Data Synergy
LEADING IT SOLUTIONS

PowerMAN Server 5.2

Management Reporting Platform Guide

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About Data Synergy

Data Synergy is a British company based in Sheffield. We have over 10 years' experience developing and supporting software solutions for enterprise PC deployment and management. We do not resell other vendors' products and do all of 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.

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Contents

Overview

The PowerMAN reporting platform complements the PowerMAN client software by giving you powerful, organisation-wide, reporting of PC energy usage, costs and waste.

The software is available in two separate solutions:

- **PowerMAN Hosted Reporting** - Running on Data Synergy's servers this solution avoids the need to purchase, configure and maintain your own server. This is ideal for small-medium sized organisations below approximately 5,000 computers.

- **PowerMAN Enterprise Server** – Running on your own server this product provides your own private reporting system. This is ideal for larger organisations or where use of the hosted service is not practical.

The reporting solution is optional – the PowerMAN client software will provide central control of PC power management without it. However, the management reports can be extremely useful to monitor the on-going effectives of your PowerMAN installation and determine if any improvements can be made. Whichever solution you select both provide identical reporting features.

This guide explains how to use and manage the reporting system. The guide is written for both users and site administrators. Separate administrator guides are available which explains how to initially configure PowerMAN Enterprise Server and how to deploy the PowerMAN client software.

Accessing the demonstration system

The Data Synergy website includes a live demonstration of the PowerMAN reporting system.

The example shows an organisation divided into two areas:

- **No power management** - before PowerMAN

- **Active power management** - with active PowerMAN management

You can access the demonstration and explore the features described in this document at the following link: http://www.datasynergy.co.uk/demo.aspx

Reporting sites and sub-sites

PowerMAN can group similar or related computers together into **sites**. The grouping is configured by the system administrator and may be revised without any data loss. Typically computers are organised by location, computer type or business function.

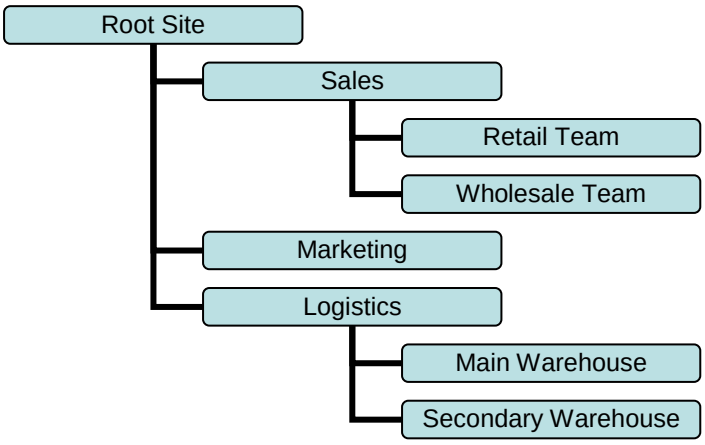
Reporting sites may be created in several different ways:

- Manual site created by system administrator on server
- Automatic site creation based upon client-side settings and then allocation of reporting site by system administrator
- Fully automatic site creation based upon computer Active Director (OU) hierarchy. This feature requires PowerMAN client v5.2.6 or later

Each site is identified by a unique identity called a **SiteGUID**. Unless you are the system administrator you will not need to know the intricate details of how the SiteGUID identity operates – *all you need to remember is that it is unique*. An example SiteGUID:

```
{94818dbc-308c-4a61-a59b-714c047703d5}
```

The system administrator can create as many sites as are required for your organisation. Sites can be nested within each other to reflect the organisation structure or Active Directory hierarchy. For instance an example structure could be:



You can use PowerMAN to report on any site or any hierarchy of sites.

For instance, using the example, a report for **Sales** would include **Retail Team** and **Wholesale Team**.

Whilst computers can be moved between sites at any time it is good practice to put some initial thought into the site hierarchy so that it accurately reflects your organisation structure.

An **ideal site** is a group of similar computers within a defined environment such as an office, department or computer room. A typical site can have from 10 to several hundred computers and will be **suitable for managing as a single entity.**

Accessing the reporting system

The system administrator can supply you with a URL (web address) that can be used to access the reporting system. The administrator can configure the system security to allow:

- Allow anonymous viewing
- Require a login for authenticated viewing
- Require a login for authenticated site administration

System logins may be based upon your email address and a password or Windows user name. Windows based logins do not require a separate password.

> **Tip:** The PowerMAN hosted reporting service is initially configured to allow anonymous viewing. This simplifies access which is especially useful when learning the PowerMAN system. You can request a login if you need a higher level of security. A login is **always** needed to make changes to the system configuration.

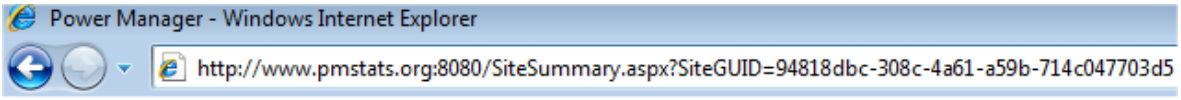
On a stand-alone PowerMAN Enterprise Server system this URL is usually in the following format:

http://yourserver:8080/

However, depending upon configuration, you may need a more complex URL to access the reports. The typical URL format is

http://yourserver:8080/SiteSummary.aspx?SiteGUID=yourguid

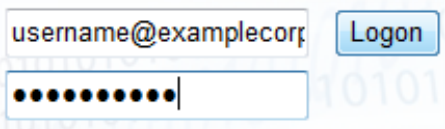
It may be helpful to bookmark the URL in your favourites. To access the URL paste it into your browser address bar:



Login using email address and password

If your system requires you to logon using an email address and password you can enter your credentials using the boxes at the top of the screen. To login proceed as follows:

1. Enter you email address and password into the login fields (top right)
2. Press the **Logon** button



3. You will be redirected to your organisation root (top-level) site. This is the site that contains all other sub-sites.

Login using Windows user account

If your system is configured to permit login using your Windows account then no separate password is necessary. This is known as **Windows integrated authentication.** If anonymous logins are permitted you will initially be logged in anonymously. In this case you may login (for instance to perform administration) by clicking the **Logon** button:

1. Press the **Logon** button

2. You will be redirected to your organisation root (top-level) site. This is the site that contains all other sub-sites.

Online Help System

PowerMAN includes an on-line help system that can be used to complement this guide. To access the system press the question mark icon that is displayed next some features.

Reporting System Basics

The PowerMAN reporting solution is designed to show energy management related statistics for computers within your organisation. You can use the reporting system to monitor performance and fine-tune your PC power management policies.

The reporting system uses a common colour coding scheme to show the various types of activity:

Colour / Activity	Meaning
User Activity	The user was active during the time period. This usually means that the user operated the keyboard/mouse.
Other Activity	A program or other activity configured by the system administrator was active during the time period. This colour will only be present if this feature has been enabled.
Inactivity	The computer was inactive. No user activity was detected. No other significant activity was detected. **Tip:** Used correctly, the primary purpose of PowerMAN is to reduce the amount of time spent 'inactive' to a minimum. It is unlikely that you will be able to completely remove all inactive time but you should be able to remove almost all of it without disrupting productivity.

PowerMAN divides the day into small (15 minute) time slots and records anonymous information about the activity on each computer. For each time slot PowerMAN provides the following information:

- Was there any user* activity?
- Was a user logged on?
- Was the monitor, hard disk or screen saver on or off?
- Did any application prevent sleep or hibernation?

*** The information collected does NOT include the name of the user or what specific programs, websites, keyboard activity they were performing. PowerMAN logs less than 4 bytes of information every 15 minutes. Please contact Technical Support for a detailed explanation of the information collected and the protocol used to transfer it to the PowerMAN server.**

Site Summary Overview

The site summary page contains the majority of the reporting features. The top of the page includes details about the site and is followed by information about recent activity, sub-sites and computers. Depending upon system configuration some of these areas may be missing.

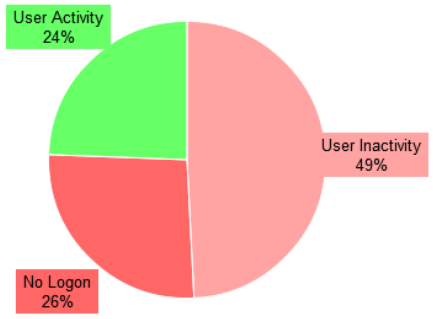
Example Corporation Limited

Organisation	Example		
Unique Identity	{94818dbc-308c-4a61-a59b-714c047703d5}	First Data	29/02/2008
Created	01/01/2009	Last Data	25/04/2009
Expires	Never	Total Computers	104 Export
Data Retention	Unlimited	Total Sub-Sites	4 Export
Computer Auto Move	Enabled	Estimated kWh / PC	00.20 KW
Anonymous Access	Viewing Only	Electricity Cost / kWh	$ 0.12
Wake Proxy	www.examplecorp.com/wakeproxy.aspx	Nominal CO_2 / kWh	0.43 kg
Timezone	0.0 hour(s) UTC		

Site Information
Information about the site and site parameters

Activity breakdown by type

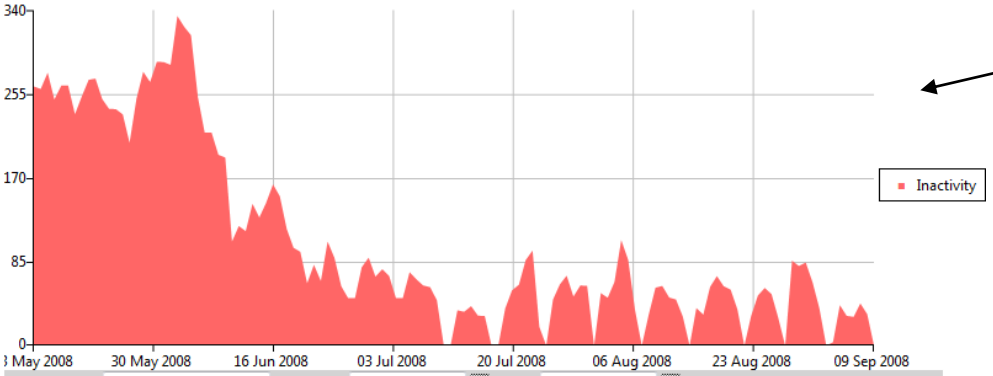
Majority inactive hours 49%
due to user inactivity whilst logged on



Site Summary Chart
This chart shows summary information for the current site and sub-sites broken down by activity type

Inactivity (Waste) / Hours

6205 inactive hours
Equivalent estimated $ 628



Export Show activity time data from 13/05/2008 until 13/09/2008 Normalise Show All
Refresh

Site Activity History
This chart can show site activity in hours, estimated cost and estimated CO_2

Sub-Sites

	Inactive Hours	Active Hours	Inactive	User Active	Other Active
Sales Area	18810.75	8286.00			
Admin Area	7989.00	3763.25			
Logistics Area	4910.75	3860.75			
Development Area	729.50	370.00			

Export Show worst 10 sub-sites from 15/01/2009 until 04/04/2009 Refresh

Sub-Sites
This area shows sub-sites and their activity statistics for the displayed time period. You can navigate to each sub-site by clicking on the site name. The statistics for each site include all of its sub-sites.

Computers

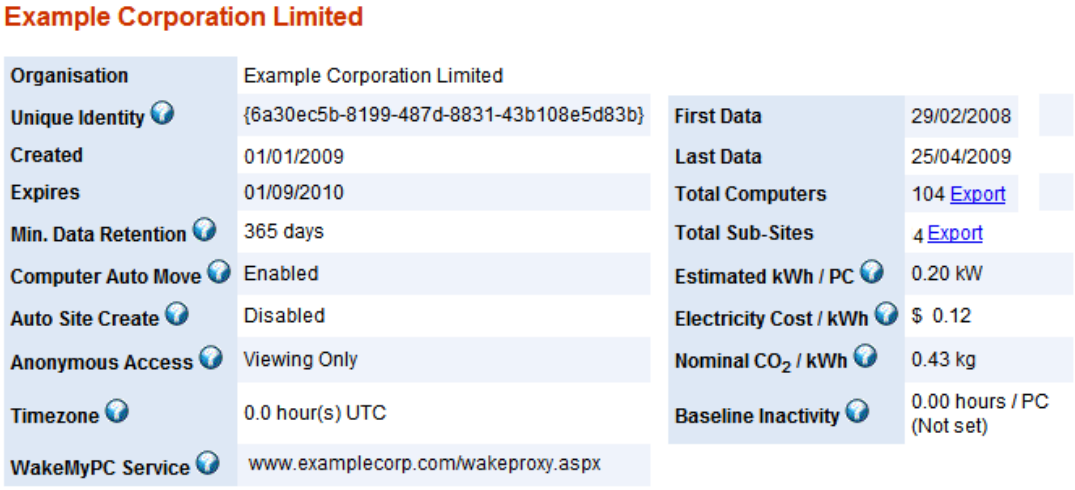
	Version	Last Status	Inactive Hours	Active Hours	Inactive	User Active	Other Active	
TECHSUPPORT5	5.1.0.3440	19/03/2009	2353.00	317.50				Wake
TECHNICAL1-1	5.1.0.3440	20/03/2009	2055.00	600.25				Wake
TECHNICAL1-3	5.0.10.3230	13/01/2009	2010.00	467.25				Wake
SCOTTS	5.1.0.3440	22/03/2009	1795.00	508.00				Wake
EMMAV2	5.0.10.3230	02/02/2009	1731.50	499.00				Wake
REPAIRS2	5.1.0.3440	19/02/2009	1090.00	204.75				Wake
REPAIRS3	5.1.0.3440	20/02/2009	997.00	287.00				Wake
REPAIRS5	5.1.0.3440	20/03/2009	906.50	346.75				Wake
TECHSUPPORT1	5.0.10.3230	12/12/2008	768.50	46.50				Wake
REPAIRS1	5.1.0.3440	20/03/2009	718.00	497.00				Wake

Export Show worst 10 computers from 13/05/2008 until 13/09/2008 Refresh

Site Computers
This area shows the activity statistics for computers in the current site. You can navigate to each computer by clicking on the computer's name

Site Summary Information

The top of the site summary page displays information about the site and its sub-sites. Some of this information is technical data useful to the system administrator:

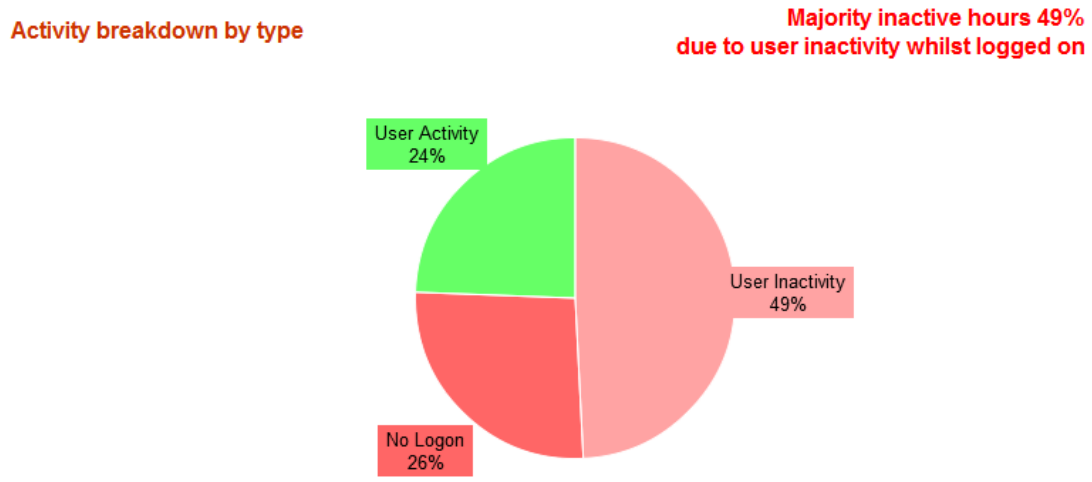


The information fields have the following meanings:

Field	Meaning
Organisation / Site	The name of the site
Unique Identity	The SiteGUID assigned by the system administrator or automatically by the server
Created/Expires	The date the site was created and will expire. The expiry date is determined by your PowerMAN product license key
First/Last Data	The date that data was first and most recently reported to the server for this site
Min Data Retention	The minimum period of time the server will retain the site data. Most sites are configured to discard data that is more than one year old. This period of time is primarily dictated by the available server storage capacity.
Computer Auto Move	Computers will normally move automatically between sites if the administrator changes the **SiteGUID** on the client computer. This feature may be disabled in some deployments to lock computers within their initial site.
Auto Site Create	When this feature is enabled reporting sites are automatically created by the server to reflect the client computers Active Directory hierarchy. This feature requires client software v5.2.6 or later.
Anonymous Access	The level of access granted to anonymous users (without a logon)
WakeMyPC Service	The address of the optional WakeMyPC server. This feature was called 'Wake Proxy' in previous releases.
Total Computers/Sites	The number of computers and sub-sites within the current site
Estimated KWh Electricity Cost Nominal CO_2	The nominal figures used to estimate site running costs and CO_2 emissions.
Time zone	The time zone relative to UTC (GMT) that the site is located in. This is used to display some data in local time format
Baseline Inactivity	The baseline inactivity level, in hours, for a single (normalised) PC. This may be established during an initial workstation audit and subsequently used in estimated savings calculations. The date displayed alongside this figure is the date the estimate was based.

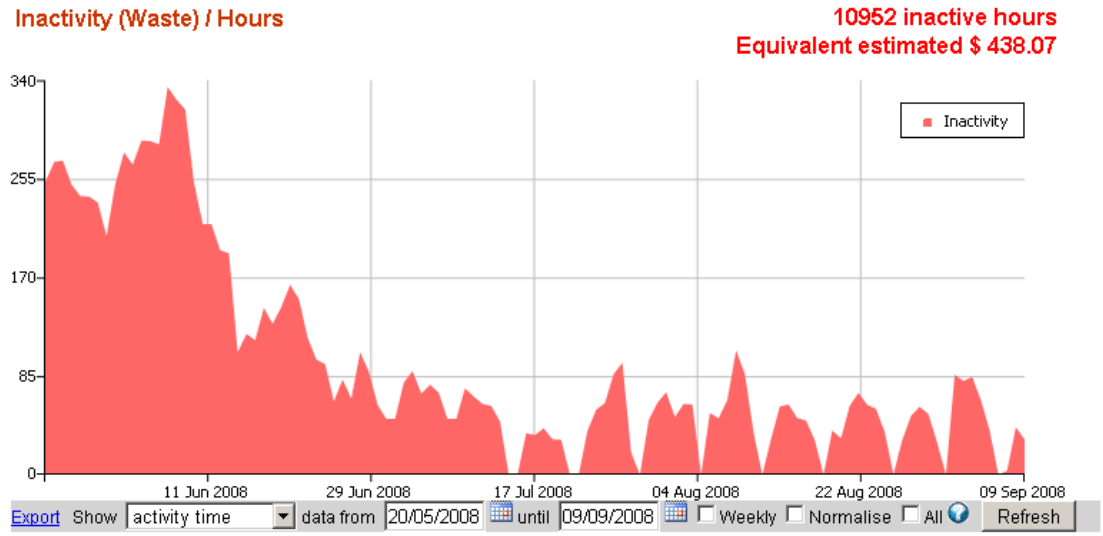
Site Activity Summary

The site activity summary chart breaks down recent site activity by activity type. This includes all computers in the current site and all sub-sites of the current site. This chart provides a very quick overview of site performance.



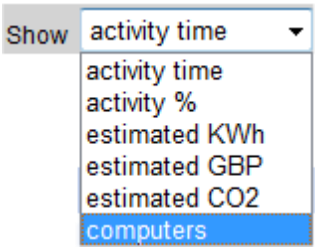
Site Activity History

The site summary chart displays site activity for the selected calendar period. This activity includes all of the computers in the current site and all sub-sites of the current site. This chart is the primary reporting tool provided by PowerMAN and the quickest way to monitor system performance in a visually accessible way.



The toolbar beneath the chart can be used to control the information displayed. It is worth spending five minutes to familiarise yourself with the powerful range of reports offered by this toolbar.

The export link can be used to export the displayed data in the industry-standard CSV format. You can open and manipulate this file with Microsoft Excel or a similar program.



The drop down box is used to select the information displayed in the chart. Normally PowerMAN displays information as absolute activity time. However, you can also select % activity time, estimates costs, the number of computers active or estimated savings (against the baseline figure)

The date fields are used to control the date range used for the chart. All dates are inclusive. To select a date either input it directly into the box or press the calendar icon to display a convenient calendar.

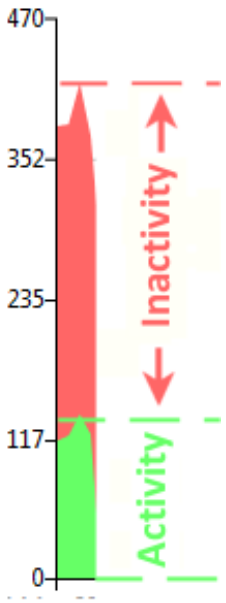
PowerMAN displays dates using the format configured in your web browser. For instance in the UK dates are displayed as dd/mm/yyyy whilst in the US dates are displayed with the month first as mm/dd/yyyy.

You can change the date format in Microsoft Internet Explorer by selecting Tools / Internet Options / Languages.

The tick boxes are used to configure how the information should be displayed in the chart:

- The **weekly** option aggregates date for each week together. This can be useful to remove daily fluctuations (especially weekends) from the data. This option is especially useful when looking at data over periods of many months.
- The **Normalise** option divides the displayed data by the number of computers active that day (or week). This is useful to remove the effect of a fluctuating number of computers. Please see the section below for further information on this topic.
- The show **All** option can be used to include or exclude the user and other activity fields. This can be useful to simplify the chart and display only the primary 'inactive' data.

Tip: The **Normalise** option can sometimes result in data with periodic spikes. This can especially happen at weekends when the level of activity (and possibly the number of computers) is greatly reduced from the weekday average. You can avoid this phenomenon by using the **weekly** setting.



When the show **All** option is enabled PowerMAN displays the separate activity classifications in a stacked format. The total activity time is the summation of each of the separate coloured areas as shown in this diagram. You can read the values using the scale on the right hand side.

Normalisation Feature (average PC metrics)

Normalisation is a key statistical technique that averages results for all computers in the site.

This produces **a per-PC metric** that can be compared between days even when the number of PCs is variable. Normalisation also provides a metric that can be used to compare the performance of sites/reporting groups of difference sizes. Normalisation may be performed on either the daily or weekly data.

Weekly normalisation may sometimes be useful to extend this process and remove daily fluctuations. In deployments with a variable number of active computers on different days or where there is a significant difference between weekdays and weekends this can help remove these effects from the data and provide a result for an average or 'typical' PC. The normalised result is always a fraction of 24 hours (daily) or 168 hours (weekly).

> **Tip:** In some deployments the non-normalised and normalised charts may be almost identical. If this is the case it indicates there is little deviation between specific PCs and the nominal PC.

Estimated costs and CO_2

The data recorded by PowerMAN is based upon the amount of time in each activity state. This time based data is the most accurate way to measure the effectiveness of your power management policy.

The PowerMAN Server system also allows you to convert this to estimates of cost and equivalent carbon dioxide. This conversion can allow you to visualise and report on the effectiveness of your power management policy using these alternative measures.

PowerMAN can **only estimate** the cost and CO_2 figures because:

- Each PC has different power requirements. In practice a desktop PC usually requires 100-300W (0.1 to 0.3KW). Unfortunately most computers do not have the hardware necessary to measure this electronically. You can however measure this yourself using a watt-hour meter. The best way to do this is to use a meter that can record a cumulative (not instantaneous) figure and monitor different computers over the full working day cycle. This will produce a figure in KWh.

- The cost of electricity varies from site to site. This value is available from your electricity supplier.

- The nominal amount of CO_2 released per KWh of electricity generated from fossil fuels depends upon the generation method and efficiency. The UK Government currently uses a standard figure of 0.43kg/KWh. The exact amount depends upon the source of electrical generation. This value may be less (or even zero) if non-fossil fuels are used to generate the electricity. This value is also available from your electricity supplier.

You can replicate the calculations performed by PowerMAN as follows:

1. Measure the KWh figure for a PC / 24 hours

2. To calculate cost multiply this figure by the electricity cost per KWh

3. To calculate nominal CO_2 multiply this figure by 0.43kg/KWh (or the figure from your electricity supplier)

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 47,040, 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.

Although the figures produced by PowerMAN are only estimates they will produce useful figures if you use accurate values for electricity consumption, cost and CO_2.

The following example explains how a method to estimate the cost of PC inactivity.

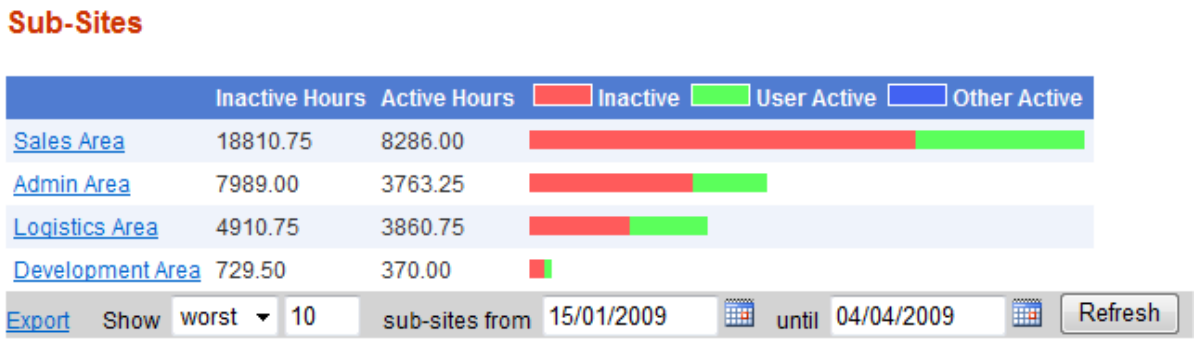
a. Estimate the 'inactive' hours per PC per week

b. Determine the energy cost / KWh

c. The approximate annual cost of inactive periods is the number of PCs x (a) x 52 x (b)

Sub-Sites Overview

PowerMAN displays summary information about the current sub-sites. These are the sites that are nested within the current site. The format used is very similar to the main chart but the graph is displayed sideways for easy comparison. The sub-site chart includes a separate date range selector. Normally this shows recent activity:

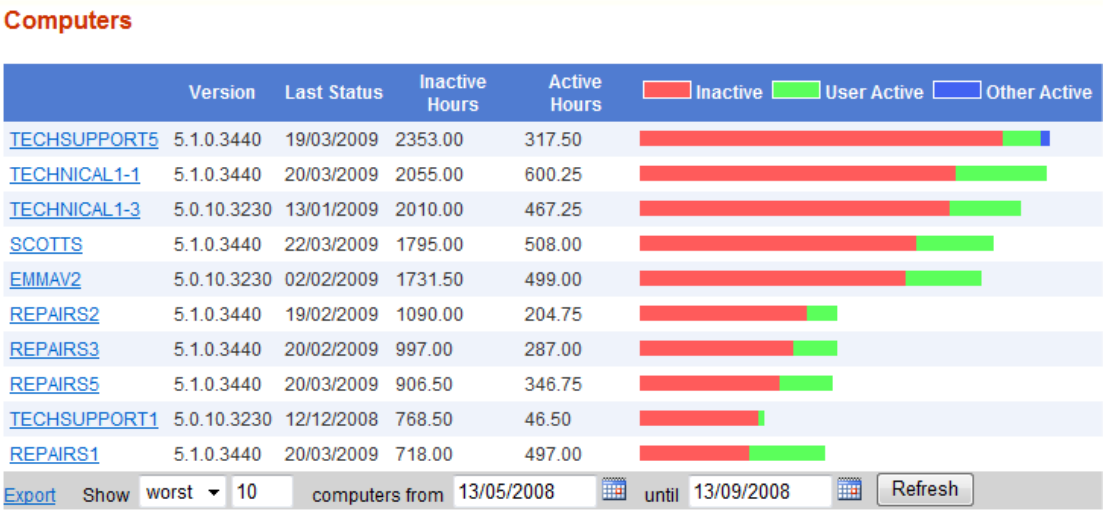


The toolbar beneath the chart can be used to control how many records are shown and if they are shown in least (best) or greatest inactivity order.

You can navigate to the sub-site by clicking on the associated link.

Computers Overview

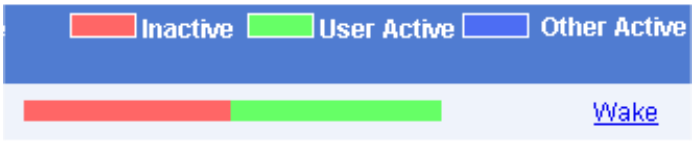
Similarly PowerMAN displays the summary information about the current site's member computers in the final chart. The last status field indicates the last day that data was logged. You can navigate to the computer, and see more detailed information, by clicking on the computers name.

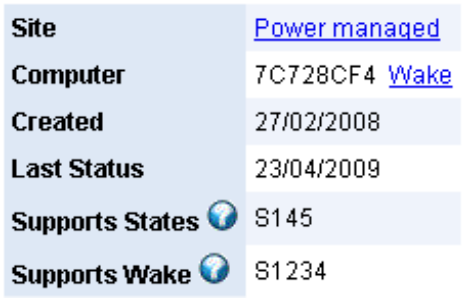


WakeMyPC Integration (Remote Wake)

The system administrator may optionally install the Data Synergy WakeMyPC software. This can be used to remotely wake a specific computer using Wake-On-LAN (WoL) technology. If this feature is enabled a **Wake** link is displayed next to each computer. To wake a specific computer click the associated link. You can export multiple wake links using the Export feature. This may be useful if you wish to distribute the links to users.

The wake feature is available on both the site summary report and the specific computer reports:

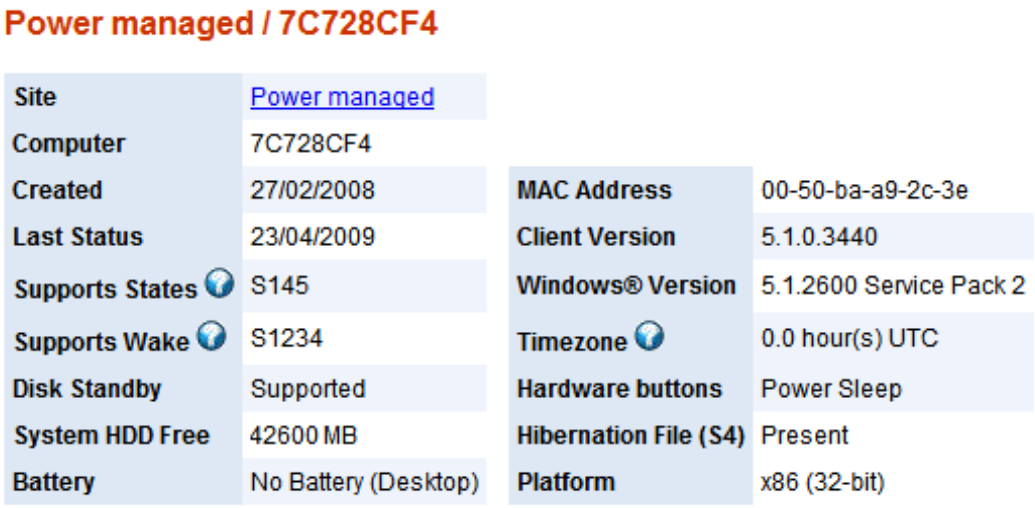




Computer Information

The computer summary report shows information about a specific computer. This report is similar to the site summary but contains much more detail.

The top of the page contains useful information about the currently selected computer:



The information fields have the following meaning:

Field	Meaning
Site	The name of the site containing the computer
Computer	The network name of the computer
Created / Last Status	The date the computer first registered with the PowerMAN server and the date that data was last reported.
Supports States	The power states supported by the computer. The power states are known as S0-S5 (S6 is also unofficially used by some vendors). Each power state requires decreasing levels of energy to maintain at the expense of increased time to become operational again.
Supports Wake	The power states that the computer can be woken from. Most systems support wake from S1-S3. Some systems support wake from S4 (hibernate). It is currently unusual to find hardware capable of remote wake from S5 (off).
Disk Standby **Hibernate File (S4)**	The power management standby support provided by the system hard disk and if a hibernation (S4) file is present
Hardware Buttons	The power related buttons available on the computer (as reported by the system BIOS)
System HDD Free	The amount of free space remaining on the system drive. This feature requires client version 5.2.0 or later
Battery	If a battery is present e.g. portable computer
MAC Address	The network hardware address of the PC. This is not the same as the IP address.
Client Version	The version of PowerMAN installed on the computer. This will be in the format 5.x.y.zzzz where x is the minor revision and y the release level. The zzzz field represents the PowerMAN software build number; this may be useful to technical support.
Windows Version **Platform**	The Microsoft Windows® version installed on the computer and the platform (32-bit or 64-bit)
Time zone	The time zone relative to UTC (GMT) that the computer is located in. This is used to bias the detailed activity report so that it is displayed using the effective local time. This is helpful when analyzing the data for user activity patterns.

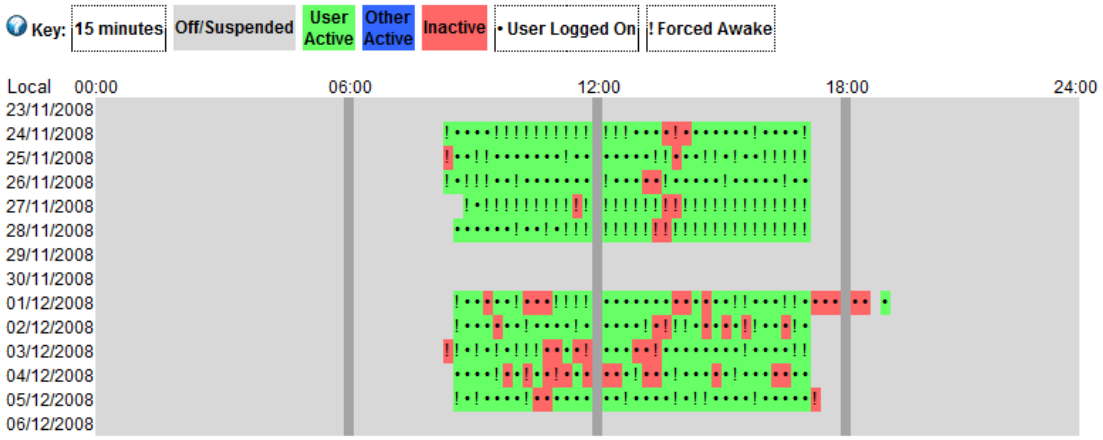
Detailed Activity Report

The detailed activity report contains information about the computer's status for each 15 minute monitoring timeslot throughout the working day. It is an ideal way to see what was happening on a specific computer and analyse usage patterns.

The information is shown using a mixture of colours and symbols. The following table explains this:

15 minutes	Each block represents a 15 minute time slot
Off/Suspended	A grey block indicates that the computer was off, suspended, hibernated or PowerMAN was not running.
User Active	A green block indicates that user activity was detected. This is currently defined as any user input (keyboard or mouse) activity during the monitoring period.
Other Active	A blue block indicates that other activity was detected. The system administrator can defined lists of protected programs, protected files or used the PowerSTART program to notify PowerMAN that 'other' activity is occurring.
Inactive	A red block indicates that the computer was turned on but was not performing any detected activity. In other words no user or other activity was detected. An effective PowerMAN deployment will normally aim to minimize such time periods. In typical deployments it should be possible to achieve an inactivity level of < 20% without significantly disrupting user productivity.
• User Logged On	A circle symbol indicates that a user was logged onto the computer.
! Forced Awake	An exclamation mark symbol indicates the Windows idle timer was disabled by an application or service. In other words the computer was forced awake and was not capable of entering a suspended power state. This state will also be reported if power management is completely disabled. Most computers will be forced awake occasionally. If the computer is permanently in this state it will suffer from PC 'insomnia'. You can workaround this by using the PowerMAN policy enforcement feature.

The following chart shows a computer used in office hours that is turned off/suspended at night time and the weekends. This represents an efficiently power managed computer:

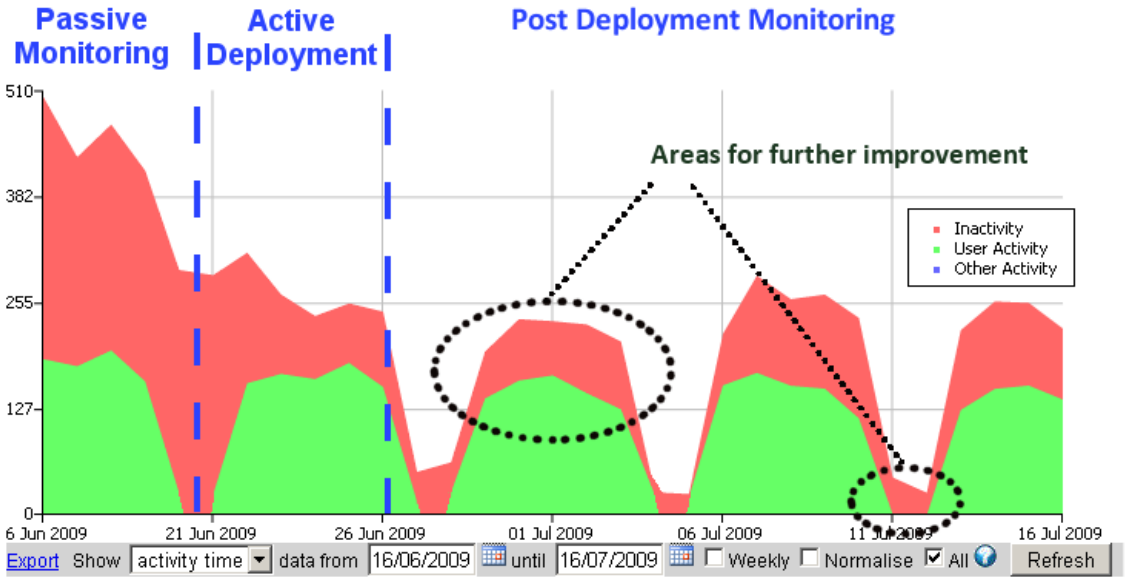


Measuring Progress

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.

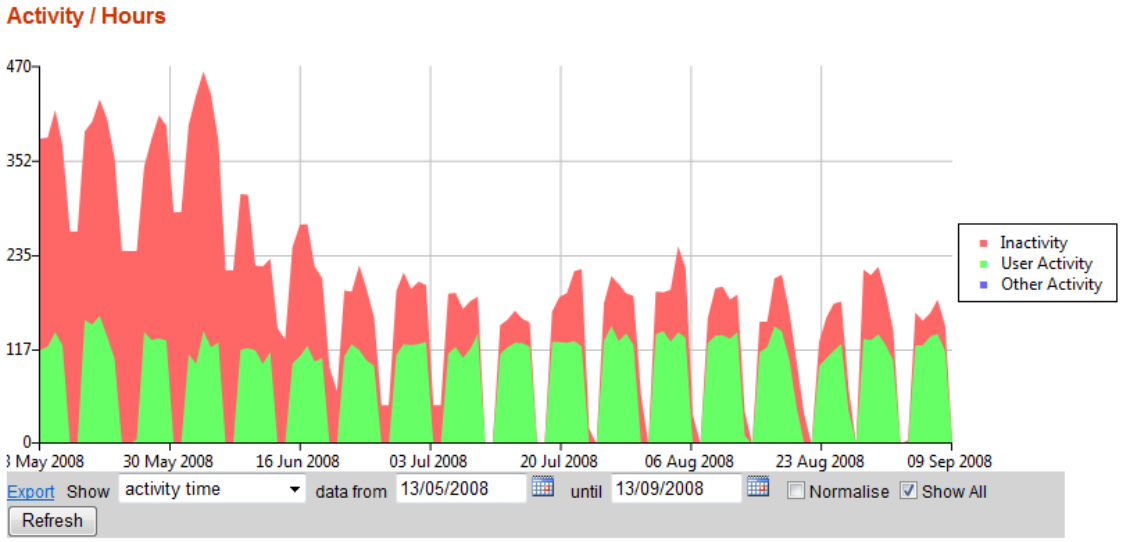
The most effective PowerMAN deployments use the initial passive monitoring phase to fully understand the existing usage profile. This passive process is transparent to users and allows you to collect information that can then be used to better the specific strategy you use to reduce PC energy waste. After you have implemented an energy reduction initiative it can be very useful to refer back to the data previously logged to measure progress and identify areas for possible further improvement.



The purpose of most deployments is to reduce recorded inactivity levels to as small as practical without disrupting productivity. The chart shows a fairly typical deployment. It has the following key features:

- Initial levels of PC inactivity (red) are predominant
- There is significant waste at weekends (red between green areas)
- Following activation of PowerMAN (around 10th of June) inactivity rapidly decreases
- Inactivity is removed at weekends
- Ultimately weekday inactivity is one quarter or less of total activity

For computers in an office setting this creates a very distinctive pattern where each week is represented by a green area, bounded by clear white areas for the weekend, and a relatively small red 'top' as shown below:



Reducing energy waste (inactivity)

The PowerMAN client software offers a variety of features that can be used to reduce waste (inactivity) levels. These features can be used in combinations to achieve the best results for your organisation. The exact settings you use will depend upon your organisation, user and maintenance requirements:

- Idle (timeout) policies work best because they allow each computer independently reduce waste according to their own usage profile irrespective of general operating times.
- Schedule based policies can make a significant difference (shutdown at night time and weekends) but will still result in uncontrollable inactivity levels during 'operating' hours. We recommend that wherever possible you use such policies in a secondary role rather than as your primary power management strategy.
- The scheduled wake feature can be used to ensure computers are ready for use at the start of the day or to create a regular maintenance window for virus scans or patches. Please remember that most hardware only supports wake from the hibernate and sleep states (not power off).
- A combination of Default/Specific User and No User policies allow you to be less aggressive when a user is logged on but maximize savings when no user is present
- The logout feature can be used to transition abandoned user sessions to the No User policy
- The policy enforcement feature can be used to remove PC 'insomnia' where applications or Windows services prevent the PC from entering a low power state for a prolonged period of time. Please remember to allow some time for legitimate system activity when the user is not present. A timeout of 30 minutes is typically appropriate.

- It can often work best to initially activate only some modest power settings. This allows users to get used to the change and allows you to measure the effect. Typically these may include turning off PC's that are not logged on and turning off monitors after a few minutes.

- Consider supplying the user 'override' tool **PowerCONFIG** to specific users. This tool may be used to disable power management in situations where the PC is required to remain active for prolonged periods.

- Remember that it can be very productive to communicate the energy strategy and on-going progress to 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!

- Above all, please remember that you can continue to use the PowerMAN Server reporting system to monitor progress and resolve any problems that may emerge.

The following table provides some common scenarios:

Scenario	Common features	Possible solution
Workplace User dedicated PC	Majority of users leave systems on to avoid start-up delay and preserve work or allow remote access	Sleep / hibernate systems when not in use. This preserves system state ready for later access. Consider using scheduled wake for the start of working day. Configure system for remote wake if remote access required
Hot desk office Non-dedicated PC	Users frequently change and therefore data preservation for extended periods is not required. No requirement for remote access	Log out / shutdown systems not in use. Use log out / hibernate to minimize delay at start-up. If appropriate use scheduled wake / shutdown to match user usage pattern
Public access area	Users frequently change and may not have unique logons. Therefore data preservation is not required. It is not desirable for users to shutdown system. Majority of systems left permanently powered on.	Configure default power settings to sleep system after a few minutes of inactivity. User pressing any key (or even moving mouse) will wake system within a second. If appropriate use scheduled wake to ensure system available during opening hours

Choosing between Shutdown, Hibernate and Sleep

PowerMAN offers three levels of power saving. The following guidelines may be useful when determining which policy to enable:

- **Shutdown (Power Off)** – The most efficient (and extreme!) method of power saving. This is generally only appropriate for situations where no user is logged on although some sites, such as public access areas, may invoke this policy 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 which are used long term by the same user and where it would be inconvenient to shutdown the PC. Typically this policy would be used in an office environment.

- **Sleep (S1-S3)** – This consumes more power than hibernate but allows the user to become active again after only few seconds delay. Typically a PC in this state consumes only 2% of the energy used when running normally. However, this depends upon the exact configuration of the hardware (usually in the system BIOS).

  Hibernate and sleep do not logout 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 approaches are not appropriate for systems in public access (walk-in) areas unless combined with a logout policy.

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

S1 Sleep Smallest saving	System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode
S2 Sleep	System appears off. The CPU has no power; RAM is refreshed; the system is in a lower power mode than S1
S3 Suspend Biggest 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'

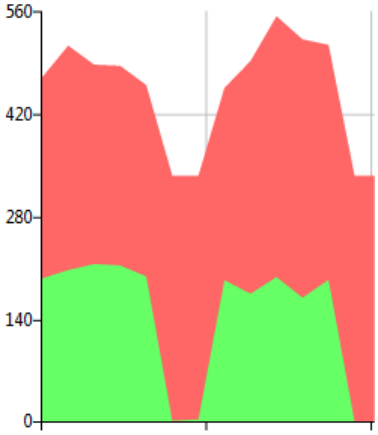
  Please remember that not all states are available on all hardware. The PowerMAN reporting system can be used to find which states are available on each PC. As a general rule PowerMAN will use the most energy efficient state supported by the hardware. S3 is considerably more efficient than S1

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.

The following screenshots illustrate the key features reported by PowerMAN for different scenarios of PC power management:

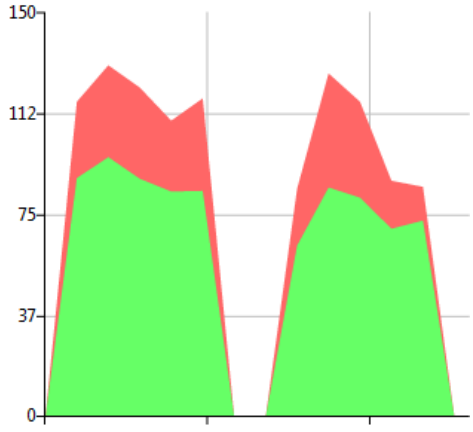
This chart is very typical of a site (or computer) that is never power managed. The combined level of activity (user activity and PC inactivity) is constant – in other words the computer(s) are never powered off or suspended.

This scenario is, fortunately, quite rare.



This chart demonstrates the effect of passive power management. During periods of activity (usually weekly) the total level of activity increases. At weekends (the middle of the chart) a base load of inactivity is present. This indicates that some computers are powered off / suspended when not in use but a significant proportion of computers are left powered on.

This is the scenario is the most common in unmanaged environments.



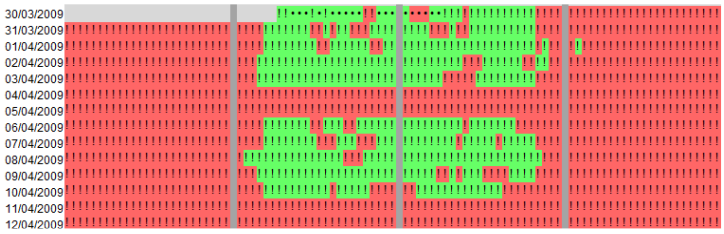
This last chart demonstrates the benefits of an effective power management strategy. During operating hours (weekdays) there is predominantly user activity. There are some periods of inactivity such as break times, but these are the minority. There is little or no inactivity outside operating hours (weekends) indicating the management system is effective.

This scenario is what an effective PowerMAN deployment should aim for.

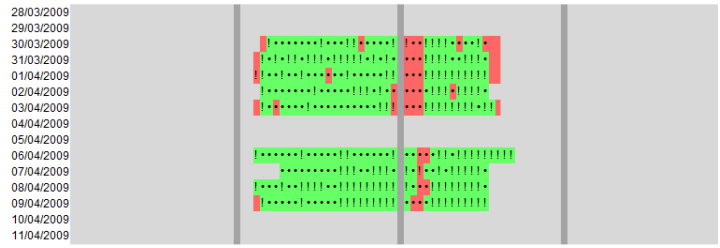
An ideal configuration will have no inactive (red) periods. This is actually quite difficult to achieve in practice without disrupting productivity.

The following diagrams demonstrate two examples from the computer activity report.

These are the possible two extremes. An effective deployment should aim for the second scenario:



This computer is used on weekdays but is not turned off or suspended outside these hours. The computer is permanently forced awake indicating that a program is preventing the computer from entering a reduced power state OR that power management is disabled. This computer is not power managed.



Similarly this computer is used on weekdays but is turned off or suspended outside of these operating hours. This is an effectively power managed computer.

Site Administration

The following sections describe the site administration functions supported by the PowerMAN reporting solution. These features are only available for users permitted by the system administrator. Your administrator can easily grant this level of access if required.

To receive a logon for the PowerMAN hosted (cloud) service please contact Technical Support.

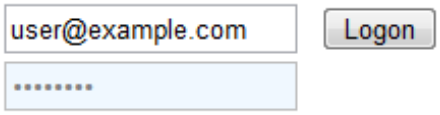
Configuring Site Features

You may divide your organisation into as many sub-sites as necessary. In a typical environment a separate sub-site is used for each logical group of computers. You can configure the client software to report for a specific site by using the **SiteGUID** setting. This is described in the PowerMAN Administration Guide.

To perform administration tasks you must logon to the reporting system with an identity previously configured with the **Site Administration** access level.

To login using an email address proceed as follows:

1. Enter you email address and password into the login fields (top right)
2. Press the **Logon** button



Alternatively, if Windows Integrated Authentication is enabled just press the **Logon** button. No password is necessary:

Once logged on you will be able to administer the PowerMAN server system:

1. You will be redirected to your organisation root (top-level) site. This is the site that contains all other sub-sites.

   Tip: Most organisations will benefit from using the sub-site feature. Whilst it is possible to configure computers to report to the root site this is not recommended as it will make sub-dividing the organisation in future more complicated.

2. The organisation home site is just like any other sub-site. From this view you can perform a variety of activities such as renaming the site, configuring the anonymous access level, adding a sub-site or configuring the nominal site costs. You access the required configuration feature by clicking on the appropriate link:

Example Corporation Limited

Organisation	Example	Rename			
Unique Identity	{94818dbc-308c-4a61-a59b-714c047703d5}		**First Data**	29/02/2008	
Created	01/01/2009		**Last Data**	25/04/2009	
Expires	Never		**Total Computers**	104 Export	
Data Retention	Unlimited		**Total Sub-Sites**	4 Export	Add/Move Site
Computer Auto Move	Enabled		**Estimated kWh / PC**	00.20 KW	Configure
Anonymous Access	Viewing Only	Configure	**Electricity Cost / kWh**	$ 0.12	Configure
Wake Proxy	None	Configure	**Nominal CO_2 / kWh**	0.43 kg	Configure
Timezone	0.0 hour(s) UTC	Change			

Manually creating and moving sub-sites

As described above sub-sites provide a convenient way to sub-divide your organisation into manageable groups of computers. There is no limit on the number of sub-sites you may configure or how they may be arranged. Each site has its own name and nominal energy costs. You configure the client software to report to a specific sub-site by using the **SiteGUID** setting.

> An **ideal site** is a group of similar computers within a defined environment such as an office, department or computer room. 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 size or scope of the site (it is easy to create another one) as this may reduce the quality of the report data gathered.

The PowerMAN Installation Guide provides a full procedure to configure the SiteGUID setting for the PowerMAN client software. The server procedure is as follows:

1. **Create SiteGUID on the server** - This is a unique identity used to track the site and report data. To do this:

   i. Click **Add/Move** site
   ii. Click **Make GUID** and copy the GUID to the clipboard or similar
   iii. Enter an appropriate site name
   iv. Click **Add/Create Site**
   v. Paste the generated **SiteGUID** (including the enclosing brace characters) into the client configuration policy

2. **Alternatively, generate a SiteGUID using the `MAKEGUID` command build into the PowerMAN client software**. To do this:

   i. Enter the command:

   ```
   POWERMAN MAKEGUID
   e.g. {bb0f71da-a116-4f80-a2cf-4d6645e2ce63}
   ```

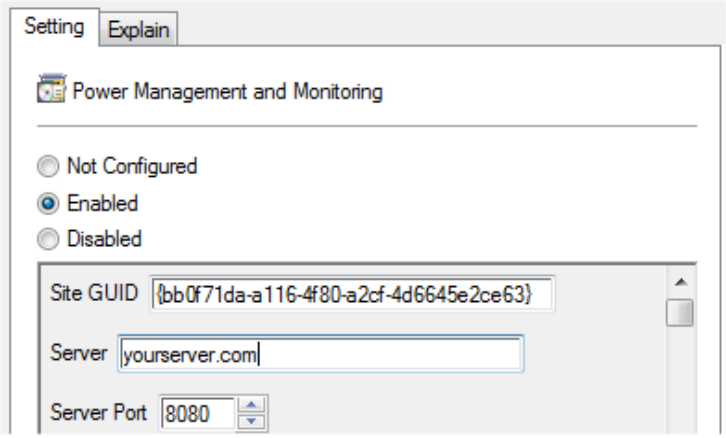
   ii. Click **Add/Move** site on the server
   iii. Paste the generated **SiteGUID** (including the enclosing brace characters) into the dialog
   iv. Enter an appropriate site name
   v. Click **Add/Create Site**
   vi. Paste the same **SiteGUID** (including the enclosing brace characters) into the client configuration policy

Configuring the client software with a SiteGUID (Group Policy Example)

Following either of the above techniques to generate a SiteGUID it may be deployed to the client software using Group Policy by the following procedure (similar procedures exist for non-Group Policy based deployments):

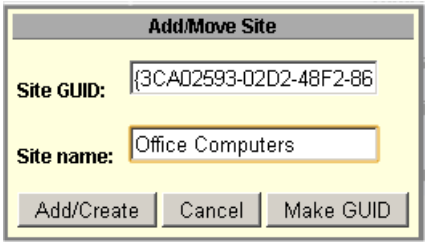
1. Open the Group Policy Management Console (or your own chosen configuration tool)
2. Navigate to the PowerMAN policy configuration section
3. Select **Power Management and Monitoring**, right click and select **Properties**
4. Select **Enabled** and configure your chosen SiteGUID and reporting server

   NB: The SiteGUID setting is **always** enclosed with **{braces}**.
5. Click **OK**



To configure the sub-site on the reporting server proceed as follows:

1. Navigate to the appropriate parent site (this may itself be a sub-site)
2. Click **Add Site**
3. Enter the SiteGUID (or press the Make GUID button) and required site name
4. Click **Add/Create**



Tip: You can also use the same procedure to move an existing sub-site to a new location in your organisation hierarchy. To do this, follow the procedure above with an existing SiteGUID.

Automatic reporting site creation based upon Active Directory

PowerMAN Enterprise Server v5.2 also allows reporting sites to be automatically created based upon the workstation Active Directory (AD) hierarchy. This feature requires client software v5.2.6 or later. To enable this feature on the server proceed as follows:

1. Create a single sub-site using the procedure above
2. Give this sub-site a name such as **AD Root**
3. Deploy the SiteGUID for this site to *all client computers*
4. Navigate into the newly created sub-site
5. Locate the **Auto Site Create** feature
6. Click **Configure**
7. Tick the **Enable auto site creation** option
8. Click **Save**

As computers report data the PMES sever will use the workstation 'distinguished name (DN)' to automatically create a reporting hierarchy. This will be based upon the AD tree. For instance the computer PC2723 could have the DN:

CN=PC2723,OU=Workstations,OU=Management,OU=Head Office Staff,OU=Departments,DC=Customer,DC=local

This would place the workstation in the following reporting location:

AD Root -> Departments -> Head Office Staff -> Management -> Workstations

PMES will automatically generate any necessary reporting sub-sites and arrange them accordingly. If a workstation moves to a different AD location it will automatically move on the PMES reporting server the next time it connects.

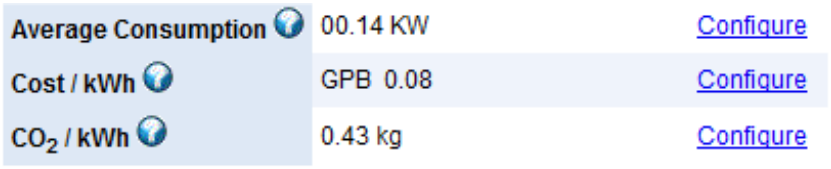
Tip: This feature is disabled if the workstation is configured with a SiteGUID that has auto move disabled. The automatic and manual creation sub-site modes may be combined in the same deployment. Automatic deployment will happen when:

i. The client computer is configured with a SiteGUID configured for site auto creation ('AD Root' in the example above)

ii. Client software is v5.2.6 or above

Changing Nominal Site Energy Costs

PowerMAN Enterprise Server allows you to estimate the cost of energy used / wasted by a sub-site. This feature depends uses nominal energy cost figures you configure to perform this function. The process is only an estimate but can, with correct configuration, be very useful.



To configure energy costs click the **Configure** link and proceed as follows:

1. Enter an average consumption figure in kWh. This is the electricity requirement of a typical computer. You can measure this using a watt meter or crudely estimate it from the power supply specification plate present on most computers (this figure is always bigger than actual). A typical desktop computer is 100-200Wh (0.1-0.2kWh).

2. Enter your electricity cost per KWh.

3. Enter the amount of CO2 produced for each kWh of energy generated. This figure will depend upon the source of your electricity. If you use a 'green' tariff it will be lower or zero. The UK Government uses a nominal figure of 0.43 kg/kWh

4. Select if you want to update the figures for all sub-sites of the current site

5. Click **Save**

Configuring baseline inactivity (estimated savings reports)

PowerMAN Enterprise Server can calculate the estimated savings achieved (in either hours, cost or CO_2) measured against a baseline period. The baseline is usually established during the audit phase of deployment before enabling power management. To configure a baseline figure for a site proceed as follows:

1. Audit the workstations for a period of time. Ideally this should be for at least 2 business cycles (weeks).

   NB: You should satisfy yourself that the workstations and audit period is representative of normal use.

2. Use the normalisation feature to establish the average level of inactivity in hours during the audit period. To do this:

   i. Filter the site summary chart to show only the audit period
   ii. Select the **Site Activity** chart
   iii. Unselect the show **All** option
   iv. Tick the **Normalise** option
   v. Click **Refresh**
   vi. Read-off the normalised amount of inactive hours from the top of the chart. This is located top-right

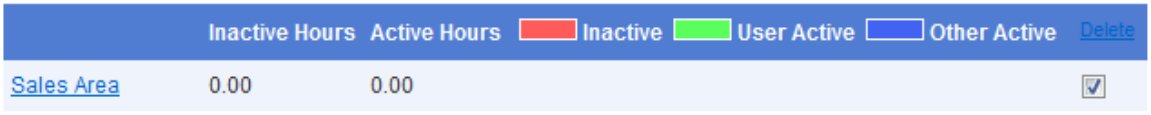
   For instance: 10.6 inactive Hours/PC/Day

3. Locate the **Baseline Inactivity** feature
4. Click **Configure**
5. Enter the figure calculated above and the date the estimate was calculated for. If the estimate covered several weeks enter the mid-date for the estimate period.

Deleting a sub-site

To delete a sub-site (and all computers within it) proceed as follows:

1. Locate the sub-site in the list and select the checkbox
2. Click Delete and confirm you wish to delete the site

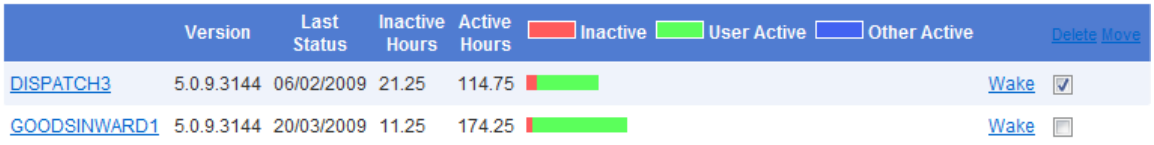


> **Remember:** Deleting a sub-site is a **permanent** operation. Once deleted all computers within that site and all data for that site are erased.

Moving and Deleting Computers

Sometimes it is necessary to move a computer between sub-sites or delete a computer altogether. To perform one of these actions proceed as follows:

1. Locate the appropriate computer(s) and select the checkbox
2. Click either **Delete** or **Move** and follow the on-screen instructions



> **Remember:** Deleting a computer is a **permanent** operation. Once deleted that computers contribution to the site statistics will be removed.