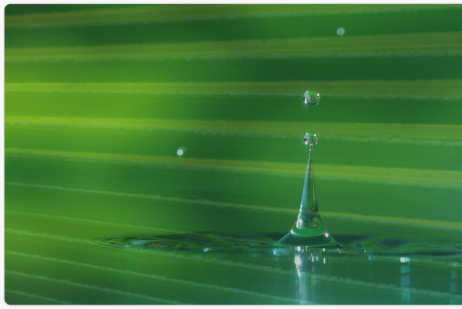


EMC PERSPECTIVE



## **A Policy-Based Approach to More-Efficient and Greener IT**

Contribute to the bottom line—  
and the environment

# A Policy-Based Approach to More-Efficient and Greener IT

## Contribute to the bottom line—and the environment

Pressures are greater than ever to reduce costs and increase efficiency in the data center. At the same time, as awareness of environmental issues increases—along with focus on the data center’s growing contribution to energy and green concerns—businesses are looking to have a “green” agenda as well.

So how does the IT organization reconcile these seemingly divergent goals? Can IT achieve a more efficient and environmentally friendly data center while struggling to meet the cost challenges posed by rising utility bills, energy, and cooling costs—and the business’ demands for more power and space?

This paper looks at how IT can indeed address both critical business and environmental issues—achieving some previously unexploited financial benefits in concert with your environmental goals—by taking a holistic approach to efficiency and energy, focusing not on “green IT,” but rather on “efficient IT” as the end goal. It provides insight into some surprising misconceptions and hidden perils that can minimize the benefits of common energy efficiency initiatives. And it defines a policy-based approach built on best practices to help IT organizations achieve faster and greater long-term results.

### Why “efficient” IT?

Whether responding to business and regulatory drivers or simply to be good citizens, IT organizations around the globe are taking measures to conserve power and natural resources—typically, by replacing older equipment with more energy-efficient equipment and by reducing footprint through consolidation and virtualization.

But many organizations fail to recognize that the real benefit of such initiatives comes not only from power and cooling efficiencies that are realized, but also from the operational efficiencies created that generate measurable savings and impact in both operating expenses (OpEx) and capital expenses (CapEx). In other words, greener IT is in actuality more efficient IT, and more efficient IT is what will ultimately help organizations achieve their business objectives and be good global citizens, too.

Improvements in IT operations can help you reduce your risk of exposure to regulations and of running out of power/cooling/space in your data center. More efficient IT can also help your organization:

- **Save money**—by reducing energy expenses, avoiding expenditures for new hardware, upgrades, and relocation before they are necessary, and avoiding the need to build new facilities by extending the life of your existing data center.
- **Make money and grow revenue**—by opening up investment, purchasing, and supply chain opportunities to environmentally conscious investors, customers, and partners who are looking to do business with “green” companies.
- **Reduce risk**—by minimizing the probability of non-compliance with a growing number of stringent regulations, such as those for energy consumption, carbon emissions, or disposal of hazardous substances.

However, making the data center more efficient and environmentally friendly is not as simple as buying pieces of energy-efficient technology. It’s about changing the way you use your equipment and your facilities. For example, filling the data center with new, energy-efficient equipment will only deliver the desired results if that equipment is provisioned to deliver the right tiers of service, is optimally utilized, and is in the right power state at the right time. Because they fail to consider the impact and implications of their actions or fully examine necessary tradeoffs, many organizations fall short of achieving their goals for such initiatives.

## Policies and processes can help you achieve your goals

A policy- and process-based approach to more efficient IT can help you avoid exposure and unnecessary costs. It forces you to focus beyond technology to think holistically, systemically, and in business terms how best to deploy and manage technology (for example, how can you achieve the best balance between your levels of service and environmental impact). It also drives the creation and governance of new, repeatable processes as well as the re-evaluation of existing, inefficient processes.

Below are examples of proven best practices that have delivered positive business and “green” results and of equal importance, have helped organizations reorient their mindsets to operating and managing their IT organizations more intelligently in today’s challenging economic and environmental climate.

### Revisit existing policies

The world is changing rapidly—which means that policies you already have in place can quickly become outdated.

- Consider how you factor in the cost of power when calculating the total cost of ownership of a new piece of equipment. Because power and cooling costs constitute a large and growing part of data center budgets, the cost equation for business stakeholders must be redefined to adjust for these changes, and stakeholders must be advised of these changes.
- When allocating infrastructure to a new project, look at your IT policies and procedures to make sure that you are assigning the right level of resources. Optimize these resources not just to business responsiveness, but also for all aspects of costs, including today’s utility and power costs. Also, optimize resources for data center costs from a green standpoint: the capacity it will consume, and the greenness of the infrastructure you will deploy against it (e.g., disk drive spin-down and other features).

### Optimize physical efficiency

- Collaborate with your facilities organization to assess the opportunities to optimize power and cooling in the data center. For example, optimize cooling design with alternate “hot” and “cold” data center aisles, and include airflows in the considerations for placing equipment.
- When considering data center layout, avoid over-provisioning that results in excess capacity in infrastructure, or infrastructure that is not being used or that is running at a higher service level than necessary.
- Consider the efficiency of your infrastructure. An energy-efficient server that is only 30 percent utilized is less energy efficient than a virtualized, fully utilized physical server. Furthermore, a virtualized server may make better use of shared power as opposed to a dedicated physical server that may remain powered on.

### Provision for optimal results

- Provision hardware with the most energy-efficient software possible, such as applications that can remain in a low-power state when not in use or that can be run at the most cost-effective times of the day. Also consider the differential power costs among tiers of storage when deciding what the most power- and cost-efficient tier of infrastructure is for provisioning each application. Power cost is proportionate to power consumption, and higher level tiers are more costly to operate than lower tiers. Evaluate tradeoffs in service levels vs. cost and change existing cost-performance equations accordingly; applications that used to be assigned to tier 1 storage may need to be reassigned to a lower tier if the availability requirements do not warrant the higher consumption and costs of power.
- Consider the IT capabilities required to ensure the desired results—this means looking at tiers of service and infrastructure in the context of efficient IT objectives; for example, if you will be utilizing disk drive spin-down, make sure that the response time will not incur penalties for mission-critical applications.

If you think about the tiers of infrastructure service that you are providing (that is, your business requirements), you are also thinking about the IT energy and efficiency dimensions of those tiers.

#### Four steps to achieving more efficient IT

In simplest terms, a policy- and process-based approach is comprised of the following four steps:

- Baseline current service levels, storage tier distribution, and energy consumption and establish target performance metrics
- Create policies and/or modify existing policies to support your business and green IT objectives, addressing identified “gaps”
- Define processes for turning policies into action and to drive and change organizational behaviors
- Measure success against key performance indicators (KPIs)

#### Optimize IT operational efficiency

- Assess your overall IT operations to reduce inefficiencies and eliminate processes and services that are no longer serving your business purposes. Existing automated processes may be wasteful at today’s power prices or may not fully leverage new automation technologies that speed time to implement IT operations.
- Take a systems approach to consolidation in the data center, including storage, the network, and applications. Applications are frequently overlooked during consolidation initiatives—but they have a potentially great impact on the ability of the data center to save energy (by eliminating unnecessary operations) and increase operational efficiency. Also consider that as much as 20 percent of a data center’s servers may be running applications no longer used by the business.

The bottom line is that technology solutions alone are not enough. Policies and procedures about managing and deploying technology to your key applications—applied in a systemic way—are what will help you realize real, measurable impact to your business and to the environment.

#### Establish governance

Do not assume that simply introducing these efficient IT practices will automatically bring about the necessary behavioral changes in your organization. A conscious decision must be made as to which individuals or organizations will be responsible for governing your policy- and process-based IT efficiency initiatives and ensuring that they will be a regular part of management discussion and of your reporting and metrics.

Look at your original business objectives that are driving the initiative to make this determination (and remember that you may not have even been looking at a “green IT” objective). Was your objective to increase IT efficiency? If so, your VP of operations may be the right person for this role. Were you looking to extend the useful life of your data centers? In that case, your IT facilities team may be most appropriate. Or, a cross-functional program office or center of excellence may be warranted to oversee all your efficient/green IT initiatives and manage their progress. And some organizations choose to task all senior leadership with responsibility for their green goals.

#### Efficient IT is a shared initiative

Efficient IT initiatives must be executed cross-functionally—with IT, facilities, and finance organizations working together to create a more complete, strategic umbrella of business, environmental, and social initiatives in place. Environmental issues are common across all operations—operational energy efficiency, use of materials and material reduction, carbon footprint reduction, education, material and waste management. All groups within the organization should work as a team to do a systemic analysis of the interdependence between the needs of the business and the environment, and they must understand the expectations of all their stakeholders. Take a policy- and process-based approach that relies on metrics to measure success. Efficient IT initiatives require a whole new discipline—not just knowledge of traditional energy-related technology (e.g., HVAC systems), but a combination of people, policies, processes, procedures, and technologies.

#### Your goal: achieve change, reduce risk

The fundamental benefit of a policy- and process-based approach is the ability to implement, monitor, and maintain change—both in user behavior as well as in the everyday decision-making related to IT operational policies. For example, how are you going to allocate infrastructure to support critical business applications? The approach discussed in this paper forces decision makers to critically examine tradeoffs between service levels and operational/environmental costs and determine how to best satisfy business and “green” agendas.

Policies, processes, and procedures must continue to evolve in keeping with constantly changing business and environmental drivers and risk; what is cost- and energy-efficient today, or what constitutes risk today, may or may not be so in the near future. For this reason, a continuous program of monitoring and measuring performance and energy consumption against established goals, and in consideration of changes in cost, availability of resources, and business/energy regulations and requirements, is essential. The rapid evolution of technologies and best practices will tend to drive continuous changes in your existing policies and process. Ultimately, you can realize a consolidated, more mature, agile, and efficient operation that contributes to the bottom line and to the environment.

## Related information

EMC Perspective: *The Efficient, Green Data Center, Delivering IT with Financial and Environmental Consciousness*, October 2008

EMC Perspective: *Managing Energy Efficiency in the Data Center*, May 2008

EMC Perspective: *Green and Lean—Four Steps to Improving Data Center Efficiency without Capital Expenditures*, July 2008

Customer Profile: *Huntington National Bank Gets Energy Efficient with EMC*, April 2008



EMC Corporation  
Hopkinton  
Massachusetts  
01748-9103  
1-508-435-1000  
In North America 1-866-464-7381  
www.EMC.com