

The Need for IT to Go Green

The demand of IT services is going up, but unfortunately so is the cost. To combat skyrocketing costs, power shortages, crippling space constraints due to server sprawl and inadequate cooling capacity, organizations are turning to virtualized high-density servers and storage de-duplication technologies as a means to retire idle, slow, energy-inefficient or "brown" legacy hardware and transform the data center into a highly optimized, energy-efficient or "green" data center.

Making matters worse is that some data centers built as recently as ten years ago are already underpowered, insufficiently cooled, and lack the capacity to support today's high performance, high density server and storage equipment. Meanwhile, IT leaders in charge of their operation are asked to cut costs, reduce energy consumption, empower staff, increase productivity, and realize greater returns on capital investments, while at the same time maintaining a cost-competitive strategic lead over their competitors without undermining or endangering the business objectives of the company. Mission impossible? No. But it can be difficult and the possibility of making a miscalculation can be very costly.

By partnering with industry experts who will work alongside stakeholders to carefully evaluate the existing infrastructure, clearly articulate the latest industry advancements in virtualization and high density server consolidation and storage technologies, and recommend a set of prioritized "greening" initiatives based on the financial portfolio and strategic goals of the organization, you can reduce costs while enhancing the quality of IT services.

Tangible Benefits of Virtualization

Virtualization is more than just a technology concept. It is a concrete business strategy that takes form in real dollars and cents.

A representative from a leading virtualization software vendor remarked, "Imagine your SUV going through gallon after gallon of gas while sitting in the garage. Servers use about 30 percent of their peak electricity consumption while sitting idle, which is often more than 80 percent of the time." Moreover, an IDC paper in Feb 2007 entitled "Enterprise Class Virtualization 2.0" reporting the facts surrounding operational costs distressing organizations responsible in managing IT infrastructures cited:

- \$8 is spent maintaining legacy IT infrastructure for every \$1 invested in new IT infrastructure severely limiting business innovation
- 50¢ is spent to power and cool servers for every \$1 in server spending today and may increase to 70¢ by 2010
- constructing a new data center costs approximately \$1,000 per square foot; this is \$40,000 per rack or \$2,400 for a typical server.

Because of these and other cost drivers, virtualization technologies are becoming an essential part of any IT strategy allowing organizations to achieve around a 10:1 server reduction ratio or higher, resulting in an 80-90% energy savings alone. And not only does server virtualization reduce the inherent high costs of capital expenditures, but now through high-density blade server technology, administrators are empowered more than

ever to manage hundreds additional physical server instances at an unprecedented level of ease, while relieving the pressure from increasingly greater space, power and cooling constraints.

The quality of IT services is also improved through a combination of virtualization and high-density blade technology and consolidated storage systems allowing flexible disaster recovery solutions, reducing maintenance outages and allowing staff to perform upgrades on the fly without causing downtime - thus increasing higher availability service level agreements, increasing workload responsiveness and resilience through distributed resource scheduling, speeding up deployment of services when needed at just the right size, and increasing overall ease of remote management, including a much simpler cabling system.

Clearly, adding even more servers to overbuilt, underutilized systems is not the answer. Instead, businesses need consolidated virtualized IT environments that require less maintenance, less space, fewer power and cooling resources, and empower IT staff to deploy resources only where and when they are needed. All this translates into significant reductions in operations costs, meaning more money for needed strategic initiatives to maintain an edge on the market.

The Path to a Greener Data Center

In a green data center, the mechanical, electrical, and spatial elements (facilities) as well as servers, storage, and networks (IT) are designed for optimal energy efficiency and minimal environmental impact.

The GreenIT Path (TM) is both a technical framework and a set of design principles to guide organizations towards implementing a green data center. The areas of focus these elements cover:

- Coordination - No plan, no matter how prudent and beneficial, can reach its maximum impact unless key stakeholders are working closely together. This is a core quality.
- Reconfiguration - Best practices for data center layout and arrangement are key to solving space, power, and cooling issues.
- Consolidation - Increasing hardware density is fundamental to reducing space, power and cooling resources.
- Revitalization - Aggressive analysis will be conducted on legacy hardware to determine the best hardware refresh opportunity.
- Virtualization - Decoupling physical resources from IT software services is necessary in creating an agile data center and will be pursued beyond just the server or CPU level.
- Optimization - Hardware utilization is critical but improvement in data workflows, software program execution, and management tools may also be necessary.
- Evaluation - Software monitoring of resources utilization and correlation to energy usage is critical both in the initial analytical baseline and in the regular re-alignment of IT operations to financial objectives.

The journey begins with the organization gathering as much as possible up-to-date information on existing hardware and software inventories and up to a full business cycle worth of performance data. To complete the analysis, a team is dispatched gathering any remaining details, including the physical layout of the data center infrastructure, computing assets - including servers, storage, network systems, and system usage statistics, as well as begin measuring current energy consumption. The power system is a critical element in the facilities infrastructure, and knowing where that energy is used and by which specific equipment is essential when creating, expanding, or optimizing a data center.

The next step is to analyze the data gathered and generate an overall power and cooling efficiency profile of the data center. This profile will serve as an analytical baseline for comparing a final list of prioritized recommendations that include both "**light green**" and "**dark green**" project opportunities that will steadily transform the existing data center into a green data center through consolidation, decommissioning, and virtualization project initiatives, based on agreed understanding of current needs and future plans. Light green efforts lead to *projected* savings and dark green efforts aim at *measured* savings.

Finally the proposed recommendations can be implemented by our consulting experts either solely or in a supporting role to existing staff.

At every step, IT management and key stakeholders will be engaged and empowered to make informed decisions throughout the process and to reinforce your team's ability to achieve project success.

The GreenIT Difference

Increasing data center energy efficiency is not only an environmentally responsible strategy, but also a financially-sound one. By consolidating systems through virtualization software and high-density equipment, organizations can retire legacy hardware and migrate legacy applications to more energy efficient systems. This will amount to enormous cost savings, by significantly reduce the consumption of space, power and cooling resources, and increasing capacity-on-demand IT provisioning services without over-investing in resources, hardware, and staff. These are just a few of the outcomes achieved as light and green project initiatives down the GreenIT Path are followed resulting in the creation of a greener data center.

So whether you want to start small and build a firm yet agile foundation for dynamic growth, or you already have a large data center and need to maximize your existing assets, GreenIT will cut through the marketing hype and chart a course from where you are today to where you need to be. We will lay out clear and specific recommendations that result in highly efficient solutions yielding the highest return on your investment.