



# **Certero PowerStudio 2.0 Report**

**A Broadband-Testing Report**

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First published June 2010 (V1.0)

Published by Broadband-Testing  
A division of Connexio-Informatica 2007, Andorra

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Broadband-Testing is Europe's foremost independent network testing facility and consultancy organisation for broadband and network infrastructure products.

Based in Andorra, Broadband-Testing provides extensive test demo facilities. From this base, Broadband-Testing provides a range of specialist IT, networking and development services to vendors and end-user organisations throughout Europe, SEAP and the United States.

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**Broadband-Testing Consultancy Services** offers a range of network consultancy services including network design, strategy planning, Internet connectivity and product development assistance.



## EXECUTIVE SUMMARY

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- The “green” argument has gone from being a political “lip service” kind of tick-box operation to an actual requirement to reduce power usage and the related costs.
- The reality is that, in many regional areas, power availability is limited and, partly as a result of this, is becoming increasingly expensive, especially for new contracts.
- While all elements of a PC network can be optimised for power saving, the reality is that the PCs themselves are the greatest consumers overall by their sheer relative volume and therefore need to be powered down as much as possible.
- In addition to in-house initiatives within companies, new government legislation with targets being set by the Department of Energy and Climate Change (DECC) via the CRC Energy Efficiency Scheme is forcing companies to cut down on their carbon footprint in order to avoid paying excessive duties on their carbon allowance.
- With PowerStudio, Certero has introduced a software application that not only provides an accurate baseline figure of PC power usage within a company but additionally automates the management of that power usage, including the ability to remotely shutdown and wake PC clients and intelligently save and reload Microsoft Office applications.
- Certero claims that its software will save companies £48 per PC per annum, with an ROI period as short as four months.
- As energy prices continue to rise, so the ROI on PowerStudio becomes ever shorter and the savings greater.
- Reporting options include statistics on user behaviour, encouraging them to be more efficient in their power saving or risk being named and shamed!
- Extensive report options mean that all aspects of user/PC up/downtime can be analysed in many different ways, such as by power consumed, wastage and idle time.

## INTRODUCTION: HOW GREEN IS PC VALLEY?

Here's an interesting question, coming from an IT product test labs.

For so long now we've been focused on performance, performance and more performance. So the key metric has been – guess what – performance related. But, in the same way that car owners, even petrol heads, are now looking at the mpg figures as well as the 0-60 stats, maybe we are also looking at a new key metric in IT too – that of power consumption?

We are now in a world where, regardless of product type and budget, the "greenness" of said product is one of the tick box requirements during evaluation. Within the network itself, switch and appliance vendors are finding ways of making their products "smart" and auto-adjusting power consumption depending on usage patterns and requirements. However, while this is truly laudable, what we found in the Broadband-Testing labs is that a well-designed 24-port Ethernet switch can actually consume less power than a single PC in standby mode. Consider, then, that 24 PCs might be connected to the switch, not in standby mode but full-on 20 watts+ per PC user mode and you can appreciate the potential consumption problem of the PC/laptop community.

### **The Real Cost Of PCs – Now The Government Is Getting Involved**

Desktop PCs have been highlighted as one of the key targets for IT energy efficiency. Recent research by the Alliance to Save Energy suggests there are 17 million employees in the UK who use a PC at work. It is thought if Business Britain were to invest in power management software there would be a collective saving of 55,723 tonnes in carbon emissions and up to £10.2 million per annum. For example, Hull City Council, an existing user of the PowerStudio product we are reviewing here, is now saving around 390 tons of CO2 annually by powering down PCs when not in use.

"Always on" PC's cost UK PLCs over £300 million a year. A survey by Business Green found that 30% of PC's are left on overnight wasting organisations at least £17 per computer each year. It is generally accepted that it is common practise for organisations to leave their PC's switched on overnight and even during weekends and holiday periods, but this has to change. The "Green Agenda" of the government, with targets being set by the Department of Energy and Climate Change (DECC) via the CRC Energy Efficiency Scheme mean the challenges look so much greater. Mandatory from 2010, companies must register their energy footprint which is then offset against a carbon allowance from the government – the less power used, the less allowance required. And this is representative for all UK-based companies, even where part of their operation is abroad.

In order to avoid paying excessive duties for their carbon allowance, Certero claims that, by investing in PowerStudio now, the ROI can be as little as four months, with only positive financial gains going forward from there. Compare this with, for example, the introduction of wind power, where the ROI is an estimated 380 years!

Even the computer resellers themselves are not happy with the current state of affairs. In a recent survey of 100 IT resellers, it was felt that there was a requirement to better explain to customers the costs of IT over its life-time, especially in the SME sector (PCs they buy go into service literally for the PCs life say 5-7 years), to highlight the true cost (financial and environmental) of leaving the PC on overnight and the need to introduce standards and promote them heavily. So, what better than to introduce a product that not only measures the power consumption of the desktop clients within a company but actively manages and regulates that consumption, thereby saving power – and money? This is exactly what UK-based Certero has done with PowerStudio 2.0 that we are reviewing here.

The reality is that companies in high-concentration areas for IT service delivery such as the Docklands in London and business parks in the South-East of England are hitting the limits of what the energy provider can offer them. So, when asking the question “can you deliver us 20% more power next year because we want to put another 500 users online?” the IT manager is getting the answer “sorry, no can do” from the energy provider. In modern IT history, this is an unprecedented situation. But it’s clearly not a situation that is going away. Focus, therefore, has to change when looking at capacity planning and factor in power consumption as a primary metric when evaluating product options. This, in turn, means – from a testing perspective – we need to generate new standards to measure power consumption against. In the world of performance testing, standards have developed over the past 20 years that are largely adhered to, or variations on a theme thereof. But with power consumption we are in a new world, one traditionally inhabited by the electronics engineer, rather than networking technicians.

According to Gartner research, users are becoming increasingly confused about the issues and solutions surrounding green IT. IT users are unsure of the implications of green IT and where to invest their technology budgets. This confusion will continue for some years to come in what is a rapidly changing segment of the industry. The IT industry is saturated with green IT talk. Conferences, presentations and consultants are springing up to provide guidance and advice on a range of issues that are being codified under the generic term of ‘green IT’. Unfortunately, with so much hype, users are left with a sense of confusion about where and when they should invest their time and money. However, Gartner research shows that the spectrum of green technologies, services and legislation that users need to focus on can be broken down into short-term (immediate), midterm and long-term activities. The immediate issues affect the next 24 months and need to yield a quick return on investment while the midterm category covers the next five years. The long-term category covers products and activities that are, by nature, rather esoteric and may never become mainstream.

With PCs, however, the impact is immediate and obvious. As users buy into the idea of “more efficient” PCs, the reality is that this year’s model – despite being technically more power efficient in relative performance versus power consumption levels – is actually more *gourmand* than the one it replaces, thanks to multi-core CPU architectures and, in some cases, multiple CPUs. So we are using *more*, not less, energy with every new PC we invest in.

Time, then, to start managing our power: enter PowerStudio with claims by creators Certero of the ability to save almost £50 per PC, per annum.

## POWERSTUDIO 2.0: PRODUCT OVERVIEW

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PowerStudio is a web-based client/server application, described by Certero as an "Enterprise Energy Optimisation Suite".

The idea is that, by applying centralised computer power policies, organisations can prolong the life of their computer equipment, reduce their carbon footprint and potentially save thousands of pounds on electricity costs with a view to ROI being incurred within four months of the investment in the software. This is a bold claim, but one that has substance. As we have already noted in the introduction, the *real* cost of PCs goes well beyond that initial purchase price.

What PowerStudio does is enable a company to completely manage its PC power consumption, including automatically shutting down systems and waking them as required. The software is designed to gracefully shutdown applications and save open files when the system goes into low power states. Automation of shutdown/wakeup processes allows for management of maintenance tasks such as required patching, as well as general day-to-day usage management.

As a relatively new entry into the world of power management, with PowerStudio, Certero has taken the opportunity to leap straight in with advanced technology; hence the product is true Web 2.0 based, has no legacy to support, hence it is compact in terms of client footprint (we measured the PC agent as 12MB maximum) and has zero dependence on 3<sup>rd</sup> party products (such as Microsoft) as some rivals do.

This means that Certero has been able to therefore do everything its own way, resulting in some very finite control of PCs and related endpoint client hardware – all of which we look at here.

### **PC Not Server Power Management**

PowerStudio is designed specifically for controlling and reducing the power consumption of the desktop/laptop PC, rather than the server.

Certero discussed the subject of the latter with the user community and found too many application and political issues around the subject of auto switch-off for servers so, currently at least, that is a no go area. However, look at how many PCs are served on a per server basis and you'll see that the PC itself is a sensible target for power reduction.

So, with PowerStudio, we are talking PCs, PowerPCs, laptops, thin clients and similar end user devices.

Key features of the product include the following:

- Creation of multiple power profiles and schemes for different job roles.
- Application of schemes to individual computers, groups or organisational units.
- Organisation and reporting on computers by organisation of business unit.
- Active Directory Integration.
- Setting targets and measuring against estimated and actual cost savings.
- Identifying and reporting on overnight and weekend PCs left on.
- Users can view their own power statistics.
- Presentation mode user override feature.
- Document management ability to identify and save/close/open Microsoft Office files.
- User and system initiated remote wake up of remote PCs.
- Identifying daily, monthly and annual trends of computer power usage.
- Measuring savings as cost, CO2 emissions and kWh.



Figure 1 – PowerStudio: Management Interface

### Who Needs The Old "Squash Ladded" Any Longer?

Within companies, staff have always sought to get "one up" on each other. Remember the old "squash ladder" and the bragging rights that led to (let's forget the towel flicking...)?

With PowerStudio, Certero has introduced an infinitely greener alternative to these bragging rights by providing a points system in which users are rewarded for performing power saving activities. So, instead of bashing a rubber ball around a 'prison cell', users can focus their finger activities on power buttons, then see their performance against their colleagues in the PowerStudio user league, encouraging users to be collaborative in saving energy. The idea is that by directly involving the user base, organisations can save even more energy, reduce costs and carbon footprint and fully optimise power management capabilities across the PC estate while – at the same time – educating users on their ability to take better manage their own, individual impact on the environment.

Certero believes that this combination of features allows savings of up to £48 per PC, per annum to be made. The integrated functionality helps you create targets, report against those targets to measure ROI and demonstrate the environmental benefits of using its software.

So let's now put those claims to the test...

## POWERSTUDIO: PUT TO THE TEST

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From an installation perspective, PowerStudio is web-based, running on a back-end server (Windows server 2003/2008) and supporting SQL Express, so if your PC capacity does not exceed around 6,000 units there is no requirement to invest in expensive, additional database applications.

Full support for Active Directory is included. The software is designed to be integrated into as many domains as required, even when there is no tree established, so it is very flexible in deployment, fitting in with how the company views its user base.

From a user perspective, interface wise, search and filter options are very simple and there is nothing new to learn for anyone used to browser-based interfaces with radio buttons, sort arrows and similar common features. Clicking within a list provides a number of action options. A menu on the left, meantime, provides all the main navigation options. In addition to a number of report options, results can also be exported to a spreadsheet for further analysis.

The starting point with PowerStudio is an "Estimator", essentially what Certero itself describes as a glorified spreadsheet, but an essential way of getting a base point for power consumption.

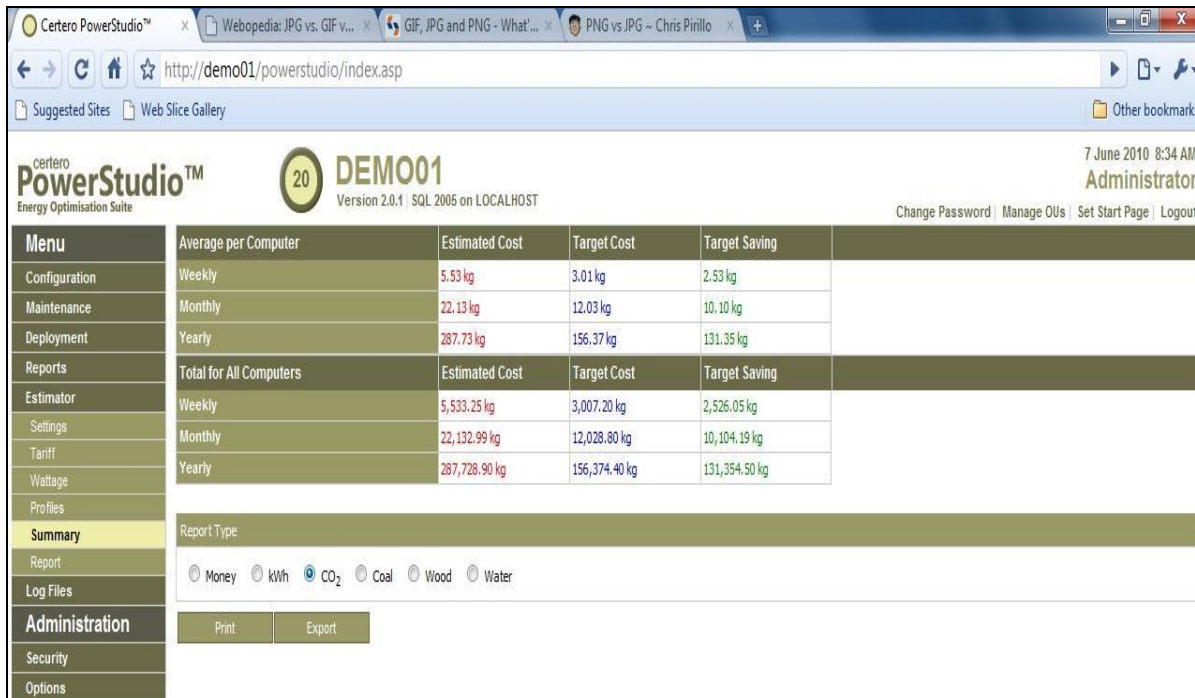


Figure 2 – PowerStudio: Estimator

This requires certain metrics being input, in terms of PC power consumption and user profiles, in order to generate a base usage figure. So, for example, what is the time-of-day usage on a per user, per department, per whatever basis – e.g. some users will follow a 9-5 pattern, others may work on night shifts, exactly how many PCs are left on outside of working hours and similar questions need to be answered to get to this “stick in the ground” moment.

For example, in the UK 30% of PCs are typically left on outside of working hours and the larger the company the more likely that PC never gets turned off. And user bases supported by outsourced services will find that their PCs are on 24x7 in order for essential, remote maintenance to take place on an as needed basis. Research by Certero itself has shown that a best figure for leaving on PCs outside of office hours is just 5% but the worst example is a far scarier 90%. Put that into perspective by imagining a user base of 5,000 PCs, 4,500 of which are left on outside of office hours so that each is consuming three times more power daily than it need to...

The actual tarrifing of electricity also varies between companies and geographical areas so this also has to be factored in. For example, it might be based on a single rate or a dual peak/off peak basis. In the UK, the typical cost of electricity consumption is around 10 pence per kilowatt per hour (kw/hr) but this can vary and will typically be more expensive on new contracts, perhaps as much as 50% more expensive. And these prices aren't exactly going to come down in the future. Certero also provides conversion factors – allowing for carbon, coal, wood and water energy sources and for them to be factored in our out. In this way we build up average power consumption on a per device basis, allowing for other metrics such as display types, custom wattage options and other variables. At the end of this initial analysis a summary report is produced showing the estimated power consumption cost, the target cost to be achieved (i.e. with PowerStudio in action) and the target savings to result from its benefits.

The figures include a CO2 savings figure and they can also be measured in a variety of formats; not simply monetary but also in terms of Kw/hr savings, coal, wood and water.

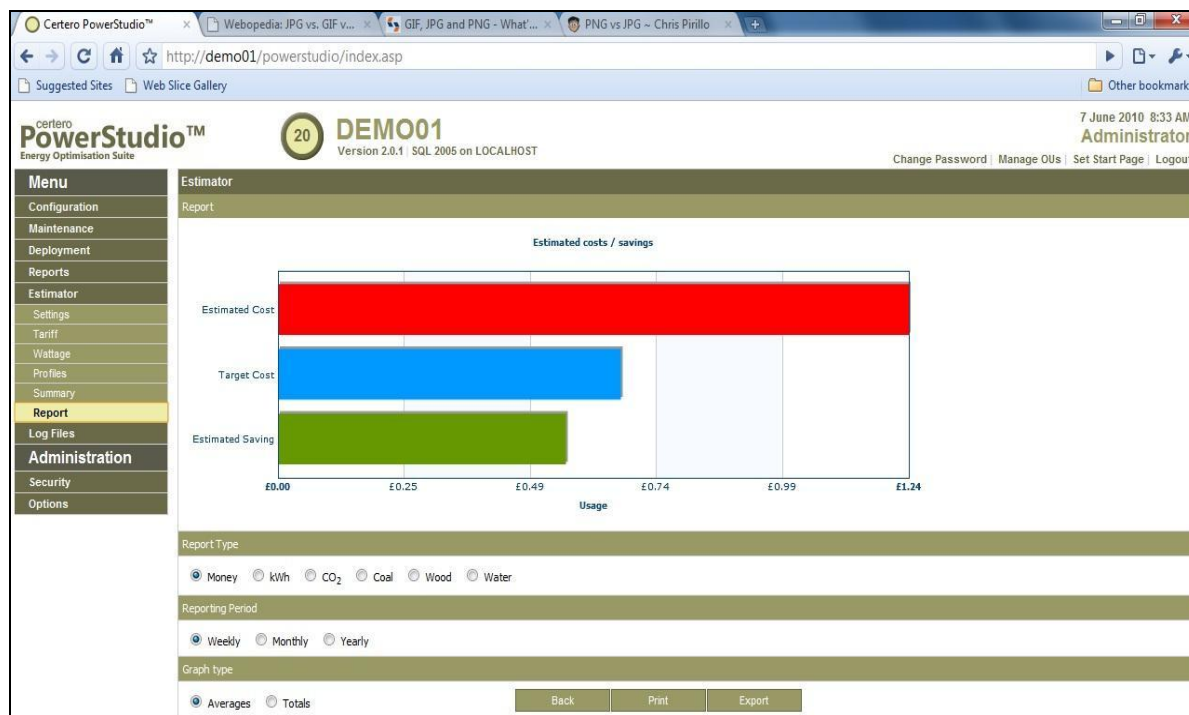


Figure 3 – PowerStudio: Reporting Estimator

### So how does Certero work?

The basic architecture is client-server, with agents being pushed out to the endpoint clients with data capture being recorded at those endpoints and that information being fed back to the PowerStudio servers. Memory footprint at the client is not large – we recorded 12MB during testing – so there is no resource issue here.

Once the baseline is established and the software installed on server and clients, real data recording can commence, which can then be used to compare with targets and adjust accordingly. Certero recommends an initial survey/data gathering period of two weeks which provides a company with a real-world baseline for its power consumption and something to compare with the estimated usage figures generated at the beginning.

Data is reported in many different ways – for example:

- Costings/Savings
- Idle time
- Users
- Wastage



Figure 4 – PowerStudio: Reporting Wastage

At this point a company can start to create and manage power usage schemes and policies, taking advantage of what options each Operating System (e.g. XP, Vista, Windows 7) can offer them to fully optimise power usage on a per client basis. In this way, multiple, custom power schemes can be created to optimise each clients' consumption covering areas such as powering down screens and hard disks, switching into standby mode (this can take power consumption down to 25% of normal, but some applications don't behave well in this mode of usage). So, for example, you might choose to put a client into standby mode after 30 minutes of inactivity, but there is also the system hibernation option to consider, the downside here for some being the 20-30 seconds it typically takes to wake up that client again.

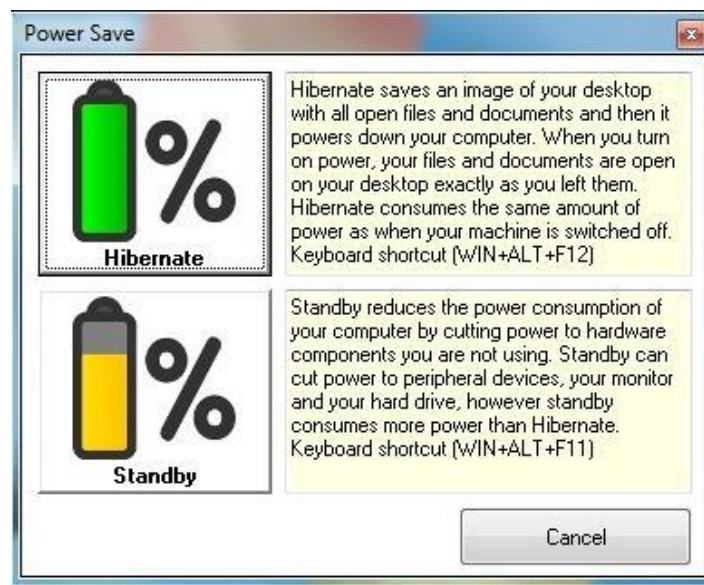


Figure 5 – PowerStudio: Hibernate Versus Client Options

Hibernation might therefore be a more applicable option for night-time/out of office hours schemes but the great thing is that the inherent flexibility means that each company can match policies to their requirements without being forced down any specific route due to the limitations of the software.



Figure 6 – PowerStudio: Management Of Policies By OU

While there is no requirement for Active Directory with PowerStudio, it will fully synchronise with it if it is being used. Regardless, power schemes can be applied in a manner that suits the structure of the business itself, by Organisational Unit (OU - e.g. Finance, HR, IT etc), or per individual PC in specific circumstances – whatever fits the bill.

In order to allow for movement of users and PCs between, for example, OUs in the company, policies can be inherited or amended as these circumstances change. So changes can be fully automated in this way. You can create as many schemes as you want, so a typical combination might be a business hours (daytime scheme) and outside hours (night-time scheme) mix. Additionally you might want to create a maintenance mode scheme for handling required patch updates and other maintenance requirements where the client needs to be powered up. Filter options can be by hardware type so, for example, you might want to give all laptops a specific policy.

### Virtual Desktop Support?

Virtual desktops are not a problem for PowerStudio – the OS is detected and the agent pushed out. For example, the built-in power management in VMware is supported, so a client can work on a virtual desktop and be fully supported by PowerStudio.

A reporting dashboard provides an overview of the collected statistics.

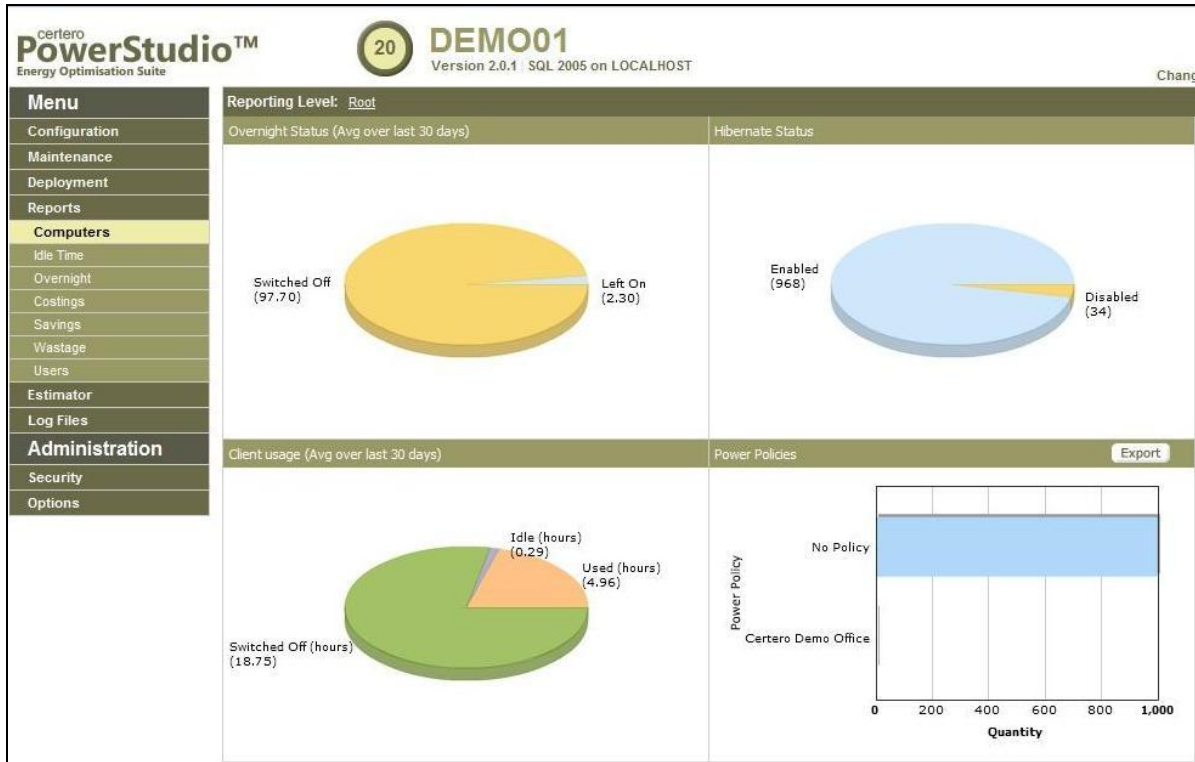


Figure 7 – PowerStudio: Reporting Dashboard

Additionally a scripting function allows custom scripts to be run – for example at log off/shutdown.

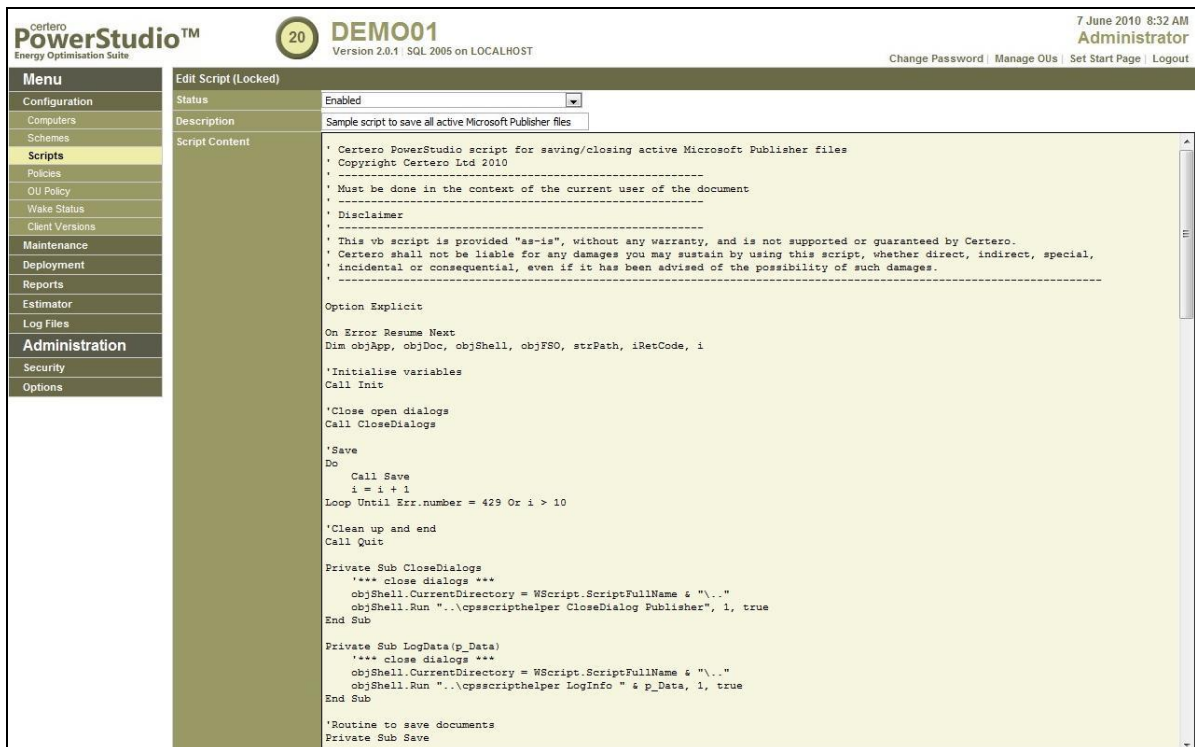


Figure 8 – PowerStudio: Management Of Policies By OU

With everything now in place, here is where PowerStudio really earns its keep, by automatically managing the powering up and down of the PC client base, whether local or remote to the server software. The software is able to remotely wake (for example, by using Wake On Lan techniques) and shutdown PCs so powering up and down can be fully automated and customised to fit a users' requirements. Wake up options include by email (a blank email can enable Wake on LAN mode on a PC).



Figure 9 – PowerStudio: Wake-Up Enabled

For example, an office worker starting at 9am might not have an absolute requirement for that PC to be fully active at 9am, but a call centre worker starting at the same hour would require that PC to be up and running from the first second, so power schemes can allow for this kind of requirement – for example, ensuring that the PC wakes up a few minutes in advance.



Figure 10 – PowerStudio: Wake On Lan Sent

PCs can also be woken from a filtered list – the software provides a visual indication of whether a PC is on or off, so a virtual onscreen button can be clicked on to bring a PC back to life (or vice-versa).

Other issues can also be allowed for – for example, presentation mode with laptops, in order to avoid that dreadful moment when your laptop starts to shutdown mid-presentation. An icon on the menu bar indicates when power mode is in action. You can also see how long that particular mode is in operation for; for example, with presentation mode on laptops this can be a very important feature. These options can be over-riden in some circumstances, a menu providing options and explaining what the options (and consequences) of selecting a different option are.



Figure 11 – PowerStudio: Tray Menu

If you think this kind of customisation can allow a user to simply negate all the good work that PowerStudio can do, then think again. Usage statistics are recorded and reported upon, so that a points scoring system is created for each user, encouraging them to be environmentally conscious (and saving their employer ££££ of course...). Exactly how far a company takes this as a means of persuading their users to turn off their PCs is up to them of course. We can see a new way to achieve promotions here... What it means is that, while PowerStudio itself can fully control the power consumption patterns of a PC, a user can be encouraged to be even more efficient than the software and gain points or lose points as a result of their actions.

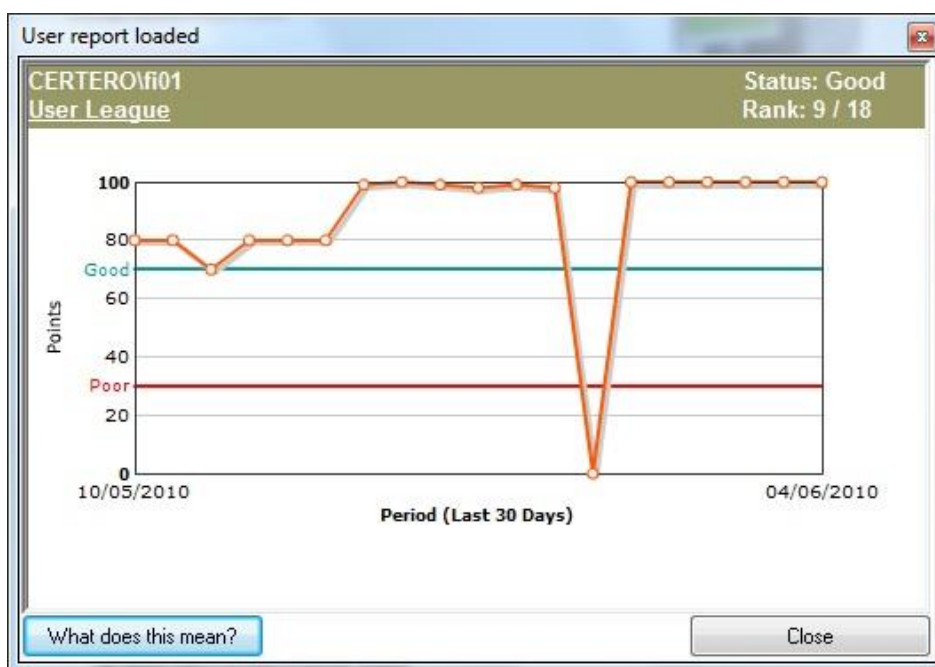


Figure 12 – PowerStudio: User League Report

### Day To Day Usage Of PowerStudio

Once the software is up and running, the original power consumption estimate can be checked pro-rata against actual results and before/after type examples compared to see how well the schemes are working.

So trend analysis is easy; the reports are very graphical and make easy to see actual versus estimated power consumption. There are costing reports, savings reports, power wastage reports – so users can be named and shamed or praised, as required!

Reports can be company wide, broken down by OU or however you want them to be displayed/broken down, so very finite control can be made of any aspect of the user base.

It is one thing to control the powering up and shutdown of a remote PC, but without being able to intelligently handle open documents it could lead to serious data loss and seriously upset users.

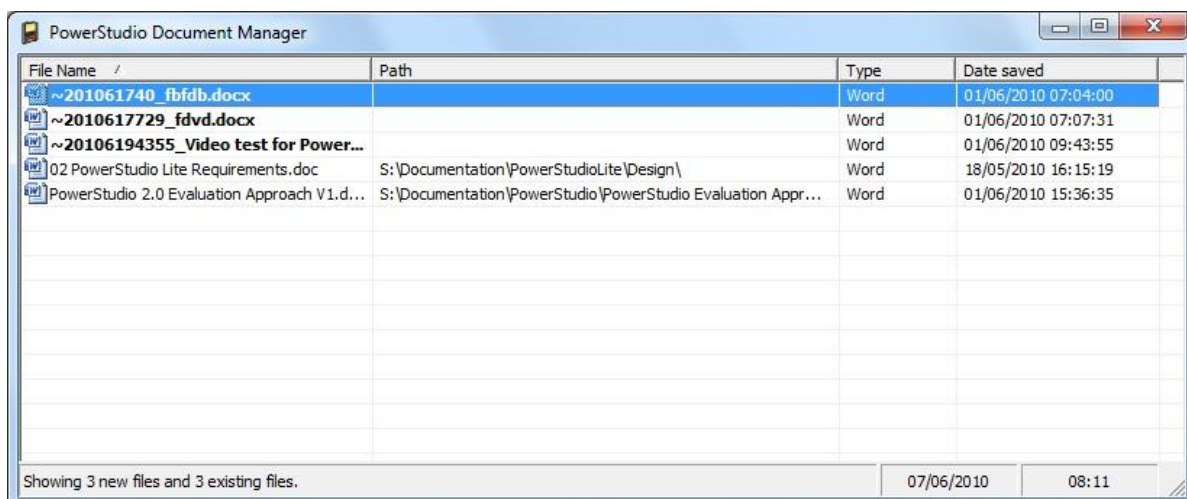


Figure 13 – PowerStudio: Document Manager

For this reason, PowerStudio includes a document manager that intelligently handles the saving and opening of MS Office documents. For example, if a document is open and in read-only mode, it can't be saved with the same name, so the software can auto-close documents when in standby and relaunch them on startup.

We tested the software with Excel and Word documents, closing them down and re-opening and there were no problems whatsoever. Another intelligent option is where you can allow time, for example when switching into and out of standby mode, for a network connection to become active before trying to save or restore a document. If the documents are on a network drive that is no longer available, the document manager can show where the document was stored and can then be retrieved via the document manager. Where a file has not been saved before, it will be saved to a temporary location/name combination.

## SUMMARY & CONCLUSIONS

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With PowerStudio 2.0, Certero has taken a very positive setup towards genuinely saving companies money on power consumption and, at the same time, ticking all the "green" boxes.

So, what is good for the environment is also good for the bottom line profit margins in this case. While all elements of a PC network can be optimised for power saving, the reality is that the PCs themselves are the greatest consumers overall and therefore need to be powered down as much as possible. With PowerStudio, Certero has introduced a software application that not only provides an accurate baseline figure of PC power usage within a company but additionally automates the management of that power usage, including the ability to remotely shutdown and wake PC clients and intelligently save and reload Microsoft Office applications.

Certero claims that its software will save companies £48 per PC per annum, with an ROI period as short as four months and – having now seen the product – we can see how this could easily be the case. And as energy prices continue to rise, so the ROI on PowerStudio becomes ever shorter and the savings even greater.

We also like the reporting options that encourage users to be more efficient themselves and see this as a very positive initiative. Extensive report options mean that all aspects of user/PC up/downtime can be analysed in many different ways, such as by power consumed, wastage and idle time, so ongoing analysis and power management is made easy.

Overall, then, if you have a large network of PCs and currently have no power management in place, or are looking for new alternatives, we thoroughly recommend you take a look at PowerStudio 2.0.

