Ptak, Noel & Associates LLC
The Authority in IT Convergence Strategies

The Green CIO

The CIO's role is undergoing radical re-definition these days. Once focused primarily on selecting the information technology to implement an existing business plan, recent research reveals CEO's expect the CIO to play a more active, cross enterprise role that is more strategic but still retains tactical responsibilities. The CIO is expected to act as a 'catalyst for change' and an 'expert on what's possible' to implement a new enterprise agenda. The agenda centers on change whose implementation will require actions that are innovative, globally integrated, evolve business models and focus on corporate social responsibility. The benefits realized from infrastructure virtualization, consolidation and optimization within the data center are receiving their own attention. The task for the CIO is to export the 'green benefits' of information technologies and methodologies throughout the enterprise. 'Green' initiatives are being discussed as part of a program for increasing enterprise operational efficiency and social accountability under the umbrella term, 'Corporate Sustainability'. Let's look at some areas of potential application.

Educating the enterprise: It's not simply about a Green data center

The traditional data center's lack of focus on energy conservation, as well as its significant environmental impact and footprint is no news. To-do lists, products and services to address the challenge of 'greening' the data center are easily found. Industry journals and vendor literature abounds with how-to and what's-been-done articles on everything from data center layouts that balance heat loads to advanced cooling technologies to cabinet re-design. What hasn't been so exhaustively covered is the CIO's proactive role in pushing 'green' technology and methodology to other enterprise business functions.

In addition to their normal duties, today's CIO is expected to:
1. Seek out opportunities to creatively apply IT technologies, methodologies and services across all business functions.

2. Lead efforts to engage other C-team members (COO, CFO) in finding ways to support and implement 'green' initiatives in the enterprise. Teams should work together to assure the most effective tools and technologies are available and operational processes and polices established to support 'green' behavior.
3. Educate business functions on the existing and innovative use of technologies to reduce their environmental impact.
4. Support and promote "Corporate Sustainability" initiatives with technology, information and data.

Of course, the first priority for the CIO interested in 'Greening' IT is to focus on initiating the activities and processes necessary to make the IT organization more cost effective and efficient in terms of reducing consumption and environmental impact. For many organizations today, there are a lot of 'low hanging fruit' opportunities of actions they can initiate both quickly and easily. This includes such activities as:

1. Monitor and work to reduce the energy consumption not only of all IT equipment but of the rest of the equipment in the datacenter;
2. Discover, continuously monitor and turn off unused servers as well as other devices,
3. Monitor and consolidate servers when workloads (and utilization levels) drop; then, unconsolidated servers as workloads increase,
4. Implement a comprehensive and widespread program of Virtualization. This is proving to be one of the most cost and energy effective actions in IT.
5. Compress data – the rate of growth in data collection and storage is old news as was the decreasing cost of storage – however, 'green' costs have radically altered the cost profile – data compression now is an environmental imperative,
6. Encourage development team to collaborate online using the more sophisticated tools now available to reduce their travel needs,
7. Reduce 'sneaker-net' and eliminate 'desk-side' support by enabling use of remote control and automation by support staff. This saves not only time and effort but cuts back on travel costs.

These are just a sample of what the CIO can do. However, the influence of the CIO doesn't end at the data center boundary. There is the rest of the enterprise to consider.

The CIO must proactively identify and promote existing and emerging technologies to address green issues outside the data center. Using their experience with these technologies in IT, they should pro-actively work with non-IT functions to identify opportunities to reduce the environmental impact, assure efficient utilization and consumption of scarce resources and assets. The CIO can partner with the COO, HR, facilities, etc to identify opportunity for action. Some projects will require a straightforward application of techniques and technologies as applied in IT, but some will be the result of a creative leveraging of capability in ways unique to the business functions. The CIO must support both short and long term efforts to cut energy and power costs, to reduce waste and consumption of scarce materials such as fuel, space, water, energy and power. He must lead efforts to identify and promote the use of alternative abundant, non-polluting resources and raw materials across the enterprise.

Technology for export

The CIO must foster the use of technologies that have proved their 'green' ability in the data center. Let's look see how they can be applied.

Digital record keeping – for sharing and reuse

One area rich with potential is the replacement of hard copies and paper-based records and communications with digital counterparts. The acceptance and use of e-mail and the internet as the primary tool of business correspondence proves the benefit. The 'paperless office' has been a promise for decades. Today the motivation and costs exist to make adoption a worthy effort. Hard copies consume space while imposing a large environmental footprint in transport, storage, access and retrieval. A first step would encourage conversion to

digital data and record keeping and eliminating hard copies. Digital records lower operational costs while making it easier to share and access data. We address issues around managing digital data later.

Today, the use of paper is often driven from the actual or perceived needs of existing business processes. Many firms are finding out that an effort to streamline, automate and revise processes will yield significant 'green' payback and shift those processes away from simply shuffling paper to more efficient and effective ones using online forms and images instead.

Programs that discourage printouts and use of paper copies can include reducing the number of printers, centralizing print facilities, printing multiple pages on one-sheet and making double-sided copies a company standard. The use of digital tablets instead of paper is another option. Executives can set the example by:
1. Making extensive and visible use of digital devices, such as e-tablets
2. Operating a paper-less office
3. Eliminating, or at least sharing hardcopies of newspapers, journals and magazines
4. Moving advertising and marketing budgets to on-line rather than print

There are descriptions of 'green' actions and tactics publicized by such groups as The Green Grid and The Green Electronics Council.

Business process management – automating, rationalizing and revising

Both IT and the business are able to drive business results by managing services executed as processes which generate volumes of paper. In many enterprises, manual processes are out of control, often redundant and conflicting in application. IT can share their expertise in the technologies and techniques of business process management (BPM) and Service Oriented Architecture (SOA) to help business functions regain control and 'green' their processes.

In some cases, the number of processes does not merit a technology-based effort, but still threaten efficient and effective operations. The COO can initiate efforts at process documentation and review can help advance a 'green' environment. Steps that can be taken include:
1. Document and centralize the recording of processes by business function
2. Review processes for currency and application – outdated processes hamper operations and cause inefficiency and waste
3. Rationalize processes to eliminate unnecessary steps, avoid redundant data collection or analysis and reduce complexity

Such manual review can pay big dividends by increasing awareness of opportunities to eliminate inefficiencies that aggregate over time. Now, let's examine how technology can help.

Operating 'green' requires optimization and efficiency in executing and designing business processes. Combing an end-to-end view of processes with automation discovery and management, business process management (BPM) technology makes it easy to identify and implement end-to-end-optimization and innovation initiatives. SOA builds on componentization, sharing and reuse to effectively use assets, data and a service-oriented infrastructure. These are the tools to increase the agility and adaptability of business as well as IT processes. They allow business functions to review, revamp and rebuild static business processes into processes able to automatically apply business policies to adapt to changing conditions. BPM works in manufacturing to adapt scheduling and resource assignments to reflect workload changes. The CIO is there to bridge the gap between an awareness of technology and an understanding of its practical application to solve business problems.

Smart property management – integrated asset and energy management

The responsibilities and interests of the CIO and COO converge in asset and resource management. There are numerous opportunities to 'green' these areas. They can be applied from product design to equipment purchase to material acquisition and facilities planning. http://www.1000ventures.com/environment/susdev_main.html
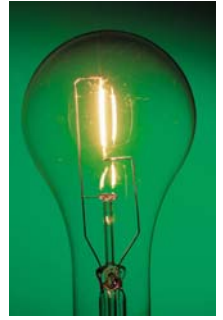
The CIO can motivate design engineers with tools for product creation that facilitate 'green' design by taking account of environmental cost and impact at every stage of the life cycle. Procurement applications should calculate the cost of local purchase versus distant supply as well as the environmental impact and energy ratings of products. Maintenance operations should be monitored to avoid inefficient operations, e.g. for machinery and corporate transport. Consider converting fleets to 'green' vehicles, corporate fleets can be down-sized to more fuel efficient and smaller vehicles..

The energy and power management and mapping programs successfully used to reduce costs in the data center can be used in enterprise-wide management. Software applications can effectively manage heating, ventilation, air conditioning (HVAC) and lighting to achieve 'green' goals as well as with applications to recycle and reuse 'waste' heat, water and other resources.

Powering devices and distributing power offer 'green' savings. Power over the Ethernet (PoE) delivers just under 13 watts at low cost with cabling requiring neither special routing hardware nor an electrician's services. Yet it can support surveillance cameras, wireless access points, wireless sensors and other low-power devices. Energy savings can add up quickly.

Socializing the enterprise - facilitating online collaboration

Today, the concept of what constitutes the 'workplace' includes home offices, remote offices and teams with members spread around the world. At the same time, the power of IT to collect and analyze data ties together and integrates business functioning as never before. The resulting interdependency means departmental decisions, policies set and action taken will impact multiple business functions. That means cooperation, collaboration and coordination across business and IT functions are critical.

The CIO facilitates these connections with team-focused collaboration technologies ranging from green conferencing to office tools, such as Instant Messaging and Web Conferencing to globe-spanning Software Development Coordination Software to jams and the concept of unified computing which integrates voice, video and telecommunication technologies. These improve and facilitate communication and cooperation, cut travel costs, reduce the need for commuting and make collaborative training more accessible and easy to deliver.

In some cases, working from home/remote locations is just not possible or reasonable. But frequently, it is simply an unquestioned cultural norm that can, and should be examined. An open approach should be taken to evaluate whether or not remote work is viable and preferable. If it is, it can be worth the effort to break through the cultural barriers that require travel to an office when there is no real need.

So, the CIO needs to educate and proselytize technologies that promote and support:
1. Remote/Home offices
2. Remote collaboration/communication/coordination of teams
3. Reduced travel through videoconferencing, and on-line trade demonstration including trade-shows
4. On-line documentation, advertising brochures and product catalogs
5. Unified computing

Managing information – sharing access, minimizing redundancy

Proliferating data and data bases are a problem for business and IT functions as well as a 'green' opportunity. All functions have grown accustomed to collecting and having access to increasing amounts of data. Automated data collection has made it easy to overlook the hidden costs of handling storing, recovering, managing and manipulating it. Much of that data is not really needed, or at least in as many different forms and locations. A recent studied revealed that more than 75% of data is just copies of other data. Less than 25% is actual new/unique content. This volume can be reduced with data and data base standardization. Data collected and stored in slightly different formats by multiple groups waste resources and prevents its efficient utilization. Both 'green' and cost benefits result by using data de-duplication, consolidation and compression techniques to reduce stored data. The benefit includes improved internal communication, collaboration and cooperation.

The CIO can help reduce the environmental impact of data collection and management by:

    a. Establishing working teams to focus on the rationalization of and coordination on data requirements
    b. Focusing teams on the standardization and reduction in number of different data base technologies
    c. Organizing efforts to eliminate collection and storage of redundant data
    d. Promoting efforts to increase the use of data reduction, compression, deduplication and off-line data management.

Optimizing applications – infrastructure, process and communication

Finally, application rationalization and optimization provide significant opportunities to reduce costs and realize benefits. It is expensive to support multiple, different applications that perform the same functions. CIO led efforts to standardize applications used for order processing, data analysis, project management, e-mail, etc. can pay significant benefits. Manual processes and workflows, in fact, processes in general are notorious for the volumes of paper produced. Automation and process redesign efforts should be undertaken with a specific goal of reducing the need for and use of the underlying resources of all types. For example, add a review cycle for new application code to assure that the developer uses techniques to avoid redundant data collection, employ existing tools and use standardized techniques to minimize use of underlying resources and infrastructure. Encourage code and data reuse, etc. Such reviews should also be made of existing code whenever possible and it makes sense.

Initiate a review of applications running on dedicated platforms to evaluate the potential for consolidation to shared platforms or even a move to the mainframe. The mainframe has proven it operates at far higher utilization levels while consuming much less energy per transaction than other platform environments.

In conclusion

These represent just a few of the possible technologies and applications that can be applied enterprise wide. The CIO as the master of technology and expert in its use has an unparalleled opportunity to advance the 'greening' of the enterprise. These all have the added benefit of a driving a significant reduction in operating costs and improving profit margins. The CIO needs to be searching out and promoting cutting edge technologies and methodologies to address business challenges. 'Greening' is simply one more area to address. A whole cottage industry exists with advice for the CIO. IBM has a site devoted exclusively to topics of interest to the CIO. ComputerWorld has a series of interesting reports here.