

## Green IT for a greener world

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Carbon emission by the world's data centres is greater than that of many countries. Underutilized servers and storage devices, waste up to half of this energy. Consolidating or decommissioning underused devices and applications reduces costs, energy consumption and carbon emissions. Efficient storage management, consolidation of user devices and servers, and optimization of data centres brings significant savings. Instead of buying more storage or servers, efficient management of existing resources reduces power consumption and brings significant productivity and cost savings.



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Green IT is no longer an abstract concept or fringe topic. Executives are considering green IT because energy costs are a huge operating expense for IT. By using more energy-efficient IT and business processes, organizations can reduce operating costs. Furthermore, there's evidence that motivation extends beyond simple cost and energy savings and now includes the desire to implement environmentally responsible practices. According to our 2009 Green IT report, 93 per cent of respondents in Asia Pacific and Japan (APJ) indicated IT should play a very or extremely significant 'green role', while 85 per cent report that their organization has a 'green advocate', mostly with an IT focus.

To make IT greener, organizations must evaluate the environmental impact, business processes and technology used for creating, producing, selling, and using goods and services. IT pervades most of those processes and is a large consumer of energy. In global terms, total carbon emissions by the world's data centres eclipse the total emissions of many countries. On average, experts say underutilized servers and storage devices,

among other culprits, waste a third to half of this energy.

Implementing green IT tactics such as consolidating or decommissioning underused devices and applications can provide immediate reductions in energy consumption and costs. They are practical ways for organizations to contain costs and improve operating efficiency while reducing carbon emissions.

**Corporate responsibility, corporate image**

The responsibility of organizations to be good stewards of corporate funds while managing the business toward green objectives are increasingly aligned with social responsibility. Our Green IT report provided proof of this shift - 85 per cent of APJ respondents indicated that their corporations want their IT to be green. Proving corporate social responsibility by reducing carbon emissions can help improve an organization's image, build brand equity, and reinforce the confidence of corporate shareholders and stakeholders. Every organization is becoming accountable - and not just for the impact of business operations on the environment.

Some customers require vendors to meet minimum green requirements to qualify as their suppliers for products and services.

### Green IT steps

The process of implementing green IT in an organization includes tactics for three areas: endpoints, printers, and enterprise IT operations. Some of these tactics can be implemented with ease. Other tactics - especially those affecting the data centre and the entire organization - require planning and coordination to ensure non-disruptive deployment.

Some measures are a one-time event, but many require ongoing participation by all employees. The organization's top executives must endorse green IT initiatives to ensure acceptance and successful deployment throughout the organisation.

### Green for endpoints and printers

Endpoints are the devices used by employees, contractors, and visitors to perform personal computing and to access and use corporate

applications, data, and IT resources. Desktop computers are the most common endpoints. Mobile endpoints are another essential consideration, including laptops, handheld devices, and smartphones. Organizations can take the following simple steps to improve endpoint energy utilization among endpoints and printers:

- Unplug power bricks not connected to a device;
- Replace old monitors with LCD screens;
- Switch monitors to standby after five minutes of inactivity;
- Shut down PCs after office hours;
- Enable active power management on desktops;
- Ensure re-use of equipment that is no longer required, but is still serviceable;
- Specify lower-power-consumption CPUs and high-efficiency power supply units with 80 per cent conversion or better;
- Use thin client technology;
- Apply timer switches to non-networked technology and printers;
- Use green default settings on printers, such as duplex and gray scale; and
- Optimize power-saving sleep mode on printers.

### Greening enterprise IT

Green measures offer the enterprise great potential for cost reduction, improved business process efficiency and reduced carbon emissions. Nevertheless, obtaining these benefits requires planning, coordination, and management to ensure successful implementation without disrupting the enterprise. The most significant savings come from efficient storage management, consolidation of endpoints, servers, data, applications, and optimization of data centres and facilities. Specific strategies include hot and cold air containment, retiring unused equipment, implementing more efficient use of racks and floor space, adjusting cooling equipment to meet reduced loads, and checking variable-speed fan settings, and the monitoring and reporting of power usage.

### Stop buying storage

IT departments often respond to today's explosive growth of data by acquiring more storage appliances and disk drives to add extra storage capacity, but this is an environmentally unfriendly and costly way to address the issue. Simply acquiring new storage hardware is not the only answer. In fact, using software to manage existing storage resources more efficiently helps organisations reduce the complexity within their storage environments, while also

reducing power consumption, bringing significant productivity and cost savings to the data centre.

Companies can avoid acquiring more storage hardware by understanding where their data belongs and automate its storage on the most cost-effective and appropriate hardware. A smarter approach is to use fast, sophisticated, storage devices only for data that requires it, while using lower level storage for data that requires lesser processing power. Use policy-driven tools to identify seldom-used data and automate its transfer to cheaper hardware. Such a multi-tiered storage infrastructure can improve efficiency by locating rarely or never accessed data and re-locating it to lower cost devices that do not constantly draw power.

Another technique called thin provisioning enables IT managers to retrieve unused storage capacity by enabling applications to access storage capacity as and when it is needed, using techniques similar to the virtual memory allocation used by most of today's operating systems. This 'storage-when-needed' approach enables organisations to instantly gain access to more storage space, without having to spend another cent on storage equipment, which helps to reduce overall carbon footprint.

Since servers typically run at about 20 per cent of processing capacity, organizations waste a significant amount of power and money on underutilized servers. Lately, some organizations have increased usage to about 30 per cent in response to the business climate's imperative to do more with existing resources, but an idle server still requires 50 to 70 per cent of the power used at full load. In addition, air conditioning for cooling a server machine room consumes at least the same amount of power as the equipment, which doubles wasted electricity costs. A simple solution is to run existing servers at a higher average load, giving users more cost-efficient power usage and allowing the organization to delay buying more servers as usage gradually catches up with existing assets. Organizations may also use server virtualization to configure multiple virtual servers on a single physical server.

Improving data efficiency can drive other efficiencies throughout the IT infrastructure. Reduction of stored data decreases the number of devices required for storage and lowers energy consumption. Another tactic is to 'de-duplicate' data - i.e., deleting unnecessary duplicate physical copies of data and consolidating its use into fewer locations. In many cases, de-duplication can reduce the amount of data stored by more than 50 per

cent. If organisations apply this technology to existing data, they can quickly free up space on current storage systems and delay - or altogether avoid the need to buy more.

Finally, email is the top target for archival data reduction. Email is often stored many times in the email server, on the user's PC, in a Microsoft Exchange or IBM Lotus Notes file, on file servers, saved in SharePoint, and in backups. Because of the excessive storage consumed, the cost of power and cooling is also commensurately higher. Data archiving technology can help address the issue of unnecessary data storage, acting as an online archive for older items that are moved from primary application storage according to company-defined policies. It also further reduces the data footprint by leveraging optimised single-instance storage and compression technologies.

The consolidation of servers, data and applications, reduces the amount of real estate required for data centres and cuts data centre power consumption. At the same time, organisations further reduce costs by freeing capacity and, consequently, the need to acquire new storage hardware. Employing these techniques will ensure organisations spend less on storage well into the future and only have to purchase new capacity when they have fully optimised the capacity they already have. Not only does this make good business sense, it also contributes to saving the environment.

### Moving forward

As organizations embark on green IT projects, there are a number of measures IT departments can begin to deploy. If the organization is new to green IT, starting with 'quick wins' often results in immediate cost savings, enhanced utilization of technology, and the added benefit of environmental responsibility. Enrolling the company in green IT initiatives requires a commitment from top executives and extends throughout the company. Some aspects of the initiative may require an investment, so demonstrating that IT can produce results and getting executive sign-off from the beginning will ensure success.

Encouraging environment-friendly production and consumption is officially part of major government, commercial, and social initiatives worldwide. Opinions vary on environmental issues, but nearly everyone agrees that individuals and organizations must do something to reduce our impact on the environment, while also realizing significant cost savings. ●