The Many Shades of Green Storage

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Sometimes a topic or idea is discussed so much that it almost becomes a campaign; we stop questioning it and instead end up believing it. From health (bottled water is purer than tap water) to of course IT (too many instances to list), provided a large enough number of people or organisations join their promotional efforts most subjects or items can become the hottest number on today's agenda.

The latest example of such a phenomenon in the IT world is the environment; this is currently one of the hottest topics discussed in the IT community. But is it hype or reality? There is certainly a good dose of proven facts behind this discussion, namely those that have turned green IT into a business-level concern:

- the limit imposed on additional hardware in the data centre my maxed out power and cooling capabilities;
- ongoing cost organisations sustain for powering and cooling data centres;
- new regulatory directives driven by the EU or by individual countries.

The rise of the green IT discussion from IT department to board-level is one of the factors that made this topic become so widespread so quickly. Never before had such a technical matter become the subject of the senior management spotlight in such a short space of time. Undoubtedly this is partly due to the fact that 'being green' is seen as having a positive effect on a company's brand and hence ensuring your datacentre is making little or no damage to the environment is now close to the heart of many VPs and CEOs.

But are datacentre managers and CIOs communicating effectively in order to devise successful green strategy? Do the former have all the facts necessary to discuss this topic with the latter and to eventually neutralise their CO2 emissions? Do IT managers know how much power their infrastructures use? How much they use for cooling? How much this costs? How much additional equipment their datacentre can host to accommodate business growth? Have they ever worked out their datacentre efficiency metrics?

Thanks to the work done by storage and other IT vendors in the past couple of years many technology solutions today are 'greener' than they have ever been even though at a first glance this might not be evident. The green debate is not only about power and cooling. In 2005 and 2006 vendors selling in the EU all implemented the RoHs directive (Removal of Hazardous Substances) in their products and nowadays many European countries have processes in place to recycle electronic waste.

One reason why datacentres are now suddenly aware of the power and cooling problem is because of the high density of new server, storage and networking components. A fully loaded blade server rack for example may use up more than 20KW, and the same goes for storage devices. This is an increase by four, six or even eight times compared to previous years and older datacentres cannot handle these new requirements.

So what measures are at the disposal of IT managers to address these issues?

The media has extensively covered the development of this debate and plenty of information can be easily found on the Internet. However, in order to provide organisations with vendor-independent information, SNIA recently formed the SNIA Green Storage Task Force and a Green Storage Technical Working Group. As a result, the association has already started delivering a tutorial to help IT professionals better understand this topic. The storage industry has introduced new technologies and architectures to help datacentres save energy and cost. A leading example is 2.5 inch Serial Attached SCSI or SAS drive technologies, which dramatically reduces power and cooling requirements. Data de-duplication, virtualisation and storage consolidation, also reduce the amount of physical storage required, thus cutting down on hardware and its carbon footprint and ultimately lowering an organisation's OPEX and CAPEX.

Beyond SNIA's activities, the "Green Grid" initiative www.thegreengrid.com is a great source of educational information at datacentre level.

Becoming green is a rewarding experience which enables organisations to reduce both costs and environmental damage. The IT industry, with the help of independent bodies such as SNIA Europe, had already made great progress in identifying the initial steps that can make datacentres become more efficient with regard to their power and cooling consumption. As time goes on new metrics will be defined so that organisations can accurately discover their carbon footprint size and origin and take corrective actions. In the meantime, the deployment of technologies such as data deduplication, Thin Provisioning, and tape-based archiving will already allow datacentres to become more environmentally friendly.