



Greening your IT

by Norman LeCouvie

How much power is your datacentre using?

AS WE SWITCH GEARS in how we conduct ourselves and our businesses, changing our ecological direction, we constantly find new points where efficiencies can be gained. Canada is well regarded for its procurement practices and now is the time to ensure they align with our environmental policies. Return on the environment (ROE) is the new catch phrase.

With energy costs spiraling upwards, ROE is being applied to unconventional areas such as the cost of purchasing and maintaining information technology (IT) systems.

Canada's over 200,000 strong federal workforce requires a momentous amount of computing power. Initiatives such as the push for greater Web-based service delivery (Government On-Line) and a shift towards national electronic health records – are only two of many public sector projects reliant on IT. It doesn't take a network engineer to see the challenges ahead.

With the increasing need for privacy and accountability, data storage demands grow by leaps and bounds. Computer systems are up to the task, but their performance can mimic a sports car: they're powerful; they fill a room; they use a lot of fuel. CIOs are challenged to balance new service roll-outs, rising energy costs and reducing the data centre's physical and environmental footprint. Informed procurement staff can help when determining the balance that needs to be struck in sourcing and effecting the actual purchase.

When it comes to procurement, Canada is considered the international gold standard; however, purchases using tax dollars are still scrutinized carefully. Federal staffers and executives can access tools such as the Government of Canada Marketplace (GoCM), which offers a carefully selected catalogue of preferred suppliers for everything from paper

clips to eco-friendly vehicles. Whittling down the choices to a select few makes life easier, but when it comes to high performance computing, there remains a broad range of overlapping and sometimes conflicting claims about value for money.

How should value be defined? Beyond the initial acquisition, the cost of supporting and maintaining investments needs to be considered. Using the car analogy, sticker price goes hand-in-hand with associated costs, including regular maintenance, insurance and fuel. When it comes to servers and storage, the definition of "supporting and maintaining" costs has been evolving.

Both public and private sector CIOs share an interesting set of problems. The standard "feeds and speeds" guideline for technology investments has given way to a new set of constraints, notably "power and space." Recently, Internet search giant Google reported that the money it spends on powering its datacentres will soon exceed the initial cost of buying the servers and storage appliances in their data centres. Global electricity costs are projected to jump considerably over the next three years, making Google's claim a stark reality for many organizations. Compounding power issues are concerns around the physical space for housing hardware. In most instances, public sector data centres are running out of space, making it exceedingly difficult to set aside hundreds if not thousands of square feet for IT systems.

The third layer of complexity in the equation is heat. A datacentre produces heat when working hard and servers slow down when temperatures are high, creating the "mother" of all datacentre dilemmas – maintaining peak workloads while keeping temperatures low *and* taking smaller sips from the 110 volt cup.

As new government services are rolled out, it's clear that cutting back on the number of servers or storage devices isn't an option. Investing in "leaner" systems is the most prudent approach.

Energy efficient datacentre technology takes advantage of more efficient processors that provide higher performance at lower electricity and cooling rates. For example, Sun Microsystems pioneered the first eco-responsible computer processor called the

UltraSPARC T1 with CoolThreads technology. The chip's architecture allows the T1 processor to run on just 70 watts, less than half of the industry standard 150 watts. Less power usage means less heat, so even when a server is at peak load, the temperature remains low, contributing a greater performance capacity. When multiplied by the thousands of servers that power Canada's public sector backbone, dramatically improved performance is complemented by decreased power usage.

In recent months, all three levels of government have begun to liquidate property in urban areas. So, as new government services are brought online, where will the expanding hardware system be housed?

Technology vendors are working hard to shrink the physical size of servers and storage devices. In some cases, this has been accomplished through the complete redesign and calculated positioning of internal parts as well as sourcing cutting edge components that take up less interior space. A peripheral benefit of new server and storage design allows for better airflow, improving heat dissipation, which reduces heat build-up and associated cooling costs.

Efficiencies are not limited to the back room. The typical desktop computer consumes 80 watts of electricity at any given time. Multiply that number by Canada's public sector workforce, and you quickly realize the energy costs.

Many health care and government organizations have invested in thin client computing systems. Rather than each employee having their own CPU, all data is stored at the server level and accessed through a desktop terminal that resembles a flat screen monitor, keyboard and mouse. Thin clients are secure, inexpensive and, best of all, consume only four watts of electricity – less power than the average night light. With fewer heat-producing desktops, air conditioning costs drop.

Recently, a large US-based telecommunications giant replaced 5,000 workstations with 5,000 Sun Ray™ Thin Clients. Within a week the local power company was asking them if they had outsourced their call centre off shore as the energy used had diminished to a small percentage of the previous month. Reduced overhead and the right equipment at the right time – music to a procurement officer's ears! *~*

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