Application Lifecycle Management
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ALM software solutions for green IT.

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Going green beyond the data center

Being a responsible corporate citizen today means more than reducing smokestack emissions and toxic waste. There must be a concerted effort to further reduce damaging carbon emissions throughout the enterprise. As such, visionary organizations are building a business case for using renewable energy sources for designing and producing energy efficient products. "Green" initiatives are being driven not only by the obvious threats to the environment and climate, but also by environmentally conscious customers who prefer to buy green products and do business with green manufacturers.

In pursuing "green IT," technology organizations in particular have already made an excellent start with initiatives to more efficiently manage power and cooling in data centers. Again, visionary organizations in this sector are seeking to take green IT to a higher level as they pursue an environmentally conscious approach to managing software applications and the processes they support.

This white paper will explore best practices for green IT and how Application Lifecycle Management (ALM) can help companies achieve green IT processes for software application management. It will discuss how IBM® Rational® provides integrated ALM and software delivery solutions that support green IT, including those offered through the Telelogic portfolio:

- *Telelogic® System Architect®, which can help with green organizational transformation*
- *Telelogic Rhapsody®, which can assist you with supports green application development*
- *Telelogic DOORS®, which can aid in traceability to regulations to prove compliance*
- *Telelogic Focal Point™, which can help you align business priorities with product and portfolio management*
- *Telelogic Synergy™ and Telelogic Change™ which can help integrate your global systems development and change management*

This paper will also illustrate the benefits of ALM solutions using examples of IBM customers who have successfully achieved green IT best practices.

Highlights

Business software applications also create carbon footprints by utilizing hardware resources that consume energy and create CO_2 emissions. Making software applications greener is an innovative way to achieve green IT goals.

Why green IT?

According to the U.S. Environmental Protection Agency, carbon dioxide emissions or "greenhouse gases" increased by more than 20 percent from 1990 to 2005. Unless businesses and consumers make conscious choices about energy use, greenhouse gas emissions will continue to rise in the future, with the potential to cause catastrophic climate changes and further damage to the environment.

From an IT perspective, energy costs continue to escalate because the growth in applications and business workloads doubles every two years, increasing the need for the power and cooling of servers and data centers. One watt of application computing power requires more than 30 watts of support power. Within the last five years, the total amount of energy used by U.S. data centers has doubled, with those energy costs representing approximately 10 to 15 percent of a typical IT budget.

But, managing hardware resources is not the only way to achieve green IT. Surprisingly, IT equipment and facilities requirements accounts for only 2 percent of worldwide carbon emissions. The fact is that business software applications also create carbon footprints by utilizing hardware resources that consume energy and create CO_2 emissions. Making software applications greener is an innovative way to achieve green IT goals.

Other factors driving IT organizations to "go green" include:

- *Rising cost of energy, as evidenced by skyrocketing oil costs that peaked in summer of 2008*
- *Increased regulatory scrutiny, with stricter regulations around carbon emissions, water usage, and management of other natural resources*
- *Customer demand for green products and manufacturing methods*
- *The need to adopt a "smart products" approach in designing energy efficient products*

In addition, global organizations also seek ways to bring geographically distributed employees and development teams together without expending the cost and energy generated by physical travel.

Highlights

To build a firm foundation for green IT, organizations must have a keen understanding of the global regulatory environment, as well as the financial incentives for green business practices, and long-term sustainability and profitability prospects.

Understanding the regulatory environment

To build a firm foundation for green IT, organizations must have a keen understanding of the global regulatory environment, as well as the financial incentives for green business practices, and long-term sustainability and profitability prospects. For example, an attribute of the CDM (Clean Development Mechanism) initiative—the carbon credits trading market—estimates the value futures contracts to be worth $3.1 trillion by 2020. The greenhouse gas emissions industry is waiting for the passage of cap-and-trade regulation in North America, potentially its biggest market.

The independent, not-for-profit Carbon Disclosure Project (CDP) publishes information on climate change-related issues and other environmental concerns gleaned from responses to their annual information requests. In a press release dated September 22, 2008, CDP stated that data collected from 1,550 major global companies indicated that the business world is taking these issues seriously and considers them drivers "of risk and opportunity." The findings also indicated that investors are taking carbon disclosure and climate change reporting more seriously when assessing the "risks, liabilities and opportunities within their portfolios."

Organizations pursuing green IT initiatives can also benefit by creating carbon offsets through projects that reduce greenhouse gas emissions, as pioneered by the Kyoto Protocol, which requires 37 industrialized countries and the European Community to reduce greenhouse gas emissions by an average of 5 percent below 1990 levels between its first commitment period of 2008 and 2012. Yet, organizations can start making a difference immediately with green IT by pursuing carbon abatement policies that start with smarter software and systems that can help to foster green business practices.

Highlights

Telelogic Rhapsody enables developers to design batteries that are more efficient, take less time to charge, last longer, and have a lower impact on the environment.

How an integrated ALM solution helps promote green IT

Automating and modeling core development and business processes to control energy use throughout the lifecycle is the foundation of green IT—and this requires integrated ALM solutions, which can help organizations promote green IT by improving efficiencies of people, business operations and products in the following ways:

Using embedded software in products to monitor, control, and reduce the energy consumed

Telelogic Rhapsody, a model-driven development environment that addresses the needs of systems engineers, can be used to develop more efficient embedded devices that can monitor and control energy use in electronics. For example, Telelogic Rhapsody can help developers design batteries that are more efficient, take less time to charge, last longer, and have a lower impact on the environment.

An IBM Rational customer in the automotive industry is using Rhapsody to accelerate development of a revolutionary hybrid transmission for medium-sized trucks. The new transmission uses hydraulic energy storage rather than electrical battery storage. Developers are using Rhapsody to model and automatically code the embedded software for the transmission control systems.

Telelogic Synergy, for software configuration and release management, is also being used by automotive companies and suppliers to build smarter, greener cars by enabling the rapid development of variants and effective delivery of innovative software. Also, its centralized repository model can reduce the number of servers and server workloads for systems development.

Promoting telecommuting and reduce business travel with online collaboration—as well as bring system development teams together for greater efficiency and quality

An IBM Rational customer in the telecommunications industry uses Telelogic DOORS for requirements management and Telelogic Focal Point, a software solution for product management and product portfolio management, helping to manage the flow of requirements from multiple project stakeholders to product development teams. Both general and specific requirements, including green requirements, are placed in Focal Point for analysis. Through an automated process, the development team can give feedback to the environmental team to confirm that the requirements have been accepted, implemented, verified and delivered. As such, the company has full control of green requirements in their product and can easily continually modify them to comply with changing regulations.

Highlights

The analytics and reporting tools of System Architect can help business managers analyze the organization's operations, and then establish a blueprint for energy impact analysis.

Other IBM Rational customers are using Telelogic Change for change management to enable electronic signatures, which reduces reliance on paper documents, a key factor in carbon abatement policies.

Conserving energy and physical resources through more efficient use of underutilized servers

Telelogic System Architect can aid in linking systems to processes and strategies, so organizations can quickly identify IT infrastructure bloat. System Architect can aid in highlighting the servers, systems and applications related to organizational business processes, as well as the alignment of these processes to organizational goals and objectives.

The analytics and reporting tools of System Architect can help business managers analyze the organization's operations, helping them establish a blueprint for energy impact analysis. They can identify redundant and under-utilized systems and servers by analyzing and visualizing power consumption by location, application, processes, strategies and staff. As a result, organizations can consolidate and decommission servers, leading to lower energy utilization of the enterprise—and cost savings. For example, an IBM Rational customer in the UK credit card industry leveraged System Architect to save $4.2 million in annual maintenance by decommissioning servers.

Creating a "paperless" organization through use of online forms, images, and communication

Some IBM Rational customers are using Telelogic Change for change management to help them develop electronic signatures, which can reduce reliance on paper documents, a key factor in carbon abatement policies. Companies may be closer to the day they will be required to establish ERUs (Emission Reduction Units) or their derivatives on their balance sheets as per FAS (Financial Accounting Standard) compliance. Telelogic Change and DOORS can provide the traceability needed to establish such an asset on the balance sheet.

Demonstrating compliance with green regulations

Integrated ALM solutions can also help organizations demonstrate compliance with green regulations. Telelogic DOORS can help organizations trace green regulations and constraints to their system and software developments to prove that they are compliant. These regulations may differ between geographies, which means that requirements management can be very complex and impossible to track using spreadsheets. The DOORS environment can assist organizations, improve productivity, and aid in reducing the threat of an audit—helping companies save money.

Highlights

Achieving green IT as a responsible corporate citizen will not only serve the goal of creating a greener, smarter planet, but also result in tangible cost benefits and future competitive advantage.

Conclusion

Creating a green IT environment goes far beyond the data center. Automated business and development processes driven by integrated ALM applications can help spread energy efficiency throughout the organization. From electronic signatures that eliminate the need for paper forms, to embedded software that reduces the carbon footprint of today's most popular consumer durables, ALM software solutions can play a significant role in creating a business case for green IT.

The Telelogic portfolio of ALM solutions from IBM Rational software can specifically help IT organizations reduce energy consumption and costs associated with multi-site software development by:

- *Reducing energy and resources required to test and run business applications*
- *Developing analytical models with current and future states of resource consumption leading to greener and more cost-effective strategies*
- *Analyzing application source code to identify and eliminate unused code to reduce application storage requirements*
- *Optimizing the performance of applications to reduce server energy costs by reducing server footprint and server processing time*
- *Managing environmentally focused product requirements throughout the lifecycle*
- *Supporting the design and build of products and services with low environmental impact*

Driven by the demand for greener products and production methods, CIOs must find ways to reduce energy use and costs across the IT environment. Most importantly, they must understand the impact of their organization's carbon footprint in order to create initiatives for reducing emissions. Using integrated ALM solutions, today's CIOS will have a head start on contributing to making the IT environment in their companies greener, smarter and more competitive.

For more information

To learn more about how IBM Rational and ALM solutions can help you achieve green IT, contact your IBM representative, or IBM Business Partner, or visit:

www.telelogic.com

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