



# The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

## Final Copy of Case Study

**LOCATION:**  
*Washington, DC, US*

**ORGANIZATION:**  
The George Washington University, Division of Information Technology

**YEAR:**  
*2011*

**ORGANIZATION URL:**  
<http://IT.gwu.edu>

**STATUS:**  
*Laureate*

**PROJECT NAME:**  
Green-IT

**CATEGORY:**  
*Innovation*

### PROJECT OVERVIEW

The Division of Information Technology at The George Washington University maintains its position on the leading edge of higher education technology by implementing sustainability initiatives that decrease energy use, save resources and improve customer service. Of our initiatives, virtualization provides the largest energy-efficiency impact. Virtualization allows less equipment to do more and eliminates the energy lost in the creation and maintenance of the University's IT electrical and mechanical infrastructures. By implementing this technology, GW has drastically reduced its energy footprint, while simultaneously lowering the cost of doing business. Currently, the Division of Information Technology has virtualized approximately 60 percent of its total server environment, saving more than 800,000 kilowatt-hours, which translates to taking 80 cars off the road. We run 250 virtual machines on 18 physical hosts giving us a conservative 13 to 1 ratio. With a goal of 80-percent virtualized to 20-percent non-virtualized servers, the Division of IT plans to significantly reduce its energy use by the equivalent of more than 120 cars off the road. These energy savings will save the University more than 1.4MKW-hours, which translates to over \$1.7M over the next five years. Most recently, these initiatives have been combined in our new FB Data Center, which opened January 2010. During the data center project, we identified several opportunities to make improvements, save energy and money, and extend the life of the data center. These areas include designing and building the data center with environmentally friendly systems and purchasing products that operate more efficiently and use less power. The capital expenditure on the FB Data Center utilities for the IT load is \$666,917 (based on \$12,631/KW which is the data center full build cost). This translates to an annual utility avoidance of 11% or \$77,011, which is a reduction of 855,677 Kw-hrs of power. Additionally, GW's Division of Information Technology has also implemented Lifecycle Refresh, GWdocuments and GWscan, and has piloted a power management application. The Lifecycle Refresh program replaces older servers and data center systems with new energy-efficient servers. One new server can replace three to four old servers with no loss in performance, decreasing



energy and the costs associated with that energy use by nearly 60 percent. Gwdocuments and Gwscan are the enterprise document imaging and scan applications. Together, these programs reduce the number of printouts, save paper from actually having files on hand, and reduce the footprint of physical space needed to store the physical documents. The large scale power management pilot encompasses all University-owned PCs. The pilot includes 1,500 computers and will include actual measurements of savings, which will be used to determine the impacts of a University-wide implementation. A 30% or more savings on electricity is expected with no impact on University workflow. If these savings do materialize, a University-wide deployment would be the ultimate goal.

### **Societal Benefits**

Currently, the Division of IT has virtualized 60% of its server environment, which translates to taking 80 cars off the road. As the University grows, so will the server environment, making the amount of cars taken off the road endless.

### **Project Benefit Example**

The George Washington University is committed to promoting the best practices of sustainability across its three campuses. This commitment requires the entire University to consider new ways of learning, teaching, living and researching that minimize detrimental effects on our environment. The Division of IT sees this calling as both a challenge and an opportunity to leverage technology to promote sustainability and serve the GW community. In partnership with the Office of Sustainability, the Division of IT has discovered new ways of engineering and implementing technology solutions that reduce energy use, cut down costs and decrease the University's carbon footprint. To date, the Division of IT has saved thousands of dollars in utility costs and reduced carbon emissions while still providing high-quality services to the GW community. The Division's sustainability initiatives combine to provide GW community members with a solid foundation to realize future environmental and financial gains. Doug Washburn, an analyst at Forrester Research Inc., says these strategies put GW among the leading organizations that have developed a strategic vision for being greener. "Right now, 50% of organizations around the world have a green-IT plan in place and are actively implementing the strategies. And if an organization does have broader initiatives under way, that's where IT is asked to contribute," he says, noting that reducing energy consumption through server consolidation and virtualization is often the first step. Creating this foundation starts with training not just the IT workers, but also training the organization's workers as a whole. All equipment given to staff and faculty is preconfigured to minimize energy consumption. Additionally, the Division of Information Technology encourages the GW community to turn off and/or power down computing equipment when it is not in use. These recommendations are sent out via email once per quarter and are easily found and accessible on the IT website. Additionally, the annual back to school technology review magazine has a prominent spread about the sustainable happenings of the IT department as well as step-by-step instructions on how to act on the green technology recommendations.

### **Is this project an innovation, best practice...? Yes**

According to the Department of Education, in 2009 there were over 4100 4-year colleges and universities in the United States. If only one-quarter of these schools (1,025 schools) adopted these Green practices, and of that



one-quarter they only experienced half of our savings (\$850,000), that would equate of over 61,500 cars off the road and a total savings of over \$871,250,000. The possibilities are endless for the public sector adoption and savings.

