The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

LOCATION:
New York, NY, US

YEAR:
2011

STATUS:
Laureate

CATEGORY:
Business Responsiveness

ORGANIZATION:
Digital Realty Trust

ORGANIZATION URL:
http://www.digitalrealtytrust.com

PROJECT NAME:
Grid Computing Datacenter

PROJECT OVERVIEW

Morgan Stanley's need for a data center to support their new grid computing applications carried with two very specific caveats: - It's power requirements necessitated an interior design that would ensure that the facility used only the energy that was required to limit the site's carbon footprint - The facility itself needed to correspond to the company's corporate standards for green development and sustainability The solution implemented on their behalf by Digital Realty Trust in Loudoun, Virginia drew upon the company's extensive experience in green data center design and construction methods. A data center houses numerous servers and other computing equipment that require a substantial amount of energy to operate. These components subsequently generate a substantial amount of heat. To ensure that Morgan Stanley's applications would consume only the minimum amount of power necessary and to minimize the amount of air conditioning necessary to cool the facility, Digital Realty Trust personnel used sophisticated computational fluid dynamics modeling software to analyze a variety of potential component lay-out scenarios. The purpose of this modeling effort was to determine the precise internal design that maximized the flow of air within the data center to both remove the produced heat and cool the equipment. Through the use of this modeling activity Digital Realty Trust was able to build out the data center using the most energy efficient design possible. The achievement of Morgan Stanley's green objectives were addressed via Digital Realty Trust's LEED compliant construction methodology. Developed by the United States Green Building Council, the LEED standard focuses on environmentally friendly, sustainable building methods. As a result, Morgan Stanley's Loudoun facility was built using, amongst a number of other elements: a high volume of recycled and reclaimed materials, low volume and automated lighting and heating to ensure that areas within the facility are only lighted and heated when in use, and reclaimed water. Through Digital Realty Trust's adherence to these standards, Morgan Stanley's facility received LEED Gold certification—the USGBC's second highest achievement level.

SOCIETAL BENEFITS

The societal benefit of this project is that is provides indisputable evidence that the requirements of business and environmental responsibility are not mutually exclusive concepts.

PREVIOUS PROJECT UPDATED/EXPANDED?

The construction of the project was completed in phases during 2008. As part of Digital Realty Trust's on-going operation of the facility all aspects of the site's energy efficiency effecting elements are monitored and maintained by our on-site personnel. As part of this process the performance of all the site's components are monitored from using Digital Realty Trust's Critical Facilities Management® software to track unit performance to indicate when preventative maintenance needs to be performed to ensure that the effected component continued to operate at its peak level of efficiency. Digital Realty Trust also measures the efficiency of the site's operation by monitoring its Performance Utilization Effectiveness (PUE). PUE is an establish industry standard used to quantify the efficiency of site performance. Using this metric as a guide Digital Realty Trust is continually modifying elements of the facility's operation to ensure that it is operating under a program of continued performance improvement.

PROJECT IMPLEMENTATION COMPLETE?

Yes

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

ADDITIONAL PROJECT INFORMATION

The project has specifically benefitted Morgan Stanley through its support of its grid computing applications, but moreover it has benefited the community of Ashburn, Virginia. The Morgan Stanley site resides within Digital Realty Trust's Datacenter Park-Northern Virginia campus. The ability of Digital Realty Trust to demonstrably prove to firms like Morgan Stanley that we are able to deliver to them energy efficient and sustainable solutions that align with both their business and environmental strategies has resulted in the expansion of our campus and aided the city of Ashburn in becoming recognized as a prime location for enterprise level organizations seeking data center facilities.

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