

Green IT

How green are IT users?

IT has become all pervasive and used by all industries, IT is a core activity right down to small towns and villages. If you think only petrol and diesel impact the carbon footprint, think again – so does IT! As per Gartner, IT is responsible for 2% of all carbon releases and it is coming from many sources – fast memory in particular is getting to be a high energy item. As we pack features and miniaturize devices, we also make them consume and release more energy which is detrimental twice over especially considering the number of computing devices and gadgets that we use every day!

Some examples to understand the enormity of the problem - a recent article in Dataquest dedicated to Green data centers had the following facts - As per VMWare, Energy costs are 10% of the IT budget and can rise to 50% if radical measures are not taken. As per Emerson Network Power, the energy usage is split evenly between computing (52%) and overheads (48%). Since racks are getting denser with more powerful servers, cooling challenges of data centers are increasing. As per IBM, data centers across the world are reported to consume 40 tW/hrs of electricity each year, producing an estimated 17.2 bn tonnes of CO₂ emissions.

According to IDC estimates, un-utilized server capacity equates to approximately \$140 bn, or more than 20 mn servers. Also, the fact that at 4 tonnes of carbon dioxide emitted annually per server, these un-utilized servers produce a total of more than 80 mn tonnes of CO₂ per year. Data storage has become highly inefficient with over allocation of storage space which is often under utilized.

We toss out toner cartridges, CDs etc into the dustbin without a second thought and so are many other such gadgets and consumer electronics (several of which are PC compatible devices today). How much are we really aware of our actions?

What needs to be done?

Virtualization is given as one of the answers which can help consolidate IT infrastructure and help reduce redundancy and hence save energy. Virtual machine based computing environments (e.g. VMWare) also help reduce electricity significantly since the need for multiple machines goes down significantly. However, without virtualizing network and storage in addition to servers, the full benefits would not be achieved.

Other simpler aspects include partial upgrades of equipment rather than junking equipment frequently since such equipment are not easy to dispose and recycle. Today tropicalized equipment are available which require lesser cooling which is also a viable option. In most offices, even switching off monitors and CPUs at the end of a workday can help save a lot of energy and reduce the need for extended cooling.

Other aspects such as de-duplication of data (solutions from Quantum) also help optimize storage space significantly. Tape cartridges may not be fashionable - but are still very cost effective, easy to use, store data for long periods and can be stored in a vault using no energy as against an extensive and expensive online storage system since a lot of the data would never get used for years.

Even simpler is to allocate only one machine per user – a lot of offices allow people to have multiple machines sitting on their desks which are never turned off although only one of the machines would be used at a time. On the hardware side, energy efficient microprocessors from companies like Sun are catching on quickly as are efficient computing platforms like Dtrace.

Spanson and Virident are two companies that are focusing on rolling out applications and hardware using EcoRAM which is a new type of energy efficient flash memory with as much computing power as is offered by a server rack using DRAM with a 50% reduction in TCO over a 3 year period.

There are also 'energy efficient' operating systems and Linux has been officially tested as the most energy efficient one followed by Windows Server. Vista is more energy efficient than XP. So, if you want to start going green, try going to www.epeat.net first before you buy your next computer.

Ranganath Iyengar