modified using the miscellaneous settings.

PowerMAN User Interface Icon

The PowerMAN icon displays the current power management state. In some cases the icon may be overlaid with an additional symbol as indicated below:

Meaning / Icon		Keep awake enabled	Out-out enabled	Forced awake (third-party app)
Managed Plan Active	G	-		
No managed plan / Managed plan not active	C			

The user interface is designed to place minimal requirements upon the workstation. For this reason it only updates every few seconds. There may be a small delay between changing power management state and the icon changing. This is normal.



Miscellaneous Power Settings

PowerMAN provides several miscellaneous configuration features under the miscellaneous section. These are generally minor features or features that influence the way other policies are interpreted.

Separate DC power policy settings are provided for systems, such as laptop computers, that run on both AC and DC power. Typically the DC policy will be stricter to enhance battery life. For desktop computers these values should be set to the same as the AC policy. The DC settings are ignored unless the Separate DC Settings feature is enabled:

Setting	Meaning
Separate DC Settings	Allow separate DC settings to be configured.
	When disabled any DC settings are ignored.
	This option should be set to not-configured or
	disabled except when configuring PowerMAN
	for use with portable computers. If separate
	DC settings are used care should be taken to
	ensure they are compatible with the AC
	settings.

The **Hibernate (Suspend to disk)** option allows you to remotely enable the Hibernate (S4) power saving state. This is the same as selecting the checkbox on the local computers Power Management Control Panel applet. As noted elsewhere S4 is the most effective power saving state available that still retains the users' (logon) session state.

Setting	Meaning
Hibernate (Suspend to disk)	Enable support for the hibernate (S4) power
	saving option. This is the same as ticking the
	hibernate option in the local control panel
	applet. If hibernate is not enabled attempts to
	hibernate will normally result in Suspend To
	RAM (S1-S3) instead.

PowerMAN allows the various built-in Windows power management tools to be hidden. These settings are available separately, using several different policies provided by Microsoft, and is therefore provided to simplify the process with a single configuration option.

Setting	Meaning
Hide Power Management Tools	Hide the Power Management control panel applet and the Screen Saver configuration tab of the display properties applet.
	This feature is only available in Windows XP/2003.

Remember: Only Power Users and Local Administrators can usually change the computer power settings. PowerMAN allows you to specify settings for all users regardless of their access level. The option to hide the built-in Windows tools is designed to prevent casual tampering. It will not prevent a knowledgeable Power User (or above) from loading the Power Management Control Panel applet (Powercfg.cpl) manually. This should not be a significant concern as any configuration changes a user does make will be erased the next PowerMAN updates (usually every 10 minutes). If users really require the ability to override you Administrator defined configuration you should consider either applying a separate user policy OR allowing the user access to the opt-out feature via the user interface.



The **Ignore User Power Policies** option allows you to disable the separate user specific power settings on a per-machine basis. This option may be useful where you are using a combination of default and specific user settings but on certain workstations you want the default settings to apply regardless.

Setting	Meaning
Ignore User Power Policies	Ignore any user specific power settings
	(configured in a user-based policy).
	When a user is logged in the default settings will apply and the user's PowerMAN settings ignored. When no user is logged in the No User settings, if present, will apply.
	This setting may be used to override the
	basis This is ideal for shared systems or
	computers in a public area.

The **Ignore User Opt-out** feature instructs PowerMAN to ignore the user opt-out option available, at the administrator's discretion, to users via the user interface icon.

Setting	Meaning
Ignore User opt-out	Ignore user opt-out configuration. This option also removes the user opt-out option from the user interface menu.

The **Discard User Opt-out** and **Discard User Keep Awake** features instruct PowerMAN to discard any user opt-out or keep awake setting upon logon or reboot. This may be used to discourage persistant abuse of these features by users to workaround the intended power managemen scenario:

Setting	Meaning
Discard User Opt-out	Discard user opt-out selection upon logout /
	reboot.
Discard User Keep Awake	Discard user keep awake selection upon
	logout / reboot.

Windows Vista and later allow the hardware wake-up timer to be disabled. This decreases power consumption in a low-power state by disabling automatic system resume. If system resume is not required then these timers may be safely disabled. Conversely, if wake-up is desired then this feature should be enabled. This feature has no effect on legacy operating systems prior to Windows Vista:

Setting	Meaning
Allow wake-up timers AC	Globally enable/disable hardware wake-up
	timers on AC power
Allow wake-up timers DC	As above when running on battery power.



Custom Actions

PowerMAN allows specific custom actions to be performed during system suspend and resume. These actions can be run for the entire system or per-user. Custom actions may be used to implement workarounds for undesirable application behaviour in a power managed environment or to notify a third-party component that suspend/resume is occurring.

Two action types are currently supported:

- 1. **CLOSEWINDOW** Close specific application window(s) or dialog(s). This action supports wildcards.
- 2. **RUNPROG** and **RUNHIDDEN** Launch application / script

The command syntax and operation of custom actions is further explained in the Appendix at the end of this document.

Policy Preferences Feature (Advanced)

The PowerMAN Policy Preferences feature allows a menu of power policies to be assembled and periodically displayed to the user for self-selection. This may be used to greatly increase user participation in an enterprise-wise power management strategy whilst strictly controlling the options available. We recommend that this feature is only used by administrators already familiar with basic PowerMAN configuration.

Tip: This feature may also be leveraged in non-directory environments to deploy a 'pool' of power policies and to selectively activate the desired policies using client-side logic. This may be achieved by using the **Policy preset** or **Registry defined for system** modes.

The preferences feature may be combined with the start/end policy times and default, no user/ specific user settings to create powerful, multi-layered policies. The preferences system also provides for a fallback to an alternative policy if no preference policy is applicable. It is good gractice to provide a fallback policy. This will ensure that a centrally defined policy always applies.

Tip: Multiple Default, No User and User-specific policies may be tagged with the same tag. The normal PowerMAN rules apply and the first applicable policy will apply. This may be used to implement a linked collection of policies that apply at different times and in different situations

The preferences feature is implemented using a **Preference Tag** that may be assigned to PowerMAN idle policies. The tag is a short alpha-numeric string and is not displayed to users. This tag associates groups of related policy settings together.



The preference tag field should be left blank when not required.

Tale Timeout AC 30 Minutes	Power settings that apply at all times and to all users
Idle Action DC Sleep	(including when nobody is logged on) unless more specific settings are applicable. The time settings are
Idle Timeout DC 30 Minutes	in local system time and may be blank. Do not configure a monitor timeout if also using the
Monitor Off AC 20 Minutes	PowerSAV (logout) screen saver. All timeout values MUST he less than the idle timeout (if defined).
Monitor Off DC 20 Minutes	Multiple policies are provided. PowerMAN will apply the first policy that is applicable. The Preference Tag
HDD Off AC 20 Minutes	is optional. Policy name must be < 32 characters.
HDD Off DC 20 Minutes	
CPU Performance AC	
Adaptive - Match demand	
CPU Performance DC	
Adaptive - Match demand	
Pref. Tag (optional) daytime	-
	OK Cancel Apply



The following basic settings are supported:

Policy Preferences Configuration	Meaning
Mode	Defines the operating mode of the policy preferences feature.
	The available options have the following meanings:
	User self selection – The user is prompted to self-select from the available options. The selection only applies whilst the user is logged on.
	User selection for system – The user is prompted to self-select from the available options. The selection applies to the workstation regardless of who is logged on until a subsequent selection.
	Policy preset – No user interface is displayed. The selection is defined by a policy setting.
	Registry defined for system – No user interface is displayed. The selection is defined by a registry setting. This feature allows the selection to be made by third-party logic or a script.
Fall-back to	Defines the PowerMAN behavior if the current policy preference selection is not available.The available options have the following meanings:
	Any applicable policy – Use first applicable policy regardless of policy tag
	None. Preference policy only – Only use tagged policies. If no applicable tagged policy available do nothing.
	Non-preference policies only – Ignore tagged policies and use first applicable non-tagged policy.

The Policy Preferences selection menu is displayed whenever a user selection is required. This can be because the interface has not been displayed for a period of time or because the previous selection is no longer available. The following settings are available to configure this feature:



Policy Preferences User Interface Setting	Meaning
Display Interface	Defines how often the selection menu is displayed.
User Prompt	Defines the message displayed to the user
Options (tag;description)	Define a list of options to display. These are in tag;description format where the tag is available within the pool of available policies.

For example, the Options (tag;description) configuration could be:

Show Contents	X
Options: (tag;description)	ок
daytime;PC will sleep after 30 min 8am-6pm. Otherwise PC will hibernate after 30 min strictdaytime;PC will sleep after 10 min and shutdown when nobody is logged on	Cancel
remoteuser;PC will never sleep	Add
	Remove

PowerMAN will only display menu options that are available. Therefore, if no options are actually available the policies the menu will not be displayed. The menu is displayed when the user next logs on:

Power Management Preferences

Please select a power management preference from the following options:

Available Options

PC will sleep after 30 min 8am-6pm. Otherwise PC will hibernate after 30 min
PC will sleep after 10 min and shutdown when nobody is logged on
PC will never sleep



The menu may also be displayed at any time by selecting the option from the PowerMAN icon.

ОK



Advanced Settings

Finally, PowerMAN supports the following **Advanced Options**. These are intended for resolving configuration options and should normally be used only under the supervision of PowerMAN Technical Support.

Advanced Settings	Meaning
Ignore Active Flag	When enabled this option will ignore other related tools (such as the legacy PowerCONFIG tool and PowerSTART) and protected objects. This means that non-user activity will not be reported and will be counted as idle time. Use this option to enforce a policy regardless of these tools.
Ignore phantom activity	Ignore phantom (e.g. typically optical) mouse input when no user logged on. This policy is enabled by default and provides a workaround for problem mice when no user is present.
UI Ignore recent events	Disable UI notification of recent power management events. This prevents display of the orange status icon.
Default Idle Sensitivity% AC	The level of sensitivity applied by Windows to detect system idle when running on AC (mains) power. On systems that fail to correctly idle it may be necessary to lower this (see notes below). The recommended value is 5%. This value may be 5-95%.
Default Idle Sensitivity% DC	As above for DC (battery) power source
GUI refresh (ms)	The frequency that the PowerMAN UI Icon updates. The default is 10 seconds.
Upload timeout (ms)	The period that PowerMAN will wait for a response from the PowerMAN server before aborting a data upload. The default is 10 seconds.
Maximum upload retry delay (secs)	The maximum period that PowerMAN will wait before re-trying to repeat a failed upload. The default is 300 seconds (5 minutes)
Regenerate missing policies	Some third-party utilities have been observed to remove all legacy Windows power policies (in Windows 2000, XP and 2003). In this situation the Windows power management sub-system refuses to operate and prevents new policies (including PowerMAN) from being configured. This setting, which is enabled by default, works around this extreme situation by re-generating the default OS policies if they are completely missing.
Remove broken policies	Legacy Windows power policies (in Windows 2000, XP and 2003) are stored in both the HKLM and HKCU portions of the Registry. Sometimes these can become inconsistent. This can happen in environments with roaming profiles or where other third-party power management tools have been used. In some cases these broken policies may
	prevent PowerMAN from operating correctly. When enabled this feature allows PowerMAN to



	remove these damaged policies. This is
Fix inconsistent settings	By default PowerMAN will try to resolve configuration problems by using the closest
	policy possible to that configured. This may be
	necessary because of inconsistent settings of
	configuration. This feature is enabled by default.
	Care should be exercised when disabling this
	feature as it may expose problems with existing
	settings.
Always user internal shutdown timer	system shutdown on idle. On later operating
	systems this feature is implemented internally
	by PowerMAN. In some cases it may be
	desirable to use the internal PowerMAN timer to
	workaround problems with the Windows timer.
	scripts which are ignored by the Windows
	internal shutdown timer. This feature is disabled
	by default.
Default Enforcement	The policy enforcement (anti-insomnia) feature
	is enabled by default with a timeout of 15 minutes. This setting may be used to disable
	this feature. This should not normally be
	necessary.
	Policy enforcement may also be disabled by
	zero.
Offline network detection	By default PowerMAN will attempt to upload
	outstanding data every few hours. In some
	infrequently connected environments this may
	result in a delay before PoweriviAN reporting data is available on a server PowerMAN
	includes a built-in offline network detector that
	will detect infrequently connected computers
	and attempt an immediate upload if a network
	connection is detected. This feature is enabled
WTS Started check	PowerMAN requires the WTS service to operate
	on Windows XP/2003. In some rare cases this
	service may be slow starting. This setting may
	be used to disable the WTS start-up checks
	under the instruction of Technical Support
Delay PowerMAN Activity	In some systems it can be desirable to delay
	PowerMAN start-up until after the system is fully
	running. This setting defines a time period that
Event Logging	The amount of information reported in the Event
	Log. This setting may be changed to increase or
	reduce the amount of information reported.
Event log size (MB)	The size of the power management event log.



Distinct User Power Policies



All of the PowerMAN settings described above are computer policies that apply to the entire workstation. When using Group Policy they are configured within the **Computer Configuration** branch of the Group Policy Object Editor.

There policies apply to all users and are the simplest way to quickly implement an effective power management policy.

In some cases it may be necessary to apply *additional* policy settings for specific users or groups of users.

Tip: PowerMAN can be very effectively implemented **without** creating any separate user based policies. These are only necessary when specific users need to deviate from the standard policy and should be the exception rather than the rule. If this approach is taken please remember to continue to configure No User (logon prompt) and Default (everyone else) policies to ensure you achieve the most effective coverage. **The user policy should always be created using a separate Group Policy Object to that used to install and configure the PowerMAN service.**

To create a separate user policy you must create a separate Group Policy Object for the user settings. This is necessary because the normal policy is applied on a per-computer basis. To perform this configuration:

- 1. Open the Group Policy Management Console (GMPC)
- 2. Locate the Organisational Unit (OU) to which you wish the initial policy to apply
- 3. Right click the OU and select Create and Link a GPO here
- 4. Enter a name of the new policy and click **Ok**. The example creates a policy called **Software – PowerMAN Power Manager**
- 5. Select the newly created policy, right click and select Edit
- 6. The Group Policy Object Editor should open
- 7. Navigate to the User Configuration section and expand the **Administrative Templates** section
- 8. Right click and select Add/Remote Templates
- 9. Click **Add** and locate the PowerMAN5.adm file supplied. When this is completed click Close. It may be helpful to remove the other administrative templates present using the Remove button. These are not required for PowerMAN.
- 10. Configure the **User Power Settings** using the same method as outlined above for the Default Settings



Getting the most from PowerMAN

Baseline existing environment

PowerMAN will work best if the existing environment is measured before any power management is attempted. We therefore recommend that the software is used for monitoring only during the first few weeks of operation. After a consistent pattern has emerged this information may then be used to inform decisions about which power management strategy to use and then quantify the effect of the chosen strategy.

The software offers many different ways to manage power effectively. The following section explains best practices and provides some useful tips on getting the most from PowerMAN.

Typical deployment phases

A typical deployment is divided into three distinct phases:

- An initial period of **passive monitoring**. This allows a baseline usage profile to be established
- Deployment of an **active power policy**. This is designed to reduce energy from the established baseline. Often the specific settings used are chosen based upon both the results of the monitoring phase and existing knowledge about the usage pattern and user requirements
- A **post deployment monitoring** phase. In this phase the power policy is monitored and areas for possible further improvement may be identified.





Idle or schedule-based power management?

PowerMAN allows both idle (timeout driven) and scheduled power management actions to be configured. Each has advantages and in some cases they may be used most productively together:

- Idle Strategy The Default, No User and specific user policies allow an idle timeout to be defined. This is very similar to the basic configuration available in the Windows Control Panel Power applet. A timeout strategy allows each computer to respond dynamically to its environment. This will normally maximize any power savings but does mean that each computer will behave independently. This may be unsuitable for some environments such as timetabled rooms in schools.
- Scheduled Strategy The scheduled shutdown / sleep / hibernate policy allows a specific action to occur at a specific time. This is ideal for environments with a predictable usage pattern or where independent computer behaviour may be disruptive. Unless computer utilisation is very high it is unlikely that a scheduled strategy alone will achieve the savings possible from an idle-based approach.
- **Combined Strategy** In some environments a combination of the two strategies may be ideal. A common approach is to use a light sleep timeout driven strategy for 'daytime' periods. This has the advantage of a fast resume time and minimal disruption. This can be complemented by a nightly full shutdown or hibernation strategy.

Complementary PowerMAN features

Consider using the following additional options to improve results:

- **Default Policy** The power policy that applies at all times to all users unless a more specific policy is applicable. This policy allows a common standard to be quickly implemented
- •
- **No User Policy** It is often possible to use a more aggressive power management strategy when nobody is logged on. PowerMAN allows a distinct policy to be defined for this situation.
- Logout Policy Sometime operating environments (such as school or university computer rooms) have a very high turn-over of users. It would be inappropriate to enable an idle policy, whilst a user was logged on, in such environments as this may result in a computer being locked for subsequent users.

A logout policy can be used in combination with the No User policy to ensure that the user is not logged on before the appropriate idle action occurs. This approach can also benefit usability because it allows Sleep or Hibernate to be configured as the idle action when no user is logged on which means the system can become available again to the next user in a reduced time.

- Policy Enforcement Sometimes the installed software may prevent the computer from becoming idle. As noted elsewhere in the documentation there are numerous legitimate reasons for this (such as a Microsoft Office PowerPoint slide show) where this is desirable. Unfortunately this can also happen when not intended and can result a significant additional amount of energy waste. If this appears to happen the policy enforcement feature may be used to configure an **additional** time, after the last user input, after which the idle action will be forced. Policy enforcement is enabled by default in PowerMAN v5.2 and later.
- Scheduled Power Management Alternatively, the scheduled shutdown/sleep/hibernate policy may be used as a 'catch-all' policy to ensure that systems are shutdown or configured



to use less energy at certain times of the day. This approach can prove very effective where the usage pattern is predictable.

• **Policy Preferences Feature** – This feature allows users to participate in the power management strategy by selecting a policy from a menu provided by the system administrator. Whilst the options available are controlled by the system administrator this approach can increase user acceptance by offering users some degree of autonomy.

Maximizing Savings

Each organisation has specific operating requirements that will require tailored power management settings. Often the perceived drawbacks of using active power management can be overcome by both a careful deployment and by keeping the users informed. The following tips may help maximize savings:

- 1. An effective idle-based strategy will usually have the greatest effect on energy consumption. The savings available greatly exceed those possible from display, hard disk power management or scheduled strategies.
- 2. The display and hard disk settings may be used to further reduce energy consumption without risking the user's session. These should generally always be enabled.
- 3. Similarly the CPU performance settings can be used to reduce energy consumption with minimal impact on users. Typically these should be set to 'Adaptive' when a user is present and 'Degrade' when no user is present.
- 4. Screen savers consume energy. Consider turning the monitor off rather than enabling a screen saver.
- 5. Most modern programs fully support sleep or hibernate. These may be used to save energy whilst preserving the user session and any open documents. Sleep and hibernate are most appropriate when the PC is used by the same long-term user.
- 6. When the computer is regularly used by many users (for instance in a hot desk or public access area) sleep or hibernate are rarely appropriate policies for when the user is logged on. This because both lock the workstation for subsequent users. Instead consider using a logout policy to prevent the system being hogged by an absent user. Typically it can be quite simple to determine a suitable timeout after which the user is assumed to have 'abandoned' the computer.
- 7. The power settings appropriate when a user is logged on may be very different from those appropriate when no user is logged on. PowerMAN allows separate user and 'No User' policies to be easily defined. Ideally a power policy should be configured in both situations (even if the user policy doesn't implement an idle action it can still save significant energy by turning the monitor off or logging the user out after the specified period).
- 8. Power off does not need to be the default action hibernate or sleep can be used as idle actions when no user is logged on to allow the next user to rapidly logon and become active.
- 9. Similarly PowerMAN can resume the PC from one sleep state to transition to another. This can be effectively used to use a light sleep (S1-S3) during the daytime when the system is idle but transition to power-off or hibernate (S4) at night time.



Practical tips for an effective PowerMAN deployment

As you move towards using PowerMAN for actual power management the following tips may help with project planning:

- 1. Think about your users and their usage pattern. Are your user-computer relationships persistent? Will the same user use the PC next time? If the same user will be the next person to use the PC then using hibernate / sleep may be ideal.
- 2. If the users change frequently then hibernate or sleep may result in the computer being locked for the next user. In this case a forced logout may be a good approach. When the user has been logged out you can then implement your chosen power management strategy using a 'No User' policy.
- 3. PowerMAN offers several different policy management policies. Most organisations implement a standard 'Default' policy. If appropriate you may also wish to implement a 'No User' policy for when nobody is logged on. This is a good opportunity to use full power-off (shutdown) when nobody is logged on.
- 4. Idle (timeout) strategies generally save more energy because they allow each computer to respond independently to its environment. This works well in some environments but may be unacceptable in others with a more rigid operating schedule (for instance school classrooms).
- 5. Alternatively you may like to use a scheduled strategy (scheduled hibernate etc.) as you primary management mechanism. Depending upon your environment this may be a cruder approach but have the advantage of being consistent on every PC and therefore more suitable for your users.
- 6. Some organisations use a mixture of Idle and Scheduled approaches. This can work very well with the 'daytime' idle timeout being used for a 'light' sleep and the night-time scheduled shutdown being used to clean-up and maximize savings over night.
- 7. Whatever approach you use please remember that PowerMAN will work most consistently if you:
 - **Baseline the environment before implementing actual power management** This will allow the effect of the remedial action to be quantifiably measured.
 - Always define a Default idle policy even if it is configured to do nothing
 - Always define a Global policy for hardware buttons etc. even if the configuration is trivial this will ensure consistency. This step is particularly useful on Windows XP where pre-existing power management configuration may sometimes cause a conflict.
 - Remember to **enable hibernate** if you plan to use this power saving mode
 - Enable 'Policy Enforcement' to ensure consistent application on PCs suffering from PC Insomnia.



Common Scenarios

The following table explains two common scenarios and suggested PowerMAN management strategies:

Scenario	Description	Suggested Strategy
Office / Workplace	Same user uses PC every day.	Sleep systems when not in use.
Exclusive PC access		ready for later access whilst
User dedicated PC	Some users may leave systems on to	permitting fast resume.
	work or allow remote access	Hibernate or power-off systems when no user is logged on. This will increase energy saving for workstations that may remain unused for some time. Consider enabling scheduled wake-up for start of working day. Configure system for remote wake if remote access required.
		Ensure password required on wake-up.
Public access area	Different user uses PC every session. Locked workstations are not	Log out inactive workstations and then use a 'No User' policy to
or	acceptable.	sleep/hibernate the PC ready for
Hot desk office	Users frequently change and users understand the need to save open	start-up delays.
Non-exclusive access	documents before leaving a workstation unattended.	If appropriate use scheduled wake-up to match user patterns.
Non-dedicated PC	No requirement for remote access	



Example Settings

As noted above the recommend approach following an initial deployment is to wait several weeks and monitor the site. This will give you a baseline against which to judge the various policies you may consider applying.

It works best to start gradually and apply policies over several weeks monitoring the energy saved and any impact on users. The settings may be edited using the Group Policy Object Editor described above (access this through the Group Policy Management Console).

A typical site scenario would proceed as follows:

- Deploy and determine baseline usage. This may typically take several weeks
- Apply some relatively non-intrusive settings. Some examples could be:

No User Power Settings (no user logged on)

NB: It is safe to turn off the PC when nobody is logged on

Idle AC	Power Off
Idle Timeout AC	15 minutes
Idle DC	Power Off
Idle Timeout DC	15 minutes
Monitor Off AC	5 minutes
Monitor Off DC	5 minutes
HDD Off AC	2 minutes
HDD Off DC	2 minutes

Default Power Settings (Apply unless another more specific policy is configured)

Logout Timeout AC	Disabled
Logout Timeout DC	Disabled
Idle AC	Do nothing
Idle Timeout AC	NA
Idle DC	Do nothing
Idle Timeout DC	NA
Monitor Off AC	10 minutes
Monitor Off DC	10 minutes
HDD Off AC	Do nothing
HDD Off DC	Do nothing

 Enable policy enforcement (anti-insomnia). This will ensure that selected power settings operate as intended and are not interrupted by application behaviour. The enforcement feature allows a 'grace' period to be defined. After this additional time has expired PowerMAN enforces the selected power management behaviour:

Extra Timeout AC	5 minutes
Extra Timeout DC	5 minutes

• Remember to ensure hibernate is enabled if this power management is to be used. The simplest way to do this to use the PowerMAN setting:

Hibernate	Enabled
(Suspend to disk)	



• After allowing a period to establish the effectiveness of these settings you may wish to go further. Typically the most gains can be made by reducing the time allowed before a computer turns off or hibernates:

Default Power Settings (Apply to all users)

Logout Timeout AC	Disabled
Logout Timeout DC	Disabled
Idle AC	Hibernate
Idle Timeout AC	15 minutes
Idle DC	Hibernate
Idle Timeout DC	15 minutes
Monitor Off AC	5 minutes
Monitor Off DC	5 minutes
HDD Off AC	5 minutes
HDD Off DC	5 minutes

• Follow-up the deployment to ensure that the policy is working as desired. This can easily be achieved by monitoring the reported power statistics.



Excluding Specific Computers via a protected 'marker' file (Alternative method)

Normally it is possible to apply the same power management configuration to each computer within an organisational unit (OU) and use a separate OU for each logical power policy. However, sometimes this may not be desirable or it may not be practical to re-arrange the OUs to match the required power scheme. The protected computers feature may normally be used to exclude specific computers.

In some cases it may be desirable to exclude a computer based upon the presence of special 'marker' file. In this scenario the Protected Files feature may be used to exclude specific computers.

To use this procedure proceed as follows:

1. Create an empty text file which matches the computer name (or a global name if appropriate). One way to do this is to use a computer start-up script to execute the following batch file:

echo %computername% > c:\%computername%.txt

2. Use the Protected Files feature to exclude the c:\%computername%.txt file. For instance the following settings would exclude three computers:

```
c:\CriticalPC.txt
c:\OfficePC.txt
c:\FaxServer.txt
```

The following Microsoft document provides further information on computer start-up scripts:

http://technet.microsoft.com/en-us/library/cc779329(WS.10).aspx

Alternatively, Group Policy itself may be used to exclude certain computers using Security Filtering. This is explained in the following Microsoft article and related discussion:

http://technet.microsoft.com/en-us/library/cc781988(WS.10).aspx http://adisfun.blogspot.com/2009/04/security-filtering-and-group-policy.html



Viewing PowerMAN statistics

To view the statistics for a site visit the following URL adding the appropriate Site GUID value (this is the value created when PowerMAN is deployed). For instance for the site {bf4c090c-9d22-4c82-8869-b63497040d01} the URL would be:

http://www.pmstats.org:443/SiteSummary.aspx?SiteGUID={bf4c090c-9d22-4c82-8869-b63497040d01}

Calculating actual energy consumption

Due to the nature of standard PC hardware it is not possible to calculate an exact amount of energy (in watts) for each PC. This is because the standard PC architecture does not provide a standard method for measuring this. Therefore PowerMAN measures the following key factors:

- Cumulative time the computer is turned on
- Cumulative time the computer is in active use

From this information it is simple to calculate the time the computer was **not being used**. This is expressed as a number of hours '**idle**'. This figure is directly proportional to amount of energy being wasted.

PowerMAN also measure other power related factors such as: The amount of time the hard disk is spun down, the monitor off, the computer was artificially prevented from sleeping by user configuration etc. In future revisions of the reporting software this information will be included giving a more detailed picture of the power consumption profile.

The Site Summary graph gives a fast, visual, indication of the amount of waste. Over a number of weeks progressive increases in the amount of power management can significantly reduce the amount (and cost) of waste.





Example: A typical PC consumes 150W. This is equivalent to 0.15kWh. Therefore, for a medium sized site of 350 computers, where the total site wasted hours for a week is 47040, and the cost of the electricity \$0.15 per kWh the calculation would be:

0.15 kWh x 47040 hours/week x \$0.15 /kWh = **\$705.60 per week**

This is equivalent to a yearly cost of over \$36,000.

A useful **rule of thumb** is that office based computers are used 25% of the time (40 hours per week). If the computers are not shutdown at other times the waste period is up to 75%. With suitable configuration PowerMAN can virtually eliminate this waste.

How PowerMAN Works

PowerMAN installs a service application POWERMAN.EXE on each computer. The service spends the vast **majority of the time in an inert state** and therefore does not have any measurable impact on system performance. Periodically (every 5-10 minutes) the service checks the current status of the computer. This process only takes a fraction of a second.

During each cycle the program:

- Determines if the system has recently been accessed by a user
- Checks for the managed power scheme ('Managed policy for [username]')
- Creates the power scheme if necessary
- Updates the scheme settings according to the administrator configuration

PowerMAN uses the built-in power management features of Microsoft Windows wherever possible. This is why the current PowerMAN settings can be viewed though the standard Control Panel tools. This approach means that PowerMAN works alongside Windows wherever possible and allows the software to achieve maximum software compatibility. PowerMAN does implement some features (such as policy enforcement and user logout) internally. This is necessary because these features are not available in Windows.

PowerMAN is fully capable of configuring the power management settings for users who are not permitted, themselves, perform this action. Unlike most other solutions for power management this is achieved without lower any of the security safeguards build into the operating system. In addition PowerMAN provides finer control not normally available including:

- Default power policy
- Distinct policy for when no user is logged on
- Separate policy per user (if required)
- Multiple, time-bound, policies
- Multiple scheduled wake, shutdown, reboot sleep and hibernate policies
- Policy 'enforcement' to overcome PC 'insomnia' issues
- User override (for permitted users)
- Protection for specific programs or files from power management
- Customisable maintenance windows
- Full management reporting

PowerMAN is invisible to users and is active less than 1 second every hour.



Additional PowerMAN Features

WakeMyPC - External PC wake-up gateway

PowerMAN includes the facility to integrate with **Data Synergy's WakeMyPC product.** This allows any computer within a managed site to be woken on demand. This may be used by a remote worker or Technical Support to activate the workstation when it is powered off.

This feature is achieved by using the Wake-On-LAN (WoL) feature present in most modern computers. To wake a suitably configured PC a WakeMyPC gateway must be present on your network. This allows the PowerMAN server to send a WoL request to the PC. WakeMyPC requires a computer (which does not need to be a server) with an internet facing networking connection to be running Microsoft IIS 5 or later (Windows 2000 or later).

When this feature is enabled a PC can be simply woken by using the 'Wake' link on the PowerMAN reporting website:

Data Synergy / ENGAGE	
Site	Data Synergy
Computer	ENGAGE WakeMyPC
Created	30/06/2011
Last Status	23/09/2014

WoL can be a problematic technology to introduce to an enterprise network. The most common issues are:

- WoL typically uses broadcast network packets. These are not routable and therefore only
 work within the local sub-net. This why the WakeMyPC is necessary. It may, in some cases,
 also be possible to re-configure your router to forward WoL packets or use the WakeMyPC
 'subnet directed broadcast' method.
- A typical WoL implementation does not include any security. It is possible to wake an arbitrary PC on the local sub-net. This should not normally be a significant security concern.
- WoL must be enabled in the system BIOS and usually in Windows Device Manager. There is sometimes a degree of trial and error required to get WoL working.

WakeMyPC is designed to overcome these issues. The WakeMyPC manual explains workarounds and suggested implementation strategies in further detail.


PowerMAN on Windows Vista / Windows 7 / Windows 8 / Windows 10

There are minor differences between operation on Windows XP and later editions. When running on Windows Vista and Window 7 the additional power settings, not built-in to Windows, are visible in the Control Panel power applet. This feature is not available on Windows XP.

Due to operating system differences the following minor features are not currently supported on Windows Vista and later. These features may be configured but will have no effect:

- Video dim setting
- CPU throttle setting
- Hide power applet setting
- Power meter setting
- Lid open action

In addition the following Windows Vista and later features cannot currently be configured by PowerMAN:

• Hybrid Sleep - this can be configured using the policy settings provided with Windows



Troubleshooting

PowerMAN is a very reliable program but problems do sometimes happen. Most issues arise during installation and can normally be solved quickly. The following section details some of the most common issues and explains possible solutions for them:

Problem: PowerMAN does not deploy correctly using the GPO method

This can occur for a number of reasons. The following should be considered:

- 1. Do other programs deploy correct via Group Policy?
- 2. Is the client computer within the correct Organizational Unit (OU)?
- 3. Are there any errors in Event Log?

If PowerMAN is the first program to be deployed via GPO there may be an underlying problem with the domain or active directory configuration. The following should be checked:

- Do other applications deploy successfully using the group policy mechanism from the same file-share? Sometimes applications are indivertibly configured to deploy from a local drive letter (on the server) and not a publically available share.
- The client computer is within the correct Organisational Unit (OU). This can be checked with the **Active Directory Users and Computers** snap-in (dsa.msc)
- The PowerMAN MSI is in share accessible (read access) to the **computer account** of the client PC. Sometimes there may be NTFS access restrictions that are stricter than the share permissions. Both types of permission should be checked. The easiest way to achieve this is to grant a Read Access to the group **Domain Computers.**

Remember: The Windows group policy engine runs in the security context of the computer account. Therefore the share and underlying NTFS permissions must grant access to this account. The effective permissions are the lowest common denominator of the share and NTFS permissions.

- Another policy or application may be preventing installation. This can be checked with the Resultant Set of Policy (RSOP.MSC) tool provided with Windows. The error tab contains information about policy deployment problems.
- Is the problem resolved by disabling Asynchronous policy deployment (see Computer Configuration\Administrative Templates\System\Logon in the Group Policy Object Editor)?
- Is the problem resolved by restarting the computer twice? Depending upon other group
 policies scheduled for installation and removal it can take up to two additional reboots for
 PowerMAN to install. This situation can also happen if the MSI and license settings are
 deployed separately because PowerMAN will not start until the product license key is present.

Microsoft also provides some advice on debugging GPO based deployment issues:

http://technet.microsoft.com/en-us/library/cc787386(WS.10).aspx



http://technet.microsoft.com/en-us/library/cc775679(WS.10).aspx

Microsoft also documents a scenario where a network timeout problem can prevent effective Group Policy application. The following document explains this and provides links to the necessary Windows hotfix:

http://support.microsoft.com/kb/840669

In some cases it may be necessary to investigate further by enabling 'verbose' MSI logging. This can be enabled on the client computer by creating the following Registry value:

Key: HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows\Installer REG_SZ: Logging Value: voicewarmup

This will create log files in the %temp% folder (\Windows\Temp for standard Group Policy MSI deployment. The users' own temporary folder for manual MSI deployment). This following document explains this in detail:

http://support.microsoft.com/kb/223300

After this setting has been enabled, reboot the PC, and allow Windows to attempt the MSI installation again. When this process has completed (or nothing has happened) log into the machine and check the log files created in the \Windows\Temp folder.

If this technique does not reveal the cause of the problem it may also be useful to enable 'verbose' logging for the Windows Group Policy engine. Please remember that this is an advanced technique and it may take some time to decipher the log files. You can enable this logging by creating the following registry value. It may also be necessary to create the Diagnostics key if one is not already present.

Key: HKEY_LOCAL_MACHINE\Software\Microsoft\Windows NT\CurrentVersion\Diagnostics REG_DWORD: AppMgmtDebugLevel Value: 0x4b

After this setting has been enabled, reboot the PC, and repeat the installation process described above. The Group Policy engine will create a file called Appmgmt.log in the C:\Windows\Debug\Usermode folder. This is further explained here:

http://support.microsoft.com/kb/246509/

NB: You may also need to create the Usermode folder if it does not already exist.

Problem: The PowerMAN application appears to deploy okay but the configured policy doesn't seem to deploy consistently

This is commonly caused by attempting to apply invalid power settings. Please check the Power Management Event Log to determine the cause of the problem.

This can also be caused by attempting to configure the majority of settings against a User object rather than a computer. The following guide lines should be applied:

- The PowerMAN service should be deployed to computers (not users)
- The majority of the settings should also be deployed to computers
- If a specific user policy is required this should be deployed using a **separate group policy** to the users



Problem: PowerMAN appears to be deployed okay and the required settings are displayed in the Control Panel Power Management applet but the computer does not shutdown/hibernate/sleep as expected

OR PowerMAN reports event #2003: The computer is being prevented from entering the idle state by an unknown program

Some programs can inhibit the Windows idle timer and effectively force the computer to remain awake. There are many legitimate reasons for this. For instance:

- 1. Microsoft PowerPoint forces the computer to remain active when displaying a slide show
- 2. Microsoft Word has been seen to prevent the computer from sleeping when editing a document.
- 3. Microsoft Windows will force the computer to remain awake if remote users are accessing local resources (such as printers or files) through a Windows share.
- 4. Cyberlink PowerDVD (or similar) forces the computer to remain active when playing a DVD
- 5. The PowerMAN user interface or PowerSTART tools can be used to force the computer to remain active when other programs are running or the user has specified the system cannot sleep

When this happens too often or is undesirable it can prevent timeout driven power management from working effectively. This can be because of deliberate application behaviour, intermittent activity bursts, or because of non-power management aware application development practices. This is sometimes known as 'PC Insomnia'. For instance:

- 1. Background activity such as anti-virus scanning, system updates (for instance Symantec Endpoint Live Update or Windows Update) or automatic system optimization (such as hard disk defragmentation) may cause the system to be relatively busy.
- 2. Foreground activity such as a screen saver may keep the system artificially busy. Some screensavers may intermittently perform more intensive activates that result in the idle timer being periodically reset.
- 3. Some (mainly optical) mice can infrequently (or worse continuously) send small movements resulting the illusion that the user is active. This can sometimes happen in the presence of florescent light.

PowerMAN reports this problem in the Power Management Event Log. Typically this is reported as Event #2003: "The computer is being prevented from entering the idle state by an unknown program"

The following steps should be performed to locate the cause of the problem:

- 1. Check the Event Log. PowerMAN logs to ensure that the desired policies have actually been applied (with no errors) and that no other program is keeping the system awake.
- 2. Enable the Policy Enforcement settings and re-test. In most cases the system will perform the configured idle action as expected. If this option resolves the problem then one or more of the installed programs were preventing the idle action from occurring.
- 3. Enable additional event logging (located in the Advanced configuration section) and restart the computer or PowerMAN service. After a few minutes check the Power Management Event Log for additional information.



- 4. Enable the debug log file (Advanced\All Infomation + Debug Log) and restart the computer or PowerMAN service. After a few minutes stop the PowerMAN service and examine the log file (see the section below on using the debug log file for more information) to determine if the system is being preventing from entering the idle state because of hardware input (mouse / keyboard) or system activity. It can sometimes help to plot the idle time remaining field using a charting tool such as Microsoft Excel. This may help you visualise the timer behaviour and understand what is happening. Often this can result in a 'saw-tooth' pattern as the timer periodically resets. There is an example of this later in this guide.
- 5. Reduce the idle sensitivity to a much lower value. This change increases the threshold of system activity that Windows uses to reset the idle timer. Try reducing the sensitivity to 5%.
- 6. Unplug the mouse and the keyboard and determine if the problem is resolved. Sometimes a faulty input device (especially an optical mouse) may be the cause of the problem.
- Unplug the network cable and determine if the problem is resolved. If the Wake-On-LAN (WOL) feature is not required disable it. If the network card supports wake on 'directed packet' (using IP address) and this feature is not actually required try disabling it.
- 8. Confirm that the system will reliably sleep and/or hibernate (and resume again) on demand by using Windows Task Manager and selecting the appropriate option from the Shutdown menu.
- 9. Stop all running programs (one at a time if necessary) and wait for the computer to enter the idle state. This can most quickly be done by disabling PowerMAN (stop the PowerMAN service) and manually setting the idle timeout to 1 minute.

If the above steps do not reveal the cause of the problem PowerMAN Technical Support will be able to offer further debugging steps to find the cause of the problem.

Problem: A Hard Disk (HDD) spin-down policy has been applied but doesn't seem to do anything. The hard disk always remains powered on.

Unfortunately for power conservation modern installations of Windows remain stubbornly busy even when no user is present.

Unlike earlier revisions such as Windows 95/98, Windows XP includes a number of optimization features that are designed to run in the background. Coupled with the typically large number of other background services this means that many systems are never idle long enough for the system hard disk (the one containing Windows) to switch off.

On fresh OS installation it is sometimes possible for the hard disk to spin-down, in practice however, many real-world installations do not because the required level of inactivity never occurs. It is, however, quite common for systems with multiple drives to reach a point where one drive is not being used and therefore that drive will spin-down as expected. (See the next problem below for the side effects that result from this)

PowerMAN Technical support can advise on possible actions that may improve the situation.



Problem: After enabling a Hard Disk (HDD) spin-down policy the system may sometimes freeze momentarily

If the hard disk becomes idle (see above problem) for a sufficient period it will spin down to save energy. When the system is activated again (for instance by a user moving the mouse or pressing a key) the hard disk is accessed again and usually takes several seconds to spin up. During this time the system may appear to freeze momentarily.

As noted in the previous problem it is quite unusual for the system hard disk to become idle enough to spin down. However, in systems with more than one hard disk it is quite likely that the secondary drives will power off after a period of inactivity. Therefore this symptom is usually more apparent on such multi-drive systems.

Typically this problem can be resolved by increasing the HDD policy timeout to the same value as the monitor timeout. This means that the HDD will spin-up at the same time the monitor powers on and therefore the delay will not be apparent to the user.

Problem: PowerMAN reports that there are fewer computers than expected in the site

OR PowerMAN reports many more computers than expected in the site

OR PowerMAN reports unexpected duplicate computer names within the same site

OR PowerMAN reports computers that seem to be on more than 24 hours a day!

OR PowerMAN is deployed using an image based Windows installation and only one client is reported. The service appears to be operating okay on each computer

These symptoms are commonly seen in the following circumstances:

- 1. A problem is preventing PowerMAN being deployed correctly. This will reduce the number of computers registered in the site
- 2. Computers containing a working PowerMAN installation are cloned using imaging software such as Symantec Ghost.

PowerMAN uses a randomly generated identity (called the ClientGUID) to distinguish each computer within a site. If an image is deployed with such an identity PowerMAN is unable to determine this has happened and therefore all computers have the same identity. This can cause most computers to be ignored by the logging server.

This problem can be worked around by using the following technique:

• Temporarily stop the PowerMAN service with **ONE** of the following commands:

NET STOP POWERMAN Or POWERMAN STOP

• Delete the following value from the registry:



HKEY LOCAL MACHINE\SOFTWARE\PowerMAN\ClientGUID

- If necessary shutdown the computer
- Create the image
- Do not restart the computer until the image is created because the PowerMAN service will create another Client GUID

Problem: PowerMAN is installed but the computers are not showing up on the reporting system

OR Power Management Event Log reports Event #6015: Downloaded XML was corrupt

OR Power Management Event Log reports Event #6032: Server failed to respond

OR PowerMAN Enterprise Server logs show frequent truncated XML uploads (typically around 1,400-1,500 bytes in size)

OR PowerMAN reporting fails to work consistently with M86 Security / Trustwave web content filter when split packet detection is enabled

OR PowerMAN reporting previously worked but the PID key expired or the workstation was turned off for a prolonged period and reporting subsequently fails to work or work consistently

PowerMAN records and transfers log data on a daily basis. The data is not sent until the close of the day. If the reporting feature is enabled the data is transferred to the reporting server. When the hosted PowerMAN reporting system is being used this is located at pmstats.org. If a private PowerMAN Enterprise Server is being used then this address will normally be located somewhere on the enterprise network.

The upload normally happens between 00:00 and 03:00 if the computer is on or within a few minutes of the computer next starting. Therefore, if you installed PowerMAN today it will not report anything until tomorrow.

If computers do not register within 24 hours of being installed with PowerMAN then there may be a configuration problem. The following should be checked:

- 1. The SiteGUID setting is correctly configured and registered on the PowerMAN reporting server. The SiteGUID should always contain the {brace} characters.
- 2. The server address. This is normally pmstats.org. There is no need to prefix this with http:// or www.
- 3. The server port. This is normally 443. In some circumstances it may be necessary to use the alternate port 8080. This is commonly necessary in networks which bar all HTTP traffic but permit standard SSL traffic.
- 4. The proxy address and port setting. If you are using a proxy server please check that server address and port are correctly configured. The proxy should permit unauthenticated HTTP traffic to the reporting server. The proxy server logs may also indicate the cause of the problem.



5. The Power Management Event Log. This will probably explain the cause of the problem. Some upload problems are reported using a standard Winsock error code. These are explained in the following Microsoft document:

http://msdn.microsoft.com/en-us/library/ms740668(VS.85).aspx

It some cases it may be helpful to enable additional event logging (located in the Advanced configuration section) and restart the computer or PowerMAN service. This may be combined with the FORCEUPLOAD command (see below).

Power Management Event #6015: 'Downloaded XML was corrupt' indicates that there was a problem with the response data from the PowerMAN server. This can happen when an intermediate proxy server blocks the traffic and returns a human-readable error page.

NB: The pmstats.org hosted reporting service has two redundant IP addresses. Ideally firewalls should be configured to use the DNS name pmstats.org. If this is not possible then BOTH IP addresses should be configured to ensure reliable operation. The addresses are 92.27.62.83 and 212.248.221.157.

In some circumstances it can be useful to force an upload. Please remember this will only work if **more than one** day of log data is present. It is never possible to force the upload of the current, incomplete, log data. To force an upload use the following command:

POWERMAN FORCEUPLOAD

If the above steps do resolve the problem it may necessary to investigate debug the network communication between the computer running PowerMAN and the server. This advanced technique may especially useful when using an intermediate proxy server. PowerMAN uses a standard Windows supplied component called WinHTTP to perform network communication. This is the same library used by most of Windows including Internet Explorer. Microsoft has incorporated a logging system into WinHTTP that can be used to examine the network traffic. Windows XP and earlier use a specific tool to enable logging. On Windows Vista and later this functionality is built-in to the operating system.

On Windows XP/2003 and earlier proceed as follows:

- 1. Confirm that there is some PowerMAN data to upload. The easiest way to check this is to confirm that more than one log value exists in HKLM/Software/PowerMAN/Logs
- 2. Obtain the WinHTTPTraceCfg tool. This is in the Windows 2003 Resource Kit
- 3. Enable WinHTTP tracing with the following command:

winhttptracecfg -e 1 -d 0 -s 2 -t 1 -l c:\winhttplog

This will create a series of files in the C:\ folder prefixed 'winhttplog'

4. Force an upload using the above technique:

POWERMAN FORCEUPLOAD

Check the C:\ folder for a log file (there may be several). These show the network transaction with the (proxy) server

5. Remember to disable logging with the command:

winhttptracecfg -e 0



On Windows Vista and later proceed as follows:

- 1. Confirm that there is some PowerMAN data to upload. The easiest way to check this is to confirm that more than one log value exists in HKLM/Software/PowerMAN/Logs
- 2. Create a folder for the log files e.g. C:\Logs
- 3. Ensure that Everyone has "Full Control" access to the C:\Logs folder. This step is necessary because WinHttp runs in several different security contexts.
- 4. Open a CMD prompt and launch NETSH.EXE
- 5. At the prompt type: winhttp and press Enter
- 6. To view the current configuration use the following command and press Enter:

show tracing

7. To view the syntax available use the command:

set tracing /?

8. To configure logging use the command:

```
set tracing output=file trace-file-prefix=c:\logs\powerman
level=verbose format=ansi state=enabled
```

This will create a series of files in the C:\logs folder.

9. Force an upload using the above technique:

POWERMAN FORCEUPLOAD

Check the C:\logs folder for a log file (there may be several). These show the network transaction with the (proxy) server

10. Remember to disable logging with the NETSH command:

set tracing state=disabled

Microsoft provides a reference to the NETSH commands used for WinHTTP logging here:

http://technet.microsoft.com/en-us/library/cc731131(v=ws.10).aspx

The most common proxy server communication issues are:

- Incorrect proxy server address / port setting
- Proxy server requires authentication PowerMAN does not support proxy authentication. You
 can work around this behaviour by creating an proxy server exception for the PowerMAN
 server
- The PowerMAN server address is missing from the proxy 'white-list'



Specific problems when Trustwave Web Filtering and Reporting Suite (formerly known as M86 Web Filtering and Reporting Suite) is present:

PowerMAN reporting may fail to work consistently when Trustwave Web Filtering and Reporting Suite (formerly known as M86 Web Filtering and Reporting Suite) is present. This software is commonly used in educational establishments to provide web content filtering and logging.

This problem occurs because the web filtering software truncates multipacket HTTP POST requests. This can prevent the PowerMAN reporting protocol from operating correctly when attempting to upload a backlog of multiple days reporting data. This scenario is most common when a workstation has been turned off for a prolonged period or a PowerMAN product key has expired and been updated sometime later. This scenario is less likely if no PowerMAN reporting data backlog has built-up. For this reason the problem not initially be apparent and may emerge later.

If this problem occurs the WinHTTPTraceCfg (or proxy) logs will typically show something similar to:

"Redirected by M86 Web Filter Internet access to the requested website has been denied based upon your user profile and organisation's internet usage policy" (Result code 302)

This problem can be worked around by modifying the content filter settings to **disable split packet detection**. The M86 documentation states that this feature is disabled by default. However, if split packet filtering is enabled the scenario described above may occur.

Customers have also reported that this problem can be worked around by adding the reprting server domain (typically pmstats.org) into a content filter category that is permitted for workstations with a currently logged on user and when there is no logged on user.

Problem: Windows Power Management applet reports blank or incorrect status for a power action or power timeout

The Windows XP Control Panel Power Management applet (Powercfg.cpl) is only designed to show certain power states (it does not support power off) and certain timeout values (1, 3, 5, 10 minutes etc). PowerMAN allows other values to be specified which the applet is incapable of displaying. In most circumstances the relevant value is displayed as blank **or** downgraded to the nearest displayable setting. This does not alter the application of the desired policy which will function as desired.

Problem: The PowerMAN service (or power configuration) is applied using a logon script but does not consistently work

PowerMAN is a service application and therefore must be installed by an Administrator (or via GPO). Similarly, the majority of PowerMAN settings are in the HKEY_LOCAL_MACHINE area of the registry and this is not modifiable by most users. PowerMAN cannot be installed or configured from a user logon script.

Problem: The 'Managed' power scheme does not appear in the Windows Control Panel

OR The settings in the Windows Control Panel do not match those configured



PowerMAN typically only refreshes power settings every 10 minutes. Therefore it may take a few minutes for recently changed settings to become active. Group Policy settings can sometimes take up to 120 minutes to propagate across the network. Please be patient.

You can force a faster update using the following commands:

GPUPDATE /FORCE POWERMAN RESTART

Sometimes it isn't possible for PowerMAN to activate the configured settings. This can happen if there is an inconsistency in the settings or (sometimes) if the hardware is not capable of configuration selected. If the desired settings do not appear in the Control Panel applet or configuration doesn't function as expected please check the Power Management event log.

Problem: Sleep has been configured (suspend to RAM). The power saving is not as great as expected

There are several levels of sleep called (S1-S3). Each offers increased amounts of energy saving by progressively stopping additional levels of the PC hardware. All resume within a second or two and therefore the highest (S3) setting should be used wherever possible. Sometimes PC motherboards are not capable of S3 (or have been configured to use S1 instead). Sometimes these are referred to as **Suspend to RAM** and **Power On Suspend**. Please check your BIOS settings to ensure that S3 support is enabled.

Windows XP / 2003 can prevent use of the S3 state when USB devices are connected (preferring the S1 state). This feature is implemented because of problems sometimes found with resume from S3 when using USB devices. Microsoft explains this in the following document:

http://support.microsoft.com/kb/841858

Problem: A scheduled wake policy has been configured but nothing happens

Unfortunately not all computers are capable of resuming from all sleep states. This functionality depends on underlying support from the PC motherboard hardware which is not always present. The following steps should be checked:

- 1. Check the Power Management Event Log. A problem may be preventing the wake policy from being applied
- 2. Use the POWERMAN INFO command to determine the supported wake states. Check the value of Min RtcWake State. This is the highest (S1-S5) state from which the computer is capable of waking. Sometimes this can be changed by modifying the BIOS settings.
- 3. Check the BIOS Power Management settings. Different BIOS manufacturers use different terminology for the wake-up / resume feature. If the computer supports this function it is normally located in the power management settings and may be described as S1/4 Resume, Alarm Resume or similar. This setting should not be confused with the BIOS based alarm feature (with a resume time) that is present in some older BIOS.
- 4. Attempt wake from different levels of sleep some computers can wake from hibernate whilst others can only wake from the suspended state. You can test this using the POWERMAN HIBERCHECK and SLEEPCHECK commands. Remember most hardware does not support wake from the powered off state (although it is quite common for wake from hibernate to work fine). In addition, some laptop computers are designed to prevent system resume when



running on battery (DC) power. To confirm this re-test the computer when the mains supply is connected.

5. Contact the motherboard vendor to determine if the required functionality is available

Problem: The computer is configured to hibernate or sleep. Sometimes the previous user leaves the workstation without logging off and this can lock the workstation for the next user

This problem can be avoided by using the logout feature. Configure the Default (or specific user) power settings to log the user out after the desired time period. Configure the Default policy idle action to 'Nothing' when using the logout feature and use a suitable No User policy to save energy. Systems configured using this approach will never be locked.

Problem: Windows displays a pop-up message during hibernation - Insufficient System Resources Exist to Complete the API

This problem is caused by a known issue in Microsoft Windows XP. This problem typically occurs when the computer uses 1 gigabyte (GB) or more of RAM. The following Microsoft document explains how to obtain the required hotfix:

http://support.microsoft.com/kb/909095



Problem: PowerMAN appears to be installed but will not start

OR PowerMAN service starts and then stops again

OR The event log reports a problem with the Terminal Services service (TermService)

PowerMAN is designed for simple, single-file, deployment and does not depend on any non-Windows components or external frameworks (such as Microsoft .NET). When running on Windows XP PowerMAN requires the Terminal Services (TermService) service to be available. This service is used to provide power configuration for non-administrator users. This service is not required when PowerMAN is running on Windows 2000, Windows Vista or later.

PowerMAN will operate correctly on systems where the TermService is set to manual (the default) or automatic start. However, the PowerMAN service will fail to start if the TermService is disabled. Some organisations disable this service to reduce memory footprint or enhance system security. This configuration is unfortunately not compatible with PowerMAN when running on Windows XP.

Microsoft documents the following method to disable remote desktop access without disabling the TermService:

http://support.microsoft.com/kb/306300

Problem: PowerMAN works correctly on some computers but gives inconsistent results on others. The settings used are the same in both cases

OR PowerMAN works correctly on some computers but others have a recurring error in the Power Management event log

There are several reasons why this may happen:

1. **Incomplete power settings / Interaction with pre-existing settings** – This happens when preexisting settings are not fully replaced by the new PowerMAN configuration. For instance, if specific user policies are used or a NoUser policy is applied this can still leave periods when no PowerMAN policy is applicable. In this case the pre-existing settings present on the computer are used. This scenario is especially likely if other power centralised-management techniques (such as EZ-GPO) have been trialled on the same systems in the past.

This problem can be avoided by ensuring that a Default policy is always applied. This step may not be strictly necessary but it will ensure that a known power configuration is always operational.

2. **Hardware limitations / Windows Configuration** – Sometimes the configured power policy may not be supported by the computer hardware or existing Windows configuration. This commonly occurs when sleep mode is not supported (or is disabled in the BIOS) or the hibernation feature is not enabled. Depending upon the cause of this PowerMAN may use alternative settings or do nothing. PowerMAN reports this in the event log.

Rarely similar problems can happen if no global settings are employed. To avoid this and ensure that the power configuration always works as intended we suggest the following guidelines:

- Remember to check the hardware capabilities. This can be done with the POWERMAN INFO command. Only use sleep if it is supported by the hardware
- Similarly, remember to enable the hibernate feature if you intended to use hibernate as an idle or scheduled action
- Always configure a default policy idle (even if it does nothing)



- Always configure a Global power policy (even if its settings are trivial)
- Remember to check the event log. It may provide further explanation of the problem

Problem: The power policy doesn't work as expected. The Hard Disk / Monitor timeout is less than the idle timeout

PowerMAN will reject inconsistent settings. For instance, it is not possible to configure the hard disk to spin-down or the monitor to standby after the system has already entered a low-power state. Please change the settings to ensure that the hard disk or monitor timeout is less than the idle timeout. Please check the Power Management event log for further information.

Problem: Some computers wake-up (resume) unexpectedly

There are several reasons a PC may automatically resume from a low-power state. The following steps will help isolate the cause of the problem:

- 1. Unplug the mouse and the keyboard and determine if the problem is resolved. Sometimes a faulty input device (especially an optical mouse) may be the cause of the problem
- Unplug the network cable and determine if the problem is resolved. If the Wake-On-LAN (WOL) feature is not required disable it. If the network card supports wake on 'directed packet' (using IP address) and this feature is not actually required try disabling it
- 3. Study the power management event log. Is there a pattern? Does the automatic resume happen at set times or regular intervals?
- 4. Try a minimal software image removing all non-essential applications. The automatic resume maybe caused by another application

Problem: Some computers fail to suspend / resume reliability and consistently

Successful power management implementations often make extensive use the suspend (sometimes called sleep) and resume functionality present in modern computers. In most situations these functions work very well and require no specific configuration to be effective. Occasionally, however, some computers may have problems either successfully suspending or resuming to an operational state.

There are many potential reasons why this may happen and it may require some experimentation to fully diagnose. The following sections explain the basic steps that you can take to isolate the cause of such a problem. A separate troubleshooting section explains the steps that may be required on some systems to allow the computer to wake from a specific input (such as a USB keyboard or via Wake-On-Lan).

For the purposes of this troubleshooting procedure 'suspend' means either S1, S2 or S3 sleep (sometimes called 'suspend-to-RAM') rather than hibernation (S4) which is sometimes known as 'suspend-to-disk'. In Windows 2000 and later S4 is implemented almost exclusively by the operating system itself and therefore is less prone to failure caused by hardware or BIOS issues.

It is important to remember that **PowerMAN itself does not implement suspend and resume**. These functions are provided by the underlying Windows operating system.

Depending upon the configuration PowerMAN operates in the following ways:



- **Suspend with idle timeout** PowerMAN creates a standard Windows power policy (visible in the Control Panel power applet powercfg.cpl) and operating system implements the policy. There is therefore no practical difference between a centrally deployed PowerMAN policy and one manually created on the PC.
- Scheduled suspend, enforced suspend and shutdown (Windows Vista and later) PowerMAN instructs Windows to suspend or shutdown the PC and the operating system implements the suspend operation. This is identical to using a third party program (for instance SysInternal's PSShutdown) to perform this procedure and very similar to pressing the suspend button.

The following procedure should be followed:

Isolate PowerMAN from the problem. Try the following steps:

- 1. Temporarily remove the PowerMAN service (POWERMAN REMOVE)
- 2. Manually create a similar power policy using the Control Panel. It may be helpful to use a minimal timeout value
- 3. Determine if the PC will suspend/resume reliably

Manually initiate a suspend operation:

1. Download the PSShutdown utility. This is available from:

http://technet.microsoft.com/en-us/sysinternals/bb897541.aspx

2. Initiate a manual suspend operation with the following command

psshutdown.exe -d -t 5

It can sometimes be unclear if the problem is occurring during suspend OR resume. Try the following:

- 1. Manually suspend the PC and observe the process. A successful suspend will have the following characteristics:
 - Operation may take 5-30 seconds (depending upon configuration)
 - Windows will usually report the operation is in progress. This does not happen in Windows Vista and later when hybrid sleep mode is enabled
 - The screen becomes blank. External monitors should switch to standby mode within a few seconds
 - The hard disk should spin down. This may make a distinctive sound
 - The fan should stop running (and the PC become generally quieter)
 - A hardware indicator may illuminate or start flashing to indicate the PC is suspended
- 2. Similarly, a successful resume will have the following characteristics:
 - Resume operation can be initiated by keyboard/mouse button press or by pressing the hardware sleep/power buttons or, sometimes, opening a laptop lid.



NB: Sometimes it may not be clear how to initiate the resume process or it may not be possible to initiate resume using the desired method. This is distinct from being unable to initiate the resume process using ANY method and is discussed further below.

- The hard disk will spin up
- The fan will resume operating (and the PC become generally noisier)
- On a laptop PC the screen backlight will turn-on. On a desktop PC the monitor will return to the normal power mode (often with a distinctive click) and a flashing cursor may be displayed
- After a few moments (sometimes up to 30 seconds) the normal Windows user interface will be displayed
- The PC will respond to mouse / keyboard input and normal application operations can be resumed

If the PC will suspend but it is not obvious how to resume the PC please try the following

 Confirm if the PC will resume automatically. This may provide reassurance the problem is caused by being unable to initiate the resume operation rather than the PC being unable to resume. The simplest way to do this is with the following PowerMAN command which will suspend the computer and then resume it 60 seconds later:

POWERMAN SLEEPCHECK

2. Double check the PC will hibernate and then resume. The simplest way to do this is with the PSShutdown utility:

psshutdown.exe -h -t 5

- 3. Check the PC BIOS settings and confirm the following:
 - Suspend / Sleep (Sometimes called S1/S2/S3) is enabled
 - The keyboard / mouse can wake the PC (especially for non-USB devices)
 - USB devices may wake the PC (for USB keyboards and mice)

Determine if the problem occurs every time or just sometimes:

- 1. Repeat the manual suspend operation 10 times
- 2. Record the number of times the operation fails. Does the operation fail on suspend or resume?

Determine if the problem is caused by S1 or S3:

- 1. Check the PC BIOS settings and look for a setting related to suspend / sleep mode. This is sometimes called Suspend-to-RAM or S1/S3
- 2. Repeat the above steps for both S1 and S3. S3 is a deeper sleep state that requires less energy. Some systems work correctly with S1 but are inconsistent or unreliable with S3.

Determine if the problem occurs on a specific model of PC or with a specific software image:

1. Repeat the basic tests on a number of different computers. Does the problem only occur on specific models or with specific hardware / software revisions?



2. Try to initiate suspend directly at the logon prompt. Does the problem still occur on first bootup prior to logging on? Does the problem become more evident after the PC has been in use for a period of time? This may indicate the problem is related to a specific application.

NB: It may be helpful to use the Control Panel power applet, powercfg.cpl, to configure the power button as a 'sleep' button.

- 3. Unplug any non-essential devices, reboot, and repeat the tests. If the PC has a USB keyboard/mouse and supports a legacy PS/2 keyboard/mouse retry the operation with the PS/2 devices. This may indicate the problem is related to USB (this is quite common)
- 4. Repeat the tests using a 'clean' software image that contains the basic Windows installation and minimal drivers
- 5. Check that the latest Windows service pack and hot fixes are installed. This is often easily achieved by using the Windows update tool.
- 6. Double check for driver updates. The most common drivers to cause problems are Video, Sound and Network related drivers.
- 7. Contact the PC vendor and determine if there is a known problem with suspend. Confirm if there is a BIOS update available for the PC.

The following Microsoft Knowledge Base documents may also be useful:

Article	Title
http://support.microsoft.com/kb/952117	When you try to put a Windows XP-based computer into hibernation or into standby, the computer stops responding
http://support.microsoft.com/kb/907477	How to troubleshoot hibernation and standby issues in Windows XP
http://support.microsoft.com/kb/815304	The computer does not resume from hibernation or does not Wake-on-LAN from standby
http://support.microsoft.com/kb/331506	Computer Stops Responding When You Stand-by or Hibernate More Than One Time
http://support.microsoft.com/kb/822827	Computer stops responding after you put it into hibernation, and then resume it from hibernation many times
http://support.microsoft.com/kb/951447	A Windows XP SP3-based computer loses wireless connectivity when it resumes from standby or from hibernation, or you receive an error message when you try to put the computer in standby or in hibernation
http://support.microsoft.com/kb/302713	Error Message: Power Policy Manager Unable to Set Policy. Indicates Two Revision Levels Are Incompatible
http://support.microsoft.com/kb/841858	Description of how to enable the S3 system power state for standby when USB devices are armed for wake
http://support.microsoft.com/kb/831114	Your USB keyboard or USB mouse does not work when you resume your Windows XP-



	based computer from standby
http://support.microsoft.com/kb/878467	Your Windows XP-based computer does not resume from standby when you move your USB mouse or press a key on your USB keyboard
http://support.microsoft.com/kb/833837	You receive a "Stop 0x0000008E" error message after you resume your (Windows XP) laptop computer
http://support.microsoft.com/kb/890042	You lose access to network resources after you resume your Windows XP-based computer from standby
	NB: This hotfix is documented for use with systems using smartcard authentication. There have been reports this hotfix also works in some non-smartcard scenarios.

Problem: Unable to resume computer using selected input / button method

OR Unable to resume PC using a USB keyboard / mouse

OR Unable to resume PC using Wake-On-Lan (WOL)

OR Unable to configure Device Manager power management remotely

Most computers can be configured to suspend / resume with little difficultly.

However, sometimes, it can be difficult to initiate a 'resume' from suspend (S1, S2 or S3) or hibernate (S4) using the desired method. This is a distinct problem and should not be confused with systems that are unable to suspend or resume reliably. The most common scenario is that the PC can resume but not using the desired keyboard, mouse or Wake-On-Lan (WOL) method. This may cause user experience problems and potentially cause a power saving initiative to fail.

This troubleshooting section explains the most common scenarios and how they may be resolved.

There are four stages to this process:

- 1. Confirm the system can suspend and resume reliably (using ANY method)
- 2. Check the appropriate BIOS settings
- 3. Check the related Windows Device Manager settings
- 4. Check and configure the Power Management settings (this can be done with PowerMAN)

First, confirm that system can actually suspend and resume reliably using **any method**. The simplest approach is as follows:

1. Use the following command to initiate a suspend operation:

POWERMAN SLEEPCHECK

2. Wait two minutes. The system should resume automatically within this time



3. If this does not happen this may indicate the PC does not (currently) support automatic resume. Follow the following sections to resolve this.

The most simple resume method is a dedicated hardware button. Some systems include such buttons (although they are not always connected). Such buttons may normally be configured via a BIOS setting. It is not possible to configure this behaviour from Windows. Please check the BIOS configuration to determine if this is supported on your specific PC.

A second, related, approach is to initiate system resume using a legacy PS/2 keyboard (not a USB keyboard). As above, these are configured using only BIOS settings and do not require any configuration of the related Windows Device Manager entry. In some cases pressing any key will resume the system whilst in others a specific key must be pressed. Some systems also support resume via PS/2 mouse buttons. Please check the PC BIOS configuration to determine if this is supported on your specific PC.

Dedicated hardware sleep/resume buttons (including those on some legacy keyboards) may be configured using the PowerMAN 'Global Power Settings' feature. This is similar to the Power Options dialog in Windows 2000/XP/2003 Control Panel Power applet:

Power Options Properties	? ×
Power Schemes Alarms Power Meter Advanced Hibernate	
Select the power-saving settings you want to use.	
Options Always show icon on the taskbar	
Prompt for password when computer resumes from standby	
Power buttons When I close the lid of my portable computer:	\equiv
Do nothing	~
When I press the power button on my computer:	
Hibernate	~
When I press the sleep button on my computer:	
Stand by	~
OK Cancel A	Apply

When investigating suspend / resume issues it can often be helpful to configure the hardware 'Power' button as the 'Sleep' button. This is especially useful on systems that do not have a dedicated sleep button or where this is not connected or appears to not function correctly. Please consider reconfiguring the 'Power' button temporarily to check this.

Configuring the system to resume from a USB keyboard or mouse is considerably more complex than in the legacy cases above. This is because the functionality must be configured in the BIOS, Windows Device Manager and sometimes the related USB Hub devices. To configure resume from for USB keyboard please check the following:

1. The BIOS supports USB resume and this is enabled (often there is a dedicated setting called 'Resume on USB' or similar)



2. The Device Manager entry for the keyboard has the 'Allow this device to bring the computer out of standby' option ticked:



- 3. If this option is unavailable (greyed out) then this may indicate that the related BIOS feature is not enabled.
- In some case this may also indicate that Windows has disabled resume for this device because the system is using the S3 suspend mode. This is only applicable to Windows XP.

To restore the functionality create a 'USBBIOSx' value in the Registry. This is described in the Microsoft KB article 'Description of how to enable the S3 system power state for standby when USB devices are armed for wake':

http://support.microsoft.com/kb/841858

NB: Very rarely enabling this feature may result in increased system instability or poor suspend/resume consistency. Please test this thoroughly prior to live deployment.

5. If the USB keyboard is connected via a USB Hub then this device must be configured to remain powered and not standby. This is because the hub must remain powered for the keyboard to operate. Please remember that in some cases the USB hub may be internal to the PC. To prevent a USB hub from entering the standby state un-tick the 'Allow the computer to turn off this device to save power' option in Device Manager.



Some system administrators use the Wake-On-LAN (WOL) feature to initiate system power-on or resume from a remote location. This is commonly used for patch management and remote support. WOL is a complex topic requiring specific hardware and network support. To allow WOL to operate the following must be correctly configured on the client PC:

- 1. WOL must be enabled in the system BIOS (if present)
- 2. The following options must be selected (ticked) in Device Manager:

Allow the computer to turn off this device to save power Allow this device to bring the computer out of standby / wake the computer



Only allow management stations to bring the computer out of standby

NB: Some systems are unable to resume from S5 (full power-off) using WOL. Please check your system BIOS – in many cases there is a specific setting related to S5 WOL. A 'management station' means a true WOL 'magic' packet and not more general network traffic.

Please contact Data Synergy Technical Support if you require further advice on WOL.

Broadcom NetXtreme Gigabit Ethernet Properties 🛛 ? 🗙
General Advanced Driver Details Resources Power Management
Broadcom NetXtreme Gigabit Ethemet
 Allow the computer to turn off this device to save power. Allow this device to bring the computer out of standby.
Only allow management stations to bring the computer out of standby.
Waming: Allowing this device to bring the computer out of standby may cause this computer to periodically wakeup to refresh its network state. If you travel with this computer or run it on a battery, you should not turn on this feature as the machine may awaken at inopportune times or consume the battery.
OK Cancel

Sometimes it may be necessary to automate the deployment of these settings. This can be done using a script or batch file at deployment time. The following Microsoft documentation may also be useful:

Article / Title	Notes
http://support.microsoft.com/kb/	This document explains the PnPCapabilities Registry
<u>837058</u>	setting. This is a DWORD value where the network device
	wake-up configuration is stored:
How to disable power	HKLM\SYSTEM\CurrentControlSet\Control\Class\
management for a network	[DriverKey]
adapter when you deploy	
Windows XP.	The following (hexadecimal) values are commonly used:
	No options ticked = dword:00000038
	Allow device power saving = dword:00000030
	Allow device to wake PC = dword:00000020
	Management stations only = dword:00000120
	The system must be rebooted for a change in this setting to
	become active and be reflected in Device Manager.



http://msdn.microsoft.com/en- us/library/ms793220.aspx Enabling Selective Suspend	This document explains the HcDisableSelectiveSuspend Registry setting. This is a DWORD value that is linked to the 'Allow the computer to turn off this device to save power' option in Device Manager. It may be necessary to change this setting to prevent a USB hub from entering standby:
	HKLM\SYSTEM\CurrentControlSet\Control\Class\ [DriverKey]
	The following (hexadecimal) values are commonly used:
	Disabled = dword:00000000 Enabled = dword:00000001
	The system must be rebooted for a change in this setting to become active and be reflected in Device Manager.
Undocumented by Microsoft	The WaitWakeEnabled Registry setting is a DWORD value that is linked to the 'Allow this device to bring the computer out of standby' option in Device Manager. It may be necessary to change this setting to allow a USB keyboard / mouse to wake the system:
	HKLM\CurrentControlSet\Enum\[DeviceInstanceP ath]\Device Parameters
	The following (hexadecimal) values are commonly used
	Disabled = dword:00000000 Enabled = dword:00000001
	The system must be rebooted for a change in this setting to become active and be reflected in Device Manager.
http://support.microsoft.com/kb/ 841858	This article explains how to allow S3 suspend / resume on Windows XP when using USB devices.
Description of how to enable the S3 system power state for standby when USB devices are armed for wake	The system must be rebooted for a change in this setting to become effective.
http://support.microsoft.com/kb/ 878467 Your Windows XP-based computer does not resume from standby when you move your USB mouse or press a key on your USB keyboard	This article explains a problem in Windows XP that can prevent a USB mouse from being used to wake the system if the mouse is moved whilst the system is suspending. This problem is not currently fixed by Microsoft.

Problem: Network drive is disconnected after system has resumed

This problem can occur on some systems if the server connection has timed out. This following Microsoft article explains how to resolve this problem:



http://support.microsoft.com/kb/297684

Problem: Power Management event log reports error #1019 - Product key has expired. Please contact your sales representative to obtain an updated product key. The software will continue to function in reduced functionality mode

This indicates that the PowerMANMAN PID key has expired. This can happen during product evaluations when a time limited PID key is used. Non-evaluation PID keys are perpetual and do not expire. Please contact you Sales Representative to obtain an updated PID key.

Problem: Shutdown scripts are ignored on Windows 2000/XP/2003

This problem may occur on Windows 2000/XP/2003 where an idle policy has been configured to shutdown the system rather than suspend (sleep or hibernate). The built-in Windows idle timer does not correctly support system shutdown and fails to execute operating system shutdown scripts. This is a known limitation of Windows. The PowerMAN internal shutdown timer feature is available to work around this problem. When this feature is enabled PowerMAN implements the idle timer internally and shutdown scripts will execute as expected. This feature is disabled by default. This feature is available in PowerMAN v5.2 and later.

Problem: PowerMAN is installed but not in the path (64-bit systems)

This problem may occur when the 32-bit version of PowerMAN is installed on 64-bit systems. The PowerMAN client is a common executable (EXE) on all supported versions of Windows. The client software is available in both 32-bit and 64-bit formats. The 32-bit version may be used in mixed 32/64-bit workstations estates and offers identical features on 64-bit systems. The 64-bit version is provided to support 100% 64-bit environments. If the 32-bit version is installed on a 64-bit system it is located in the **\Windows\Syswow64 folder**. This is not in the standard command-prompt search path.

Problem: Power management event log reports event #4042: The managed power policy has been repeatedly applied x successive times. This may indicate that another program (or user) is changing the policy settings. It may also indicate a problem with the policy settings. This warning may also be generated if multiple policy changes are for very quick succession.

Occasionally other programs may interfere with PowerMAN. This event warns that PowerMAN has repeatedly configured the chosen power settings because some other process is also changing them. In some rare circumstances it may also indicate that Windows has changed the applied power settings because they are incompatible with the system hardware. If this continues please check policy settings, hardware support (PowerMAN INFO) and enable additional event logging to determine the cause.



Problem: Power management event log repeatedly record warning events #4030/4059

Events #4030 and #4059 record the pre-existing and post-configuration Windows power settings respectively. If these settings contain inconsistencies it may result in them failing to operate as expected. PowerMAN contains logic to check for such inconsistencies and warn about them both before and follow a configuration cycle. The most common inconsistency is where the video or hard disk timeout is greater than the idle timeout. PowerMAN issues these warnings for both the PowerMAN 'managed' power scheme and the built-in Windows power schemes. Therefore you may ignore these warnings if you are not using PowerMAN for active power management (e.g. monitoring only).

Problem: Power reporting is inconsistent or intermittent when installed alongside Faronics[™] Deep Freeze[™], Microsoft Steadystate or similar system restoration / system security software

OR Workstations are frequently re-imaged and this interferes with the PowerMAN reporting feature

Several system products exist which prevent effective write-access to the local file system. These products generally operate by re-directing all file write requests to a temporary file which is deleted upon restart. This creates a system which is effectively reset upon start-up and therefore immune to unauthorised re-configuration by users or installed software. This software is commonly used in high-turnover environments such as school computer labs or university open-access areas. Such software can interfere with the PowerMAN reporting mechanism.

This happens because PowerMAN caches reporting data in the local registry and only uploads it periodically. If the system is restarted prior to a PowerMAN upload the cached data can be lost resulting in intermittent reporting coverage. The result can be large gaps in the reported data.

This problem can be avoided by using the 'Log Backup' feature located with the reporting settings. This allows a parallel reporting log backup file to be stored in an arbitrary local drive/folder. This file is used by PowerMAN if the primary registry based data is missing. This PowerMAN feature may also be used as part of a frequent re-imaging strategy. There are two common scenarios:

- System frequently re-imaged (e.g. daily) Configure the log back up file and incorporate it into the re-imaging process. Typically this will require the file to be stored elsewhere prior to re-imaging and restored to the original location prior to system restart.
- System security software Configure the log backup file to be stored in a protect filesystem location (e.g. The 'Thaw space' for Faronics[™] Deep Freeze[™])



Using the debug log to investigate problems

Sometimes power policies may not behave as expected. As described above this can happen for a number of reasons and sometimes it can be difficult to pinpoint the exact cause of the problem. This is more common in Windows XP which has a more complex power management implementation which may rarely reject or transparently change apparently valid policies.

PowerMAN includes a feature that, when enabled, will dump useful system state information to a log file every second. This feature can result in very large log files and therefore should only be enabled when investigating a problem.

There are two different ways that this feature can be enabled:

- Enable Advanced/All Infomation + Debug Log. This will create a file called powerman.log in the same folder as the PowerMAN executable file
- Manually configure a log file

To manually configure the debug log proceed as follows:

- 1. Start Regedit
- 2. Navigate to HKEY LOCAL MACHINE\SOFTWARE\PowerMAN
- 3. Create a REG_SZ (string) value called DebugFile
- 4. Set the value to the name of the desired file. For instance:

[HKEY_LOCAL_MACHINE\SOFTWARE\PowerMAN] "DebugFile"="c:\powerman.log"

5. Restart the PowerMAN service (or restart the computer) with the following command:

POWERMAN RESTART

PowerMAN will log useful information every second to the specified log file. After a sufficient period has elapsed (ideally at least as long as the desired idle timeout plus a margin of a few minutes) proceed as follows to examine the log:

1. Stop the PowerMAN service with the following command:

POWERMAN STOP

2. Open the file. For instance:

NOTEPAD C:\WINDOWS\SYSTEM32\POWERMAN.LOG

The log file contains the following information:

Field	Meaning
Current Time	The time of the log entry. A log entry is produced every second
Busy%	The average level of CPU activity during the last second
ldle%	The current level of idleness.
	NB: This is the internal value calculated by Windows and is NOT the same as 100 minus Busv%
MaxIdle%	The maximum amount of idleness. Windows allows the idle timer to



	decrement whilst the current Idle% level is above this value.
	Typically this is 100% when no idle action is configured and 82% when an idle action is configured and the idle sensitivity is 50%. This value can be lowed (making the system more likely to reach idle) by reducing the idle sensitivity setting
LastInput	The time of last user (mouse / keyboard input). If this value is frequently changing this indicates that the system is receiving phantom input (usually from a faulty or over sensitive mouse)
Remain Time (seconds)	The amount of time remaining before the system is considered idle. This decreases (usually in 15s intervals) whilst the Idle% is above MaxIdle%. Where there is intermittent background activity (or user input) this value can decrease but will reset to the initial value before reaching 0.
	NB: Windows XP uses a negative value to indicate that the system is not using the idle timer. This happens when no idle action/timeout is configured
Users	The number of users currently logged onto the computer
State	The internal Windows System Execution State flags. Any value other than 0x0 indicates that the system is being artificially prevented from entering idle state by a program



An example log file, where an idle timeout or action is not specified, would appear as follows:

Log started 20080604 110319								
CurrentTime	Busy	Idle	MaxIdle	LastInput	Remain	Users	State	
20080604 110319	100	58	100	20080604 110318	-15s	1	0x0	
20080604 110320	19	58	100	20080604 110318	-15s	1	0x0	
20080604 110321	0	58	100	20080604 110318	-15s	1	0x0	

Note that the MaxIdle% is 100% and the remaining timeout value is -15 (The timer isn't running).

A common scenario is that a faulty (or poorly designed) mouse may introduce phantom inputs. This can be exacerbated by the presence of florescent lighting. Note that the LastInput field changes in every entry. This results in the idle timer being reset and therefore the system will never idle. In such a situation the log may appear as follows:

CurrentTime	Busy	Idle	MaxIdle	LastInput	Remain	Users	State
20080604 110319	0	58	82	20080604 110319	1200s	1	0x0
20080604 110320	1	58	82	20080604 110320	1200s	1	0x0
20080604 110321	0	58	82	20080604 110321	1200s	1	0x0

Another typical scenario occurs when a program artificially prevents the system from reaching the idle state. You can determine if this is happening by examining the **State** field. Any value other then 0x0 indicates that the system is currently being prevented from idling. For instance

20080604 110321	0	58	82	20080604 110321	1200s	1	0x7
20080604 110322	0	58	82	20080604 110321	1200s	1	0x1

Finally, another scenario may be that an intermittent background process (such as the screen saver) may be preventing the system from reaching the idle state. In this situation the remaining idle time may appear to initially decrease but will frequently reset to the initial value. This may appear as follows (intermediate records have been omitted for brevity):

20080604	100003	10	97	82	20080604 095736	1200s	0	0x0
20080604	100034	0	98	82	20080604 095736	1185s	0	0x0
20080604	100049	8	92	82	20080604 095736	1170s	0	0x0
20080604	100104	0	90	82	20080604 095736	1155s	0	0x0
20080604	100134	0	79	82	20080604 095736	1200s	0	0x0
20080604	100159	0	98	82	20080604 095736	1185s	0	0x0
20080604	100239	8	92	82	20080604 095736	1170s	0	0x0
20080604	100304	0	90	82	20080604 095736	1155s	0	0x0
20080604	100334	0	79	82	20080604 095736	1200s	0	0x0

NB: Some versions of PowerMAN include additional fields in the debug log file. If you need more information on these please contact Technical Support.

It can sometimes help to plot the idle time remaining field using a charting tool such as Microsoft Excel. This may help you visualise the timer behaviour and understand what is happening. Often this can result in a 'saw-tooth' pattern as the timer periodically resets before reaching zero. This is a classic sign of 'PC Insomnia':





Other Deployment Resources

The following Microsoft resources may also be useful:

302430 How to assign software to a specific group by using Group Policy 224330 Assigning a Windows Installer Package with minimal interaction 257718 How to create a third-party Microsoft Installer package (MSI) 278472 Packages assigned to computers with Group Policy are not installed



Appendix A – PowerMAN Command line options

PowerMAN supports the following command line options. These may be used by an administrator to manually configure the service and report on the current installation status:

Command	Meaning
Install	Install the PowerMAN service. For example:
IIIStall	POWERMAN INSTALL
Remove	Remove (uninstall) the PowerMAN service (also stops if running)
Start	Start the PowerMAN service (also installs if not already installed)
Stop	Stop the PowerMAN service
Restart	Restart the PowerMAN service
Status	Display the current service status
Makeguid	Generate a unique GUID value. This may be used for the SiteGUID
License	Check the current PowerMAN license key and expiry (if applicable)
Forceupload	Force any logged data to be uploaded immediately.
Hibercheck	Test system ability to hibernate and automatically resume.
Sleepcheck	Test system ability to sleep and automatically resume.
Info	Display various power related information. This is intended for use by Technical Support
Supportdump	Generate a CAB file containing PowerMAN settings and debug information. This is intended for Technical Support use.
Help	Display the command line help



Appendix B – PowerMAN Configuration with Novell ZENworks

Recent versions of Novell's ZENworks product directly support deployment and configuration of applications using a Group Policy based method. This approach is similar to the native Windows Group Policy method and is the simplest approach for deploying PowerMAN in a Novell based environment.

The following section describes the basic approach for ZENworks 6.5. A similar method may be used for other versions of ZENworks. This method assumes the **Novell ZENworks agent** to be already deployed and the **Workstation Manager** component is enabled.

To configure PowerMAN using ZENworks 6.5 proceed as follows:

1. Locate the PowerMAN PowerMAN5.adm file supplied with PowerMAN



 Open the ZENworks ConsoleOne tool and locate the container where you wish to create the PowerMAN policy. This should be an appropriate container for policies based upon your tree design.

NB: If this is your first policy then the container where the workstations you wish to manage are located may be an appropriate place to start.

- 3. Right Click and select New Policy Package
- 4. Select Workstation Package and click Next

Poli	cy Package Wizard		×
	Novell.	Choose a policy package to create or modify. The policies contained in the selected policy package are displayed in the policy list.	
		Policy packages: Policies: Container Package Search Policy Service Location Package Service Location Package User Package Workstation Package	
-		Description Container Package - is an eDirectory object that contains a collection of policies relating to containers. This policy package can be associated only with container objects. < Back Next > Cancel Finish Help	



5. Click the **Policies** tab and select the operating system(s) you wish to deploy PowerMAN to:

	r r	
rolicies	NDS Rights 👻 Other Rights to File	es and Folders
General K		
Windows 9x		
Windows NT-2000-XP		
Windows NT	Policy	Schedule
Windows 2000	ser	N/A
Valindows VP	-	Policy not enabled
Mindows Ar	olicy Jolicies	N/A Dolicy not enabled
windows 2000-2003 Terminal Server	p Preferences	N/A
Windows 2000 Terminal Server	Policy	Policy not enabled
J	Properties	Reset Add Remove
Default Package Schedule		
Default Package Schedule		
Default Package Schedule Run event: User login		

Remember: It is strongly recommended that you create a separate policy for each supported operating system. Whilst ZENworks does allow a unified (multiple operating system) policy to be created Novell recommend that the policy for each operating system be configured from a client running that operating system. In other words the Windows XP policy should be configured on a Windows XP client and the Windows Vista (and later) policy should be configured on a Windows Vista client.

6. Tick the Windows Group Policy option and click Properties

s - As 2000	sociations NDS Rights → Other Rights to File	es and Folders
T-2000 W	orkstation Policies:	
Enabled	Policy	Schedule
Π	Scomputer Extensible Policies	Policy not enabled
	NT Client Configuration	Policy not enabled
	VT Computer Printer	Policy not enabled
	NT Computer System Policies	Policy not enabled
	NT RAS Configuration	Policy not enabled
	A Restrict Login	NIA
~	Windows Group Policy	Default Schedule

- 7. Tick Computer Configuration
- 8. Click **Browse** and locate the UNC path where you wish to store the resulting .POL file.



NB: A UNC path should be used to avoid problems with drive letter mapping. This path should be accessible to workstation objects that you wish to configure.

dows Group Policies	Policy Schedule NDS Rights • Other Rights to Piles and	Folders
Manage Group Policie: <u>N</u> etwork location of ex	s xisting/new Group Policies	
	up Policies	Browse
Edit Polices	Import Active Directory Folder	
Applied Settings Typ	pes uration I⊽ Computer Configuration IT <u>S</u> ecurity Settings	
Group Policy loopt	back support	
C Apply workstation	s policy settings («epiace mode) n's policy settings last (<u>M</u> erge mode)	

- 9. Select Edit Policies. The Windows Group Policy Object Editor will open
- 10. Navigate to the **Computer Configuration / Administered Templates**, right click and select **Add/Remote Templates**:

🚡 Group Policy Object Editor	
Eile <u>A</u> ction <u>V</u> iew <u>H</u> elp	
Software - Remote Power Manage	er [Server.corp 📋 Administrative Templates
End of the settings End of the setti	
Administrative Templates	Add/Remove Templates
Software Settings	Edd/tempterstri
• Windows Settings	All Tas <u>k</u> s 🕨
Administrative Templates	<u>V</u> iew ►
	Export List
	Help

11. Click Add and locate the PowerMAN5.adm file supplied.

NB: It may be helpful to remove the other administrative templates present using the **Remove** button. These are not required for PowerMAN.

12. The Administrative Templates section should now contain a section for PowerMAN Power Management (other sections may be present depending on server configuration). Select the PowerMAN Power Management section and configure the appropriate PowerMAN settings.



- 13. For instance, to configure the license settings select **Product Licensing**, right click and select **Properties**
- 14. Select **Enabled**, carefully enter the product details supplied with the software, and click **Ok**

Product Licensing Properties
Setting Explain
Product Licensing
O Not Configured
 Enabled
O Disabled
Registered Organisation Your Company Name
Product Key KHAT-RDJV-XGQX-JURT-KKXR-KYTH

- 15. When the appropriate settings have been configured close the Group Policy Object Editor and return to the ZENworks package settings
- 16. Open the **Policy Schedule** tab, drop down **Schedule Type**, and select **Event**
- 17. Configure the policy to apply on the Service Startup event.
- 18. Open the **Associations** tab and select the container(s) you wish to associate this settings package with.
- 19. Click **OK** to complete the package configuration

There is further information about Group Policy based workstation packages on the Novell website:

http://www.novell.com/documentation/zenworks65/?page=/documentation/zenworks65/dmadmin/data /a777rvi.html



Appendix C – PowerMAN Configuration with RM Community Connect 3

The following section describes the basic configuration approach for RM Community Connect 3. A similar method may be used for other versions of Community Connect (CC).

To configure PowerMAN using RM Community Connect proceed as follows:

1. Locate the PowerMAN ADM file and copy it to the location where group policies are stored on the server.

NB: On a workstation, this folder is normally L:\Type Manager\ADM (e.g. the RMManage share) or if at the server, it is D:\RMDelivery\RMManage\Type Manager\ADM.

- 2. Login to the RM Management Console (RMMC) as System Admin.
- 3. Expand Configuration settings and click on 'Workstation Types' and then on 'Type Options' at the top (4th button from the right).



- 4. A drop down list will appear. Tick the new policy and click OK.
- 5. The new policy will be applied to a group of computers. To create a workstation type (it is not possible to change the properties of standard RM workstation types), select an appropriate workstation type to copy, e.g. Shared Desktop. Right-click on it, select copy and then give the workstation type a meaningful name.



Hint: Avoid using a name with something which is exactly the same as your 3-letter establishment code as this can sometimes cause confusion in Active Directory. In the example above and below, the code is ALD but workstation type names start with Aldby.

 Software Restrictions Settings User Types Workstation Types Printers Printers 	Aldby IWB Lapto	p Laptops used with IWBs with power managemer station type description for the type: tage of Shared Deckler
 	Description:	For desktop computers on the network.
	A Personal	For laptop or desktop computers used predomin
	Shared Desktop Shared Laptop	For desktop computers on the network. For computers used by many people that are of

- 6. Edit the properties of the new workstation type. Double click the new type and select the PowerMAN Power Management option from the drop-down list.
- 7. Configure the product licence details and other PowerMAN settings as required.

Hint: It can be helpful to configure 'AppAgent' and 'WinAccs' as protected programs. This will avoid the computers suspending whilst lengthy updates are being installed.

	<u>ð</u>		? 🗙	
Global Workstation Settings	Aldby Office Desktop workstation type			
Internet & Email Settings	Category: PowerMAN Power Management			
oftware Restrictions Settings			~	
S User Types	🗉 🗹 Power Management and Monitoring 💿			/or
Workstation Types	Seperate DC Settings (i)			
Printers	Hide Power Management Tools 🍥			
🕀 🌺 Resources	✓ Hibernate (Suspend to disk) ④			
🕀 🧟 Users	Keep Awake Server Service 🔅			
	Ignore User Power Settings 🔅			
	🖭 🔲 Scheduled Wake 🚯		=	
	🗉 🔲 Scheduled Shutdown/Sleep 🚯			
	Protected Programs (i)			
	Programs			
	Value			
	AppAgent	×		
	WinAccs	×		

8. Finally select a workstation computer to test the policy. Apply the policy to this workstation by assigning that workstation to the new workstation type. To do this locate the PC in the RMMC, select it's properties, and on the General page, change the workstation type to be the new one. Restart the computer (a second reboot may sometimes be required) and the policy should be applied.

Hint: A useful tip is to make a change to the screen-saver, or the colour of the pre-login desktop at the same time as you are making other policy. Then when you see that, you know that the other policy will be in effect, too.



Appendix D – PowerMAN Policy Settings Reference

PowerMAN is designed, primarily, for configuration with the Microsoft Windows group policy tools supplied with all recent versions of Windows Server. An Administrative Template file is supplied to simplify this process.

PowerMAN may also be configured by manually creating a suitable settings and importing them into the system registry of the deployed workstation computers. This section documents the supported policy settings and their default values. In a few cases options are available via the registry are deliberately omitted from the associated ADM file. These options are intended for advanced configuration and troubleshooting.

General Information

Unless otherwise noted all settings are of type REG_DWORD. True is indicated by 1. False is indicated by 0. Where no value is specified for a setting (it is missing) a sensible default value is assumed.

The following are valid values for settings marked _ACTION:

_ACTION Meaning	REG_DWORD Value
PowerActionNone	0
PowerActionSleep	2
PowerActionHibernate	3
PowerActionReboot	5
PowerActionShutdownOff	6

NB: Some policies only support a subset of the above actions

The following are valid values for settings marked _STATE:

_STATE Meaning	REG_DWORD Value
PowerSystemWorking	1
PowerSystemSleeping1	2
PowerSystemSleeping2	3
PowerSystemSleeping3	4
PowerSystemHibernate	5
PowerSystemShutdown	6

The following table may be useful for calculating values expressed in seconds:

Time in seconds	REG_DWORD Value (Decimal)
Disabled	0
1 Minute	60
5 Minutes	300
60 Minutes	3600 etc


Product Licensing

The product license settings are stored in HKLM\SOFTWARE\Policies\PowerMAN:

Registry Setting Name / Type	Meaning
RegisteredOrganisation	Organisation name supplied with the
	PowerMAN product key. This forms part of
REG_SZ	the product key and must be entered exactly.
e.g. Example Supplies Ltd	
RegisteredProductKey	The product key supplied with PowerMAN.
	This is exactly six groups of four characters
REG_SZ	separated by five dashes.
e.g. KHAT-RDJV-XGQX-JURT-KKXR-KYTH	

Power Management and Monitoring (Reporting)

The reporting settings are stored in **HKLM\SOFTWARE\Policies\PowerMAN**:

Registry Setting Name / Type	Meaning
SiteGUID	Unique site identity used to track a group of computers that are managed as a single
REG_SZ	entity. This value can be generated with the Makeguid command line option.
e.g. {c0388a36-0826-4566-ba64-c22a96cb7863}	
LogServer	The address of the logging server. This can be blank if management reporting information
REG_SZ	is not required. The standard logging server is pmstats.org
e.g. pmstats.org	
LogServerPort	The port number of the logging server. This is usually either 80, 443 or 8080. The default
REG_DWORD	pmstats.org server port is 443 .
e.g. 443	
LogProxy	The address of the local proxy server that PowerMAN must use to send management
REG_SZ	information to the logging server. This can be blank if a proxy server is not required.
e.g. 192.168.1.1	
LogProxyPort	The port number of the proxy server. This is typically 8080. This value has no effect if a
REG_DWORD	proxy server address is not defined.
e.g. 8080	
CacheBackup	Some sites frequently reinstall (sometimes called re-image) workstations to ensure a
REG_SZ	smooth user experience. In such sites the
	most recent power usage information can be lost during a re-installation. This can be
	avoided by configuring PowerMAN to store a
	backup of the usage information. It is the
	responsibility of the system administrator to
	ensure that this file is protected during the



	reinstallation process by either excluding it
	from being over-written or by moving it to a
e.g.	save location.
%windir%\system32\logfiles\PowerUsage.xml	This seeing must refer to a <i>local</i> path.
Hideldentity	Do not report the workstation name (and
	MAC address and OU membership if
REG_DWORD	applicable) to the reporting server. This
	option may be required to meet privacy
0=Disable	requirements in some jurisdictions.
1=Enable	
UploadLiveStatus	Report live power management status data.
REG_DWORD	
0=Disable	
1=Enable	
UploadHardwareInfo	Report hardware details of workstation.
REG_DWORD	
0=Disable	
1=Enable	

Miscellaneous Configuration

PowerMAN supports the following miscellaneous features on a per-machine basis. These are stored in **HKLM\SOFTWARE\Policies\PowerMAN**:

Registry Setting Name / Type	Meaning
SeperateDCPolicy	Allow separate DC settings to be configured.
	When disabled any DC settings are ignored.
REG_DWORD	I his option should be set to not-configured or
	disabled except when configuring PoweriviAN
1-Enable	Tor use with portable computers. It separate
	ensure they are compatible with the AC
	settings.
EnableHibernate	Enable support for the hibernate (S4) power
	saving option. This is the same as ticking the
REG_DWORD	hibernate option in the local control panel
	applet. If hibernate is not enabled attempts to
0=Disable	hibernate will normally result in a suspend to
1=Enable	RAM (S1-S3) instead.
HidePowerOptions	Hide the Power Management control panel
	applet and the Screen Saver configuration
REG_DWORD	tab of the display properties applet. See
	notes below.
1=Enable (hide)	
IgnoreUserSettings	Ignore any user specific power settings
	When a user is logged in the default policy
REG_DWORD	settings will apply. When no user is logged in
	the No User settings will apply.
0=Disable	
1=Enable	
IgnoreUserOverride	Ignore user opt-out configuration. This option
	also removes the user opt-out option from the



REG_DWORD	user interface menu.
0=Disable	
1=Enable	
DiscardUserOverride	Discard user opt-out selection upon logout /
	reboot.
REG_DWORD	
0=Disable	
1=Enable	
DiscardUserKeepAwake	Discard user keep awake selection upon
	logout / reboot.
REG_DWORD	
0=Disable	
1=Enable	
AllowWakeTimersAC	Globally enable/disable hardware wake-up
	timers on AC power
REG_DWORD	
0=Disable	
1=Enable	
AllowWakeTimersDC	Globally enable/disable hardware wake-up
	timers on battery power
REG_DWORD	
0=Disable	
ServerServiceKeepAwake	when enabled and the Server service is
	running, the system will not sleep, nibernate
	or shutdown. This option should normally be
	enner not configured or disabled unless
	specifically required as incorrect
I=EIIaDle	configuration will result in increased energy
	Sorver convice is not rupping
	Server service is not running.



Scheduled Events

PowerMAN supports both scheduled wake and shutdown features. These are stored in the following Registry locations respectively:

HKLM\SOFTWARE\Policies\PowerMAN\AutoShutdownX HKLM\SOFTWARE\Policies\PowerMAN\AutoWakeX

where X is a number from 1-n.

Days for auto-shutdown/wake are configured using the following bit mask values:

DAY	REG_DWORD Value
Sunday	1
Monday	2
Tuesday	4
Wednesday	8
Thursday	16
Friday	32
Saturday	64

To determine the value for a specific combination of days add the required values together:

For example:

Weekdays (Monday-Fri)	= 62
Weekends (Sat/Sun)	= 65
Everyday (Sun-Sat)	= 127

The supported scheduled wake settings are as follows:

Registry Setting Name / Type	Meaning
AutoWakeDays	The weekdays that the scheduled wake
	policy will apply (typically All or Mon-Fri). This
REG_DWORD	option may be extended by editing the ADM
	file. See appendix for further details.
Sun=1, Mon=2, Tues=4Sat=64 etc	
e.g. 62 (Monday-Eri)	
AutoWakeDates	I he days of the month that the scheduled
	action will apply. This works in combination to
REG_SZ	the weekdays specified and may be left
	empty if not required.
CSV separated list of days of the month	
e.g. 1, 10	
AutoWakeLocalTime	The local time that the computer is
	scheduled to wake. Typically this value is set
REG SZ	to be a few minutes before the user requires
	the computer. Remember that, depending on
Time in hh:mm:ss format	other power settings the computer may
(seconds are ontional)	shutdown or sleep if no activity occurs within
	the timeout period
60	
0.9.55	Policy is anabled by presence of both yolid
00.00	Folicy is enabled by presence of both valid



AutoWakeDays and AutoWakeLocalTime
settings

Similarly he supported scheduled shutdown/sleep settings are as follows:

Registry Setting Name / Type	Meaning
AutoShutdownDays	The weekdays that the scheduled action will
Autoonutuomibuys	apply (typically All or Mon-Fri) This option
	may be extended by editing the ADM file
REG_DWORD	Thay be extended by editing the ADM file.
	See appendix for further details.
Sun=1, Mon=2, Tues=4Sat=64 etc	
e.g.	
62 (Monday-Fri)	
AutoShutdownDates	The days of the month that the scheduled
	action will apply. This works in combination to
REG SZ	the weekdays specified and may be left
	empty if not required
CSV separated list of days of the month	
Cov separated list of days of the month	
a m 1 10	
e.g. 1, 10	
AutoShutdownLocalTime	The local time that the computer is
	scheduled to enter the specified state.
REG_SZ	Typically this value is set to be a few minutes
	after the closuring of a public access area.
Time in hh:mm:ss format	
(seconds are optional)	
e.g.	
18.00	
AutoShutdownMode	How to apply the specified action
REG DWORD	
0 Ignore action if user logged on	
1 Warn year Allow year agneel	
1 Warn user. Allow user callee	
2 warn user. No allow user cancel	
e.g.	
1	
AutoShutdownAction	The action to take. This may be sleep,
	hibernate, reboot or power off.
REG_DWORD	
This must be one of the value _ACTION	The policy is enabled by the presence of a
values noted above.	valid combination of all four AutoShutdown
	policy settings.
e.g.	, , ,
3 (PowerActionHibernate)	
AutoShutdownAllowResume	Allow system to wake from one power saving
	state to transition to another. If this feature is
	not enabled the system will remain in the
	ather state and ignore the scheduled
	outer state and ignore the scheduled
	snutuown/sieep policy.
	The first sector start start
	I his reature is typically used in sites that
	nave a lower sleep policy during the daytime



	and wish to transition to a deeper state at night time. As noted elsewhere this feature requires that the hardware correctly supports a scheduled wake operation. No all hardware is capable of doing this and some hardware incorrectly reports that it supports this.
AutoShutdownOverrideMode	Allow other applications (including protected
	files and programs) to inhibit the
REG_DWORD	shutdown/sleep operation.
0=Operation is not inhibitted 1=Protected files/programs inhibit 2=Any application may inhibit	

Global (All User) Power Settings

PowerMAN supports the following global power management features on a per-machine basis. These are stored in HKLM\SOFTWARE\Policies\PowerMAN\AllUsers:

Registry Setting Name / Type	Meaning
Enable	Enable or disable All User Power settings. This
	is enabled by default. Setting this value to 0 can
REG_DWORD	temporarily disable these settings. This is the
	same as deleting the
1-Enable (default)	registry key
LidOnenAcState	The action to take when running on AC power
	when the computers lid (if present) is opened.
REG DWORD	Support for this feature may not be present on all
_	hardware.
This must be one of the value _STATE	
values noted above.	
e.g. 0 (PowerSystemWorking)	
LidOnenDCState	As above but applies when running on DC power
	As above but applies when running on Do power
REG_DWORD	
PowerButtonAcAction	The action to take, when running on AC power,
	when the power button is pressed.
REG_DWORD	
This must be one of the value STATE	
values noted above	
e.g.	
4 (PowerSystemHibernate)	
PowerButtonDcAction	As above but applies when running on DC power
REG_DWORD	The estimate takes when even in a set AQ as were
SieepButtonAcAction	when the sleep button (if present) is pressed
REG DWORD	when the sleep button (ii plesent) is plessed.
SleepButtonDcAction	As above but applies when running on DC power



REG_DWORD	
LidCloseAcAction	The action to take, when running on AC power,
	when the computers lid (if present) is shut.
REG DWORD	Support for this feature may not be present on all
	hardware
LidCloseDcAction	As above but applies when rupping on DC power
	As above but applies when running on Do power
EnablePasswordOnwake	Require a password when the computer wakes
	from sleep or hibernate. This should normally be
REG_DWORD	enabled.
0=Disable	
1=Enable	
EnableShowPowerMeter	Show the power meter on the task bar. This
	policy should generally only be enabled for
REG DWORD	laptop computers.
N=Disable	
1-Enable	
	Dim the sereen when running on DC newer. This
	policy is typically only supported by some lenter
	policy is typically only supported by some laptop
	computers.
0=Disable	
1=Enable	

User, Default and No User Power Settings

PowerMAN supports three different types of power settings. All support the same options but are stored in different registry locations:

1. User specific settings are stored in HKCU\SOFTWARE\Policies\Powerman\User

2. No User settings (for the logon prompt when nobody is logged on) are stored in **HKLM\SOFTWARE\Policies\Powerman\NoUser**.

3. Default settings (for users without their own specific configuration) are stored in **HKLM\SOFTWARE\Policies\Powerman\DefaultUser**. These are used for every use and the logon prompt 'user' unless another specific policy is applied

Registry Setting Name / Type	Meaning
LogoutAcTimeoutSeconds	The inactive time, in seconds, when running on
REG_DWORD	AC (mains Power), that will trigger the user to be logged about. This time is measured since the last user activity (mouse or keyboard input).
e.g.	This setting is not available for the NoUser
300 (5 minutes)	policy.
LogoutDCTimeoutSeconds	As above but applies when running on battery
	power. This setting is not available for the
REG_DWORD	NoUser policy.
LogoutForce	When enabled this option will force the logout to
-	occur. If this setting is not enabled an application
REG DWORD	may yeto the logout. Typically applications do this
	to prompt the user to save unsaved work
0=Disable	therefore, if this setting is enabled, user data loss
1=Enable	may occur. This setting is enabled for



	environments where data integrity is not a concern. This setting is enabled by default and is hidden in the standard ADM/ADMX file distribution.
	This setting is not available for the NoUser policy.
IdleAcAction	The action to take (shutdown, suspend, hibernate, nothing) upon entering the idle state
REG_DWORD	NR: This must be one of the value ACTION
e.g. 3 (PowerActionHibernate)	values noted above.
IdleDcAction	The inactive time in seconds, when running on AC (mains power) that will trigger the idle action
REG_DWORD	
IdleAcSensitivity	The level of sensitivity applied by Windows to
REG_DWORD	Some systems fail to reach idle due to
e e 50 (Mindewe defeult)	background system activity. In this situation it can
e.g. 50 (windows default)	recommended. This must be between 5% and
	90%
IdleDcTimeoutSeconds	Same as IdleAcAction but applies when running on battery power.
REG_DWORD	
IdleDcTimeoutSeconds	As above
REG_DWORD	
IdleDcSensitivity	As above
REG_DWORD	
VideoTimeoutAcSeconds	The inactive time in seconds, when running on
REG_DWORD	off.
VideoTimeoutDcSeconds	Same as VideoTimeoutAcSeconds but applies
REG DWORD	when running on battery power.
HDDTimeoutAcSeconds	The inactive time in seconds, when running on
REG DWORD	AC power, before switching the hard disk off.
	NB: This policy may not be very effective on
	many systems that perform frequent background tasks. See troubleshooting section for further
	information.
HDDTimeoutDcSeconds	Same as HDDTimeoutAcSeconds but applies
REG_DWORD	when running on battery power
CPUThrottleAc	The processor throttling policy to apply when
REG_DWORD	
	Adaptive – Match performance to demand
	Degrade – Maximize energy saving by reducing
0 None	CPU performance
2 Degrade	None – Maximize performance (increased energy
	consumption)
e.g. 3 (Adaptive)	



	Processor throttling is not available on all hardware and is ignored if it is not supported.
	Typically this setting should be set to Adaptive when a user is present but may be set to Degrade when no user is logged on.
CPUThrottleDc	As per CPUThrottleDC but applies when running
REG_DWORD	on battery power

Policy Enforcement / Anti-Insomnia Settings

PowerMAN allows the administrator to enforce the specified idle settings. These can be used to ensure that the specified idle action will occur and cannot be suppressed by Windows or another program. These are necessary on some systems where the installed software may periodically reset the Windows idle timer or otherwise prevent the system from idling.

Policy Enforcement Setting	Meaning
ForceldleAcExtraTimeoutSeconds	The amount of time, in addition to the specified idle timeout after which the idle action will be forced
e.g. 300 (5 minutes)	
ForceldleDcExtraTimeoutSeconds	As above but applies when running on battery power.
REG_DWORD	

Protected Object Settings

PowerMAN allows the administrator to specify programs and files that, when running or present respectively, will prevent the system from enter the idle state. These are specified by listing creating a value in the following registry keys. The name of the value is not important (Windows numbers them when configured with the administrative template)

- HKLM\SOFTWARE\Policies\PowerMAN\ProtectedFiles
- HKLM\SOFTWARE\Policies\PowerMAN\ProtectedPrograms

Protected Setting	Meaning
ProtectedPrograms	Specifies a list of programs that, when
	running, require the system to remain awake.
REG_SZ	
	Program names should be specified without
e.g. CMD	a file extension.
	e.g. CMD and <i>not cmd.exe</i>
ProtectedFiles	As above but applies to files. When a file in
	the protected list exists PowerMAN will
REG_SZ	ensure that the system remains awake.
e.g. C:\CONDOR\ACTIVE.LOG	Files should be fully qualified and include a
	file extension.
	e.g. C:\CONDOR\ACTIVE.LOG



Resume Configuration Settings

By design Windows will return to the previous low power state two minutes after an automatic resume if there is no user activity. On some systems application behaviour may interfere with this behavior or it may be undesirable.

PowerMAN's **Resume Configuration** feature allows this Windows feature to be inhibited where necessary:

Resume Configuration Setting	Meaning
ResumeDisableResuspendSeconds	The inactive time, in seconds, during which
	PowerMAN will prevent the system from
REG_DWORD	returning to the previous low power state.
	If no user activity occurs during this period PowerMAN will subsequently allow the PC to return to the previous low power state. This process is terminated immeditaly upon any user activity
ResumeActivateMonitor	Allow the display to be turned on following an
REG_DWORD	automatic system resume.
0=Disable 1=Enable	
*This feature is not supported on some hardware platforms or graphics cards.	

Debugging / Advanced Settings

The following debugging settings are supported. These settings are located in **HKLM\SOFTWARE\Policies\Powerman**. These are intended primarily for resolving problems under the instruction of Technical Support.

Setting	Meaning / Supported Values
IgnoreSystemActive	When enabled this option will ignore other
REG_DWORD	related tools (such as the legacy PowerCONFIG and PowerSTART) and protected objects. This means that non-user
	activity will not be reported and will be
1=Enable	enforce a policy regardless of these tools.
e.g. 1	
MaskNonInteractiveSessions	Ignore user input (mouse / keyboard) for
REG_DWORD	on. This feature is intended to workaround problem hardware such as "chatty" optical
0=Disable	mice.
1=Enable	
e.g. 1	
MaskUserInterfaceRecentEvents	Disable UI notification of recent power
	management events. This prevents display of



REG_DWORD	the orange status icon.
0=Disable	
1=Enable	
e.g. 1	Llow often DewerMANL checks the surrent
HOSTPOIIWIS	How often PowerMAN checks the current
	power status. This should happen at least
REG_DWORD	seconds
e a 60000	seconds.
e.g. 00000	
Note: This value is in milliseconds	
PolicyUndateMS	How often PowerMAN undates the active
	power settings Typically PowerMAN checks
REG DWORD	the system every 10 minutes. This option
	may be used to speed up (or slow down) this
	process. Warning: Values below 30s can
e.g. 600000	have a very detrimental impact on system
	performance.
Note: This value is in milliseconds	
CacheDays	Power data is normally cached for up to 28
	days. This allows logging to continue when
REG_DWORD	the client computer is off the network or the
	logging server is unavailable. This setting can
	be used to adjust this default value.
e.g. 28	The new ar large are started in
	HE power logs are stored in
PemoveCorruptPolicies	Remove corrupt power policies
Removecon upti oncies	Remove contupt power policies.
REG DWORD	PowerMAN beta testing found a scenario
	where certain third party utility may create
0=Disable	corrupt power policies. Such policies prevent
1=Enable (default)	PowerMAN from operating correctly and
	prevent Windows from correctly configuring
	power management. By default PowerMAN
	removes such invalid policies.
UploadTimeoutMS	removes such invalid policies. How long PowerMAN will wait for the server
UploadTimeoutMS	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The
UploadTimeoutMS REG_DWORD	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD e.g. 5000	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel REG DWORD	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values shown.
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel REG_DWORD	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values shown.
UploadTimeoutMS REG_DWORD e.g. 5000 <u>Note: This value is in milliseconds</u> EventLoggingLevel REG_DWORD 0 = Standard information only (default)	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values shown. Logging additional information may fill the
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel REG_DWORD 0 = Standard information only (default) 1 = Additional information	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values shown. Logging additional information may fill the event log and cause other events to be lost.
UploadTimeoutMS REG_DWORD e.g. 5000 Note: This value is in milliseconds EventLoggingLevel REG_DWORD 0 = Standard information only (default) 1 = Additional information 2 = All information (maximum verbosity)	removes such invalid policies. How long PowerMAN will wait for the server before terminating an upload attempt. The default is 5 seconds The level of event logging detail required. This may be one of the supported values shown. Logging additional information may fill the event log and cause other events to be lost. This option should therefore only be enabled



Appendix E - Alternative Configuration Method - Local Group Policy / Registry Settings

It can be time consuming and potentially error prone to manually create the required settings. It is recommended that the Group Policy / ADM method is used wherever possible. However, if this approach is not practical it is possible to use the ADM file on a **local computer** to generate a master configuration and then deploy this using the built-in Windows Registry tools. This **Local Group Policy** approach has the advantage that it will create a consistent and reliable configuration with less likelihood of errors.

To use the ADM file on a local PC proceed as follows:

- 1. Install Windows XP on a computer that is **not** a member of a domain. It is not necessary for the PowerMAN service to be installed on the computer.
- 2. Create a folder, for example C:\PowerMAN and place a copy of the PowerMAN5.adm file within the folder.
- 3. Launch the Microsoft Management Console (MMC.EXE)
- 4. Navigate to the File menu and select Add/Remove Snap-in
- 5. Click Add
- 6. Select Group Policy Object Editor and click Add
- 7. The snap-in will default to Local Computer mode. This is correct. Click Finish
- 8. Click Close and then Ok to return to the main MMC window
- 9. Expand Local Computer Policy
- 10. Select Administrative Templates
- 11. Right click and select Add/Remote Templates
- 12. Click Add and locate the Powerman5.adm file. When finished click Close
- 13. Configure the desired power settings as per the GPO method instructions
- 14. Save the snap-in for later reuse (this avoids repeating steps 4-12 again) by selecting File/Save As and selecting the filename Powerman5.msc
- 15. Exit the management console
- 16. Export the generated registry settings for deployment on other computers by using the following command to create a file called PM.REG:

REG EXPORT HKEY LOCAL MACHINE\SOFTWARE\Policies\Powerman PM.REG

17. Deploy the settings to the required computers using your chosen deployment method. This could be one of the following:

i.REG IMPORT PM.REG



ii.REGEDIT /S PM.REG

- iii. Third party deployment tool
- 18. If you need to create additional settings the following small batch file may be helpful. This overwrites the locally cached copy of the PowerMAN5.adm file and launches the previously saved snap-in. This process is particularly necessary if a new version of the ADM file has been released (it is normally only copied to the %windir%system32\grouppolicy\adm\ folder when the snap-in is first configured):

COPY powerman5.adm %windir%system32\grouppolicy\adm\powerman5.adm

MMC powerman5.msc

Example Registry File

The following registry example contains the settings for a basic site with the following properties:

- 1. Site GUID is {bf9d6144-02f1-4292-9f59-225fae4fd7de}
- 2. Log server is pmstats.org:443 (0x1BB in hexadecimal)
- 3. A Default policy applies that hibernates the system after 30 minutes (0x708 seconds) and turns off the monitor after 10 minutes (0x258 seconds)
- 4. A No User policy applies that powers off the computer after 10 minutes (0x258 seconds) when no user is logged on
- 5. Policy enforcement (anti-insomnia) that provides a 5 minute (0x12c seconds) grace period

Windows Registry Editor Version 5.00

```
[HKEY LOCAL MACHINE\SOFTWARE\Policies\Powerman]
"SiteGUID"="{bf9d6144-02f1-4292-9f59-225fae4fd7de}"
"LogServer"="pmstats.org"
"LogServerPort"=dword:00001bb
"ForceIdleAcExtraTimeoutSeconds"=dword:0000012c
"ForceIdleDcExtraTimeoutSeconds"=dword:0000012c
[HKEY LOCAL MACHINE\SOFTWARE\Policies\Powerman\DefaultUser]
"IdleAcTimeoutSeconds"=dword:00000708
"IdleAcAction"=dword:0000003
"IdleDcTimeoutSeconds"=dword:00000708
"IdleDcAction"=dword:0000003
"VideoTimeoutAcSeconds"=dword:00000258
"VideoTimeoutDcSeconds"=dword:00000258
"HDDTimeoutAcSeconds"=dword:00000258
"HDDTimeoutDcSeconds"=dword:00000258
[HKEY LOCAL MACHINE\SOFTWARE\Policies\Powerman\NoUser]
"IdleAcTimeoutSeconds"=dword:00000258
"IdleAcAction"=dword:0000006
"IdleDcTimeoutSeconds"=dword:00000258
"IdleDcAction"=dword:0000006
"VideoTimeoutAcSeconds"=dword:00000258
"VideoTimeoutDcSeconds"=dword:00000258
"HDDTimeoutAcSeconds"=dword:00000258
"HDDTimeoutDcSeconds"=dword:00000258
```



Appendix F – Custom Actions

PowerMAN allows specific custom actions to be performed during system suspend and resume. These actions can be run for the system or per-user. Custom actions may be used to implement workarounds for undesirable application behaviour in a power management environment or to notify a third-party component that suspend/resume is occurring.

Two action types are currently supported:

- 1. **CLOSEWINDOW** Close specific application window(s)
- 2. RUNPROG and RUNHIDDEN Launch application / script

Custom actions are divided in to Computer and User actions. Computer actions run in the local system account. These actions cannot interact with the user's desktop. User actions configured in a run in the context of the user and may interact with the user's desktop.

CLOSEWINDOW Action

The CLOSEWINDOW action may be used to close an application or dialog prior to suspend or immediately upon resume. This is most commonly used to work around legacy applications that fail to handle suspend gracefully or fail upon resume. In most cases the CLOSEWINDOW command has the same effect as closing the window manually or pressing the Cancel button. The exact behaviour is application specific and must be determined prior to use.

Tip: Windows allows each window to be assigned some text and a window 'class'. The window text is usally the message displayed in the title bar. The 'class' is application specific and is commonly used to group similar windows together or link them to the parent application. Each application may have many windows associated with it including some that are hidden.

The CLOSEWINDOW syntax is as follows:

CLOSEWINDOW [windowtext] [windowclass]

Where either [windowtext] or [windowclass] or both may be specified or include a wildcard (*) character.

To use the CLOSEWINDOW action proceed as follows:

- 1. Open the target application and ensure that it is in the correct state. For the purposes of this example the target application is 'Notepad'
- 2. Determine the window text (and optionally class) for the window you wish to close:

POWERMAN LISTWINDOWS

3. PowerMAN will display a list of available windows. For example:

;HANDLE TEXT CLASS
#10424206 "Start" "Button"
#9377002 "CiceroUIWndFrame" "CiceroUIWndFrame"
#429722238 "Example - Notepad" "Notepad" -
#16978356 "Start menu" "DV2ControlHost"
#25890692 "Close" "VBBubble"
#15929788 "Jump List" "DV2ControlHost"



#7932092 "View Available Networks (Tooltip)" "VANUITooltip" #20972380 "Task Switching" "TaskSwitcherWnd" #19989242 "Show Results Pane" "OfficeTooltip" #12453072 "Battery Meter" "SystemTray_Main"

4. Use the following command to close the specific window called 'Example - Notepad':

POWERMAN CLOSEWINDOW "Example - Notepad"

5. Use the following command to close all windows with the word 'notepad' in the title:

POWERMAN CLOSEWINDOW "*Notepad*"

6. Similarly, use the following command to close all windows with the class 'Notepad':

POWERMAN CLOSEWINDOW * "Notepad"

7. After confirming the correct command to achieve the desired behaviour add the appropriate CLOSEWINDOW command to the desired custom action policy:

Setting	State	
😫 User Suspend Actions	Enabled	
🚰 Computer Suspend Actions	Enabled	
User Suspend Actions Properties Setting Explain	?×	
Show Contents		<u>×</u>
User Actions CLOSEWINDOW * "Notepad"		OK Cancel

Warning: Windows Vista and later allow some applications to be marked as 'High Integrity Processes'. The security feature prevents standard applications from interacting with these applications and is designed to prevent message injection attacks. CLOSEWINDOW may not be used to interact with a high integrity process. Please see the following Microsoft documentation for further details:

http://msdn.microsoft.com/en-us/library/bb625962.aspx



RUNPROG and RUNHIDDEN Actions

The RUNPROG and RUNHIDDEN actions may be used to launch another program during suspend or resume. The RUNHIDDEN uses the same syntax but launches the program in an invisible state.

The action syntax is as follows:

RUNPROG program [arguments]

RUNHIDDEN program [arguments]

Where [arguments] may be blank.

Tip: To launch a batch file / script the program is example:	the command interpre	eter CMD.EXE. For
RUNPROG CMD.EXE /C C:\WINDOWS\CUSTOM.BAT		
Setting	State	
😤 User Suspend Actions	Enabled	
🚔 Computer Suspend Actions	Enabled	
Computer Suspend Actions Properties	<u>? ×</u>	
Setting Explain		
Computer Suspend Actions		
C Not Configured		
Enabled		
C Disabled		
Computer Actions Show		
Show Contents		x
Computer Actions RUNPROGICMD. EXE /Clic:\windows\ci	ustom.bat	OK Cancel



Appendix G – Inconsistent Configuration Behaviour

By default PowerMAN will try to resolve configuration problems by using the closest policy possible to that configured. This may be necessary because of inconsistent settings or missing hardware support for the chosen configuration. This feature is enabled by default. Care should be exercised when disabling this feature as it may expose problems with existing settings.

The following is a non-exhaustive list of configuration problems that may be amended by this feature:

- Mismatched global power policy or idle power policy (default, no user or specific user policy)

 The missing policy is automatically created with sensible default settings
- Policy action requires hibernate but hibernate not enabled Hibernate is automatically enabled unless specifically disabled
- Policy action requires hibernate but hibernate not possible Sleep mode is automatically used instead
- Scheduled resume (wake-up) policy present but wake-up timers not enabled Wake-up timers (Windows Vista and later) automatically enabled
- Excessive video or hard disk timeout Inconsistent timeout reduced to match idle timeout



Appendix H – PowerSTART Tool

PowerStart v5.0.0.28				
Use PowerStart to prevent the computer from performing active power management whilst executing the specified program. During execution the system power monitor will record that the computer was active.				
Syntax:				
PowerStart [options] program [arguments]				
Supported options:				
/keepawake - Keep computer awake /screenon - Keep screen powered on /hide - Launch process silently				
ОК				

It is sometimes desirable to ensure the computer does not sleep or hibernate whilst performing an important task. This can be difficult to ensure whilst using standard idle based power conservation and may result in active power management being sacrificed to ensure correct operation.

PowerMAN is supplied with a utility called PowerSTART that be used to launch a critical application. PowerSTART is included in the main PowerMAN installation when installed from the MSI file.

PowerStart can launch almost any application and whilst that program is executing will:

- Log that system was not idle (even when no user is present)
- Prevent the computer from entering the idle state

Programs launched with PowerSTART are labeled 'Other Activity' in the PowerMAN reports. This activity is shown in blue and can therefore be easily distinguished from user activity shown in green:



Activity / Hours



Appendix I – PowerMAN Data Logging Protocol

PowerMAN collects power related information on a per computer basis. This information may be used to understand the usage profile of managed PC equipment, create a tailored management policy and monitor the ongoing effectiveness of the policy.

Information is collected in an anonymous format that cannot be used to identify a specific user or the activity the user is performing. The information is uploaded in XML format using the industry standard HTTP POST protocol.

The log data is stored in the *HKEY_LOCAL_MACHINE\SOFTWARE\PowerMAN\Logs* key of the Windows registry. Logs are stored in binary format with a single binary record representing an entire day. Slightly less than 500 bytes of information are logged in each record. The protocol is designed to impose the minimum demand on network bandwidth and be compatible with all known proxy servers.

In normal circumstances only a single log record will be present. This represents the current active day. At midnight (or as soon as possible thereafter) PowerMAN creates a new log record and prepares to upload the previous record to the logging server. The upload is timed to happen at a random time usually between 00:00 and 03:00. If the upload is successful the log record is deleted from the registry. If the log transfer fails for any reason it is reattempted approximately every two hours until successful.

The power reporting is 'historic' and performed using Universal Coordinated Time (UTC). If PowerMAN were to be installed today it would not report anything until tomorrow. PowerMAN will normally retain log records for up to 28 days. This allows logging to continue whilst the logging server or network connectivity is unavailable. The number of days that logs are retained may be configured using the *PowerDataCacheDays* setting.

👷 Registry Editor				
File Edit View Favorites Help				
🕀 🕒 Windows Kits	•	Name	Туре	Data
😟 🕛 Windows Live		(Default)	REG_SZ	(value not set)
Windows Live Mail		101d0f592ca314000	REG_BINARY	4f 4e 50 4d 00 40 31 ca 92 f5 d0
🕀 🎍 Windows Mail		101d0f65bf49b0000	REG BINARY	4f 4e 50 4d 00 00 9b f4 5b f6 d0 i
😟 🎍 Windows Media Device Manager			-	
😟 🦺 Windows Media Foundation				
🗈 🔐 Windows Media Player NSS		Edit Binary Value		×
🕀 🕌 Windows Messaging Subsystem		Value name:		
🕀 🕌 Windows NT	01d0f65bf49b0000			
🕀 🤐 Windows Photo Viewer		J01d0f65bf49b0000		
🕀 🕌 Windows Portable Devices		Value data:		
🕀 🕌 Windows Script Host		0000 4E 4E 50 4	D 00 00 98 F	4 ONPM Ó
🕀 🧶 Windows Search		0008 5B F6 D0 0	1 60 00 00 0	ο [öĐ.`
		0010 FF C5 E8 1	C FF C5 E8 10	C ÿÂè.ÿÂè.
E Mozilla		0018 BF C5 E8 1	.C BF C5 E8 1(
🕀 mozilla.org		0020 BF C5 E8 1	C BF C5 E8 10	CAE.CAE. C ilà ilà
		0030 BF C5 E8 1	C BF C5 E8 10	C ¿Âè.¿Âè.
		0038 FF C5 E8 1	C FF C5 E8 10	C ÿÅè.ÿÅè.
Passman		0040 FF C5 E8 1	.C FF C5 E8 10	
		0048 BF C5 E8 1	C FF C4 E8 10	C ZÁRICAR. C ZÁRIVAR
		0058 FF C5 E8 1	C BF C5 E8 10	C ÿÅè.¿Åè.
		0060 BF C5 E8 1	C BB C5 E8 10	C 24è.»4è. 🖵
Dedemation .			OK	Cancel
Recemption				
Registereumpplications		1		

If you require further details of the PowerMAN logging and data transfer format please contact Data Synergy Technical Support.



Appendix J – Updates for PowerMAN Enterprise Server v5.1.x

PowerMAN v5.4.x includes several new features and is fully backwards compatible with existing deployments of PowerMAN Enterprise Server (PMES). To gain full access to the new features PMES must be updated. To update your private PMES server proceed as follows:

- 1. Locate the folder containing the PMES website (e.g. C:\Websites\PowerMAN5)
- 2. Backup this folder to a safe location
- 3. Merge (copy and paste) the contents of the appropriate 'PowerMAN Enterprise Server Updates\PMES v5.1.0 Updates' sub-folder to your PMES website
- 4. Restart the PMES website



Appendix K – Common Event Log Messages

PowerMAN includes a comprehensive event logging feature. This section explains the most common logged events. The exact wording of some events may change from one PowerMAN release to another. However, the general meaning of a specific event number will always be the same. Some events include parameters such as times, program or user names. The first parameter is shown as %1. The second parameter, if present, is marked %2 and so on.

Event	Meaning
1000	PowerMAN Power Management service installed.
1001	PowerMAN Power Management service uninstalled.
1002	PowerMAN Power Management service running.
1003	PowerMAN Power Management service stopped.
1009	The Terminal Services service (TermService) failed to start within a reasonable time. This service is required by the PowerMAN Power Management service.
	function on Windows XP. Please check that this service is set to either manual or automatic start (manual is the default).
1013	Additional debug power information will be reported. This is an intensive process and should only be used when absolutely necessary PowerMAN's debugging features are enabled. This will result in a much greater amount of
	information being logged in the event log. Sometimes a debug text file is also created. This option should not be enabled in a production environment for longer than necessary.
1016	No valid product key was found. Check product key and registered organisation name.
	The product key was missing or invalid. Please check it. The POWERMAN LICENSE command will report additional information.
1019	Product key has expired. Please contact your sales representative to obtain an updated product key. The software will continue to function in reduced functionality mode.
	Some types of product key are designed to expire after a certain time. Please obtain an updated product key.
2000	System entering sleep/hibernate state
2001	System resumed
2002	System entering shutdown
2003	The computer is being prevented from entering the idle state by an unknown program. This is NOT a program configured by the Administrator. This may result in increased energy consumption
	Another program, not part of the PowerMAN suite, is preventing the computer from entering a lower power state. Please consider using the policy enforcement feature or other debugging steps to determine the specific program that is causing the problem.
2004	A program has indicated that it is performing activity and the computer is being prevented from entering the idle state. This may result in increased energy consumption.
2005	The computer is being prevented from entering the idle state because the Server Service is running. This may result in increased energy consumption
2006	The computer is being prevented from entering the idle state due to a protected



Event	Meaning
	program or file specified by the Administrator. This may result in increased energy consumption
2010	PowerMAN is preventing the computer from entering the idle state because it has recently automatically resumed.
4000	Removed invalid power policy for user
	Sometimes power polices can become inconsistent. This often happens when roaming profiles are used and the power policy in the roaming profile has no counterpart on the computer. PowerMAN removes such policies before creating a new one.
4003	Power policy for user checked and does not need to be updated
	The existing power settings match those configured by the administrator. No action is necessary.
4009	Automatic wake enabled for %1. The auto-wake operation may fail if not supported by hardware or if the system is shutdown. Most systems do not support wake from power off (S5) state.
4013	Scheduled shutdown/sleep policy enabled for %1
4016	The next power policy update is scheduled for around %1
4019	Scheduled sleep event. This system will suspend
4020	Scheduled hibernate event. The system will hibernate
4021	Scheduled shutdown event. The system will shutdown
4023	Scheduled wake event. The system is now active
4024	An invalid global power policy was found. The policy settings were %1
4025	An invalid power policy was found. The policy settings were %1
4026	A global power policy was found. The policy settings are %1
4027	A power policy was found. The policy settings are %1
4031	Due to recent activity rescheduled next power policy update for around %1
	PowerMAN detected a change that requires the power policy to be checked / updated. The update is postponed for a few seconds to allow the system to stabilise.
4042	The power policy has been repeatedly applied %1 times. This may indicate that another program (or user) is changing the policy settings. It may also indicate a problem with the policy settings. If this continues please contact Technical Support
	Occasionally other programs may interfere with PowerMAN. This event warns that PowerMAN has repeatedly configured the chosen power settings because some other process is also changing them. If this event happens frequently you will need to investigate the cause of the problem.
4047	Enforced sleep event. This system will suspend. Last activity %1. Active timeout was %2 seconds
	The policy enforcement feature forced the computer to sleep. This happened because some other process was inhibiting the normal Windows idle timer.
4048	Enforced hibernate event. The system will hibernate. Last activity %1. Active timeout was %2 seconds
	The policy enforcement feature forced the computer to hibernate. This happened because some other process was inhibiting the normal Windows idle timer.
4049	Enforced shutdown event. The system will shutdown. Last activity %1. Active timeout was %2 seconds
	The policy enforcement feature forced the computer to power-off. This happened because



Event	Meaning				
	some other process was inhibiting the normal Windows idle timer.				
4051	User has been inactive for over %1s and will be logged out				
4052	Scheduled shutdown/sleep event inhibited by protected service, program or file				
4053	Scheduled shutdown/sleep event inhibited by an application or service that has requested the system remain active				
4061	The system has automatically resumed and will be prevented from returning to previous power state for %1				
4062	The system has automatically resumed but may return to the previous state shortly unless user activity prevents this. To avoid the system entering automatically re- entering a low-power state please consult product documentation				
6009	Discarded some stale events. These are too old to be reported				
	PowerMAN abandoned some historic power logs because they were older than the configured timeout. This usually happens if the PC has been turned off for an extended period. Although this does result in some loss of log continuity it is rarely a problem.				
6013	Failed to upload XML (Error %1): %2				
	There was a problem transferring the power log data to the PowerMAN reporting server. The error number is normally a Windows Winsock error code indicating the cause of the problem. See http://msdn.microsoft.com/en-us/library/ms740668(VS.85).aspx for an explanation of these codes.				
6015	Downloaded XML was corrupt: %1				
	The response from the PowerMAN server was incomplete. This may indicate a network or proxy server problem.				
6016	Report operation fully completed. All data sent to server.				
6017	Report uploads are disabled. Both a logging server and site identity are required. This can also be caused by a failure to correctly determine the computer identity				
6020	No SiteGUID value configured. The computer is not a member of a reporting site. This will prevent power usage information being uploaded. To enable reporting features check the SiteGUID setting				