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Sun also rises with efficiency technology

by David Douglas - 8.2.06

In the last few decades, we have witnessed a steady and dramatic rise in economic productivity, fueled in no small part by computer and networking technologies. These same technologies have also enabled a wide range of modern conveniences that we take advantage of every day — from cell phones to grocery checkouts to ATMs to eBay to Google.

The workhorse behind these productivity gains and conveniences is the data center. Every company has one or more data centers full of servers, storage and networking equipment. These systems process, store, and move crucial data, sometimes trillions of times a day. Every transaction conducted in the world using a credit card runs through these data centers, as does every phone call, automated toll crossing, and insurance claim.

As we enter the Participation Age, with everyone and everything participating on the network, data centers are going to grow both in number and size. Three million people join the global network every week, requiring over 1 million square feet of new data center space each year to support them.

Unfortunately, data center growth also contributes to our surging global thirst for energy. A medium-sized corporate data center of 50,000 square feet and 4 megawatts of power can burn through the equivalent of over 50 barrels of crude oil per day, averaging almost 2.5 barrels of oil per hour. While these numbers look large, they are not even reflecting our largest data centers today, and the energy consumption of many data centers is increasing to capture the surge in online activity described above.

We must attack the problem from a number of directions. Our ethos at Sun Microsystems is simple and based on the following three tenets which can be applied to a wide range of organizations: Create, Act and Share. Create means making products and services that are ecoresponsible. Act means operating in an ecofriendly way on a day-to-day basis. And finally, Share means making knowledge, technology and activism available to others so that we can all move forward to a more sustainable model.

Let's look at some examples of each tenet.

The computer industry is beginning to rise to the challenge of lowering energy usage in data centers through significant R&D investment in low-power servers and processors. One recent breakthrough is in the area of multi-threaded processors, which are designed from the ground up to help companies significantly reduce their data center energy consumption while still handling large volumes of



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Trivia question!

Which of the following companies is NOT a founding member of the Green Grid coalition working to decrease the energy consumption of data centers?

HP

Dell

computation. This technology is the basis of new high-performance, energy-efficient servers that are emerging on the market. Since launching energy-efficient servers at Sun, we have seen increased server sales as well as interest from new customers seeking eco-friendly solutions. Based on this example and others, we believe that demand for eco-friendly products and services will grow as customers increase their focus on environmental and energy-related economic issues.



In addition to their products and services, organizations can also be eco-friendly in how they go about their day-to-day business. Office buildings themselves are major users of energy, and by commuting, employees often use significant resources and time to get to those offices. At Sun, we've been applying computing and network technologies to try to provide a more eco-friendly work environment. Today, more than 15,000 employees work in flexible offices at any Sun site or at their home. This program has resulted in a dramatic reduction in CO2 emissions due to commuting and major savings in real estate and energy-related costs to the company. As this example shows, acting in eco-friendly ways often has a positive contribution to the bottom line as well.

Unlike the previous two examples, there are many problems and opportunities that can not be tackled by a single organization. Instead, these situations require cooperation and sharing among a range of organizations, including companies, research institutions and governments.

Since November, Sun, along with the U.S. Environmental Protection Agency (EPA), Lawrence Berkeley National Laboratory, and other environmental and information technology leaders, have focused on how eco-responsibility can minimize harm to the planet while maximizing business benefit. One of the early goals of the group was to establish an industry-standard metric for comparing the energy efficiency of servers in a data center. Think of it as the sticker on a server at a vendor showroom which gives an EPA-approved measurement of the expected energy usage of the system. Having such a standard allows data center managers to make educated purchasing decisions, and it provides a basis on which to build other forms of accreditation, such as the Energy Star program.

Sun is also collaborating with Lawrence Berkeley National Laboratory, the California Energy Commission and Silicon Valley companies, including Intel, Hewlett-Packard and others, on a program that examines energy efficiencies in the data center. The group has built a lab in a Sun facility in California to research the potential benefits of distributing direct current (DC) power instead of the traditional alternating current (AC). Adopting such a change would require changes to a wide range of computing and networking products, making this opportunity ideal for a collaborative approach.

Alone, no single product, service, change in behavior, or even company, will get us over the hurdles that stand between today and a truly sustainable tomorrow. However, the path to sustainability is made up of many seemingly small steps. By paying attention to each of the three tenets, Create, Act and Share, we are optimistic that we can each do our part to help make that tomorrow a reality.

David Douglas is vice president of Eco-Responsibility at Sun Microsystems. He leads Sun's environmental initiatives, including driving sustainability and energy-efficiency in Sun's products; improving operations such as waste recycling and telecommuting; and facilitating volunteer programs, donations and more.

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