



Small Business Case Study

Products Used: Dual Core Intel® Xeon® processor technology, Intel® Centrino® Duo processor technology
Company Size: 25-50 employees

Cybernomics Greens Roots With Intel



Summary

Roots Canada* wanted its IT strategy to reflect the same green focus that drives its business. With Baudry Cybernomics Corporation* running Intel® at its core, Roots lowered its environmental footprint, reduced energy requirements and powers a significant portion of its core website servers with green power.

Challenge

For all businesses, demand for faster technology, more storage, better integration and instant access to all corporate data from anywhere, at any time, has been growing exponentially. This need to access information at a moment's notice has meant expanding processing and data storage capacity to meet peak demands.

"One of the biggest issues across almost every customer has been an aging network infrastructure," says Rick Talbot, Chief Technology Officer at Baudry Cybernomics Corporation (Cybernomics). "Companies are outgrowing infrastructure, data storage and need more CPU power to stay up and running. New hardware and software often require more power."

Roots is no exception. The Canadian retailer turned to Cybernomics when the demand for their online store was peaking and they needed to be more responsive to customers shopping over the Internet.

"We met Cybernomics during the 2002 Olympics when we had an extreme demand on our web site and we needed an Internet Service Provider (ISP) that was very responsive," says James Connell, Director of E-Commerce, Digital Marketing and New Media at Roots Canada. "Cybernomics was one of the partners that helped us capitalize on the amount of traffic coming to our site during the Olympics* and translate that traffic into sales with a positive online experience."



“With virtualization we can make upgrading the network a lot less painful because the upfront hardware costs can go down, and our clients can preserve their existing business processes on a new infrastructure,” explains Talbot.

But beyond providing customers with a good online experience, Roots* is always conscious of the impact of their business on the environment. The company was looking for a way to handle the growing demand on its servers, while reducing the impact of that demand on electricity and hardware requirements.

“The environmental movement is not about one large initiative. It’s about making a difference through many efforts that amount to something larger,” says Connell. “Whether it is providing environmentally friendlier products or ensuring the business decisions we make consider the environmental impact, it is something we stand behind.”

With the significant growth of Roots’ online store every year straining their servers, they needed to make sure the site could handle the peak demands of holiday shopping.

“If we bought hardware, we would be continuously adding electrical demand. We’re constantly looking for methods to reduce our carbon footprint while still expanding the business,” recalls Connell.

Cybernomics* had the solution.

With an eye on reducing the impact of technology on the environment, Cybernomics has embarked on a greening initiative that enables companies to not only increase their computing capacity but to reduce their environmental impact.

Solution

The solution depended on virtualization made possible by Intel® Virtualization Technology (Intel VT). With this technology, companies can run different software, business operations or even different operating systems

as independent virtual machines running on separate sections of a single piece of hardware. Without this technology, businesses would have been forced to buy separate servers for each application.

Cybernomics found that server consolidation using Intel VT lowers hardware acquisition costs, while improving the efficiency of data centre performance. At the same time utilizing virtualization technology secures partitions (secure sections on the hard drive) that can be dedicated to back ups and enhanced security.

“With virtualization we can make upgrading the network a lot less painful because the upfront hardware costs can go down, and our clients can preserve their existing business processes on a new infrastructure,” explains Talbot. “It is a huge benefit in terms of the flexibility, how fast you can make the change and how fast we can deliver it.”

Cybernomics estimates a traditional server upgrade, which was previously a multi-month process, can now be delivered in weeks.

Talbot says Cybernomics standardizes on Intel products in their servers, including processors and motherboards, because they are confident the technology works, each and every time.

“Interoperability is a huge issue with some other components conflicting with hardware or software running on the server. I know that the quality of Intel products is very high and the defect rate is very low,” says Talbot. “We get consistent quality and can easily combine processors, server boards and network cards, knowing they will integrate seamlessly.”

For most of its clients, Cybernomics installs a new server with either Dual-Core or Quad-Core Intel® Xeon®



processor technology to address the business challenge of slow processing speeds and running out of memory.

"We like to have a four to one ratio of virtualized machines on one server. With Intel® Quad-Core technology, we can have four machines each with its own dedicated core running on one server," explains Talbot. "CPU power increases horizontally so you always have enough processing power to handle the peaks and valleys of demand without one process getting squeezed out to handle demands in another area."

Now that Roots* has moved to a virtualized environment, they have the capacity to seamlessly expand and handle peak shopping seasons on a site that is growing by 30 to 40 per cent a year. With this level of growth, Connell expects to see payback from the move within the first year.

Key Advantages

At Roots, virtualization was implemented simultaneously with the move to a new open source web authoring software which allows more staff outside Connell's web team to update portions of the site and post new marketing content as needed.

"One of our biggest challenges is that we have a small web team but a large number of people who are interested in the content of the site. For the longest time, my team was the gap between what we could be and what we wanted to be," says Connell. "With the new open source technology, people in different divisions of the company can update content on the fly which takes the burden off my team."

This move allows Connell and his team to focus on web strategy instead of the manual process of uploading content. For Roots, it means their web site delivers fresh content faster so that more people can contribute to keeping the marketing information up to date and the site dynamic and interesting.

But, by far the most important advantage of virtualization is the lessened impact on the environment.

Virtualization Makes Business Sense

"With virtualization technology, companies are saving money," says Talbot, explaining that virtualization allows companies to experience dramatic reduction in the need for more hardware as data requirements increase. By virtualizing servers, companies can cut the number of machines they need by as much as 75 per cent, says Talbot.

"This not only means a more cost effective hardware solution but reduces the amount of space needed in data centres, and the electricity needed to run or cool the machines," he adds.

In addition, virtual servers powered by Intel® Xeon® processor technology are easier to maintain and support since companies can virtually "move" information, applications and data from one virtual server to another – almost instantaneously if support or repairs are required. It offers a level of redundancy required for disaster recovery and maintenance that could cost as much as \$20,000 if a business needed to buy a second server as a backup. Virtualization also provides the ability to run two operating systems on a single box giving companies the flexibility they need to run their business using the best software for each application without adding new hardware.

From an environmental perspective, Talbot notes that using one machine to do the work of four means fewer pieces of equipment are being bought or finding its way to landfill at the end of its lifecycle.

At Roots, virtualization has enabled them to create geographic redundancy "on the fly" by adding mirror server sites in different locations. Connell notes it allows them to add capacity very quickly when demands on their servers start to peak.

"It is also good to know that we're not significantly increasing electrical demands when we need to expand our capacity," says Connell. "Also, the redundancy that virtualization allows is key. We don't want to lose data on any server. That data is worth more than the servers themselves. We lose it and it's a huge blow to our business."

Intel Saves Green Power

Consuming less energy and being more environmentally conscious has become a primary focus for Cybernomics*. In 2007, the company became a bullfrogpowered* business, which means all of their servers with Dual-Core and Quad-Core Intel® Xeon® processor technology are running green. By buying their own power through Bullfrog Power*, a leading provider of 100% green electricity from sources like wind power and low-impact water power, Cybernomics knows the source of their energy isn't harming the environment.

As Talbot explains, the cost of hosting servers at a secure data centre like the one they use in Toronto goes beyond the per square foot floor space charge. Everyone with a cage in that centre pays for heating and cooling systems, as well as back up power. And, Talbot notes, there is a limit to the amount of power that can be brought into any given facility.

With Intel at the core, Talbot says their servers use less power and generate less heat which translates into a reduced need for air conditioning.

"With a greener footprint, we are not only saving money directly by using less energy but we are also buying green power directly which is better for the environment," says Talbot. "Why would we burn up power we don't need?"

"In our green philosophy, we have to make sure the inputs into the business are as clean as possible," adds Talbot. "If we weren't doing virtualization, our energy costs would be doubled"

For Roots, having Cybernomics signed on with Bullfrog Power has been a great fit.

"We are constantly looking for ways to reduce our environmental impact," Connell says. "Cybernomics came to us with an environmental solution before we asked for it. That's the sign of a great partnership."

As an organization, Roots has had a strong focus on being green since day one. Connell notes that while they have been growing their business, they are constantly considering the environmental impact of their growth whether it is the carbon emissions from delivery vehicles or the electricity required to power their online store.

Mobility With Power To Spare

In addition to ensuring the source of their power is green, Cybernomics is reducing the power they use by choosing notebooks powered by Intel® Centrino® Duo processor technology, which use less energy than a traditional desktop.

Talbot says new notebooks with Intel® Centrino® Duo or Intel® Core™ 2 Duo processor technology are true desktop replacements with power to spare, coupled with the mobility they need to be responsive to clients.

"They are powerful and portable," says Talbot, who appreciates the portability

when working on their servers at their Front Street collocation facility in Toronto. "I can monitor the progress of my updates or service work from the warmth of a restaurant across the street, which is a wireless Hotspot. Working from the restaurant has been revolutionary. It's quieter, warmer, and more comfortable than standing around waiting for updates to finish at the data centre."

By leveraging VPN technology, coupled with wireless accessibility, Talbot and his team can support clients securely from anywhere, anytime. "I save time and energy every time I can solve a problem remotely and don't have to drive to a client site," says Talbot, noting many Cybernomics* customers are also demanding secure VPN connections so that employees can access corporate data and e-mail from home or while traveling.

Keeping IT Lean

A cornerstone of Cybernomics' green solution is Lean Consumption*.

"We can talk green all we like but if we are not efficient, we can never be green," says Talbot, noting they wouldn't be able to use green power, or reduce their environmental impact without focusing on Lean Consumption and using Intel technology.

Lean Consumption (a practice written about by James P. Womack and Daniel T. Jones in a 2005 Harvard Business Review article) is based on Lean Production*, which is streamlining manufacturing to increase efficiency. Lean Consumption aims to minimize customer's time and effort by delivering precisely what is needed when and where it is needed. Lean Consumption is not about reducing consumption (or purchasing) but rather giving customers exactly what they want from a product or service with the greatest efficiency and least pain. It does this by ensuring goods purchased work together, customer time is not wasted with excessive self-serve requirements and hassles are minimized.

"The lean model goes beyond what we are doing with green. It really goes to the core of our approach and I think the green is a subset or component of it," explains Talbot.

Applying Lean Consumption to internal IT processes means ensuring all staff know what is being done for clients and the activities are documented and tracked. Internally, Cybernomics is leveraging specialized software that is integrated into their billing system to enhance reporting to clients.

"On every invoice, clients can see not only what work was done but who requested the service. That allows us to be more proactive by highlighting areas requiring more support and addressing them quickly to save customers money in the long term," says Talbot. "This fits in well with Lean Consumption because we can help clients see inefficiencies and what can be done to improve it so that we can move beyond a 'Fix It' mentality to focus on strategy."

Future Uses

At Cybernomics, the priority will be managing clients' pain points, such as surplus data and growing data requirements. Talbot is also interested in looking into new technologies, such as Intel® vPro™ processor technology, which will ease remote management of customer IT systems in a secure environment.

Roots* is focused on continuing to reduce their environmental impact while giving their customers more information and product details. They have recently integrated Zoom* technology on their servers, powered by Intel, which will allow customers to zoom in on a product to see fabric textures and colours. They are also looking to enhance their customer data records so that they can customize sales and marketing efforts and use more electronic and interactive media when talking to customers.

"We are always looking to further reduce our environmental impact," says Connell. "By communicating digitally we can personalize messages to specific customers to ensure they resonate with the recipient, thereby reducing electronic waste and the need for printed collateral."



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