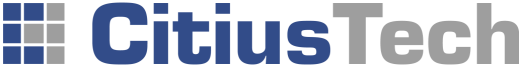


Utility to Save Electricity

Version 1.0



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Revision History

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Acronyms and Abbreviations

This section defines the acronyms and abbreviations used in the document.

|  |  |
| --- | --- |
| Term | Definition |
| Hibernate mode | Hibernate is power-saving mode in Windows which uses the least amount of power. It puts your open documents and programs on your hard disk, and then turns off your computer and when you start PC again it resumes the applications and work items. |
| kWh | Kilowatt hour |
| VPN | Virtual Private Network |
| IP address | Internet Protocol address |

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# Introduction

Electricity is one of the most important blessings that science has given to mankind. It has also become a part of modern life and one cannot think of a world without it so we need to save electricity, but idea of saving electricity completely varies between different sectors like home, industries, companies etc. Save electricity utility covers one way where we can save majority of the electricity in companies. Many employees leaves office without switching off their PC's, this utility will trace such PC's and can hibernate those, which will be useful to accomplish our objective of Environmental Management System(EMS) that is “to reduce per capita electricity consumption by 1% annually".

## Why we need it?

If you take a look at below figures then you will get why it is important:

*Wasted Energy cost of a Desktop CPU (Dell OptiPlex)*

* A desktop CPU running idle with Screensaver consumes about 0.082 kWh.
* Energy Usage for overnight, 9pm-9am, 12 hours = 0.082 x 12 = 0.984 kWh
* Energy Usage over five working day overnights = 0.984 x 5 = 4.92 kWh
* Energy Usage over the weekend = 0.082 x 48 = 3.936 kWh
* One working week Energy Usage = 4.92 + 3.936 kWh = 8.856 kWh
* Energy usage over one year = 8.856 x 52 = 460.51 kWh
* Average Energy cost per kWh = Rs. 5
* Annual Energy Cost for the Desktop CPU = 460.51 x 5 = Rs. 2302

*So we can save electricity of worth Rs. 2302 per machine per year*

## What it is?

Utility to save electricity is an automated script which will run during the night (say 1am) and finds all the desktop machines which are not switched off and will hibernate those machines.

### Some scenarios

1. User A left office without switching off his/her machine. Automated script will run and hibernate that PC.
2. User A left office without closing the applications like MSSQL, PLSQL, Browsers etc. then utility will hibernate that machine and save all the opened work items on the secondary memory so that next time user will be able to continue the work he/she left.
3. Consider User is working late night and our script hibernated his/her machine, user restarted his/her machine then script will not rerun and hibernate that machine again (Script will run only once per day).
4. Consider a machine which is switched off at 12.45am and we run our script at 1.00am then script will show status of machine ON even if that machine is OFF(It takes around 30-40 minutes to remove IP assigned to any machine after switching it off).
5. Consider script is working on 10 machines and we get error after 5 machines then script will leave that machine and will run for remaining machines.
6. If user don’t want hibernate his/her machine then it is possible to exclude his/her name from script

## Pre-Requisites

1. User ID’s/machine names of all the users.
2. One windows 7 machine with admin and domain rights to run the utility.

## When it runs?

This is an automated script which will run at 1am every night and will create report for each day.

# Advantages

1. It saves electricity and money.
2. After starting your machine you can continue the work you left (It will not cause crash of any application or process).
3. It prepares report for each day in excel (It keeps record of hibernated machines each day).
4. Utility will be useful to accomplish our objective of Environmental Management System (EMS) that is “to reduce per capita electricity consumption by 1% annually".
5. We can exclude some machines like servers, night shift machines from script.

# Disadvantages

1. It will not work for laptops.
2. VPN and Database connections will be disconnected (Work items will be saved in secondary memory. Next time you just need to re-login into VPN and database no need to rewrite queries again).