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How Verizon Does Green Computing

John Hinshaw, CIO of Verizon Wireless, talks about the methods he's using to make the company's vast tech array less power-hungry

It takes a lot of power to run a wireless network that serves 60 million customers and handles billions of calls each month. So John Hinshaw, chief information officer for Verizon Wireless, should know all about energy costs. For the past 18 months, Hinshaw has been looking for energy-efficient technology that can help the company lower its power consumption, from the desktops that support its 65,000 employees to the hardware that fills its data and call centers.

His work is starting to pay off: By cutting the number of data centers from 10 to 3, Hinshaw has helped the company save $20 million. In a recent conversation with BusinessWeek.com writer Rachael King, Hinshaw outlines just how the joint venture of Verizon Communications (VZ) and Vodafone (VOD) is saving money.

When you've looked at Verizon's different technology components, is there one place right off the bat that you've noticed is extraordinarily power-hungry?

The data center environment is the most power-hungry by far, and what we've done over the past several years is reduce the number of applications that we run at Verizon Wireless in order to simplify the customer experience—one billing system, one sales system, one customer care system. That requires a lot less hardware to run than if you had multiple systems.

It's allowed us to reduce what we had—10 data centers consuming a ton of power just a few years ago. Now we have three data centers, and that's through rationalizing all these applications. That's probably the biggest area. I think we've avoided roughly $20 million in build-out costs by being more efficient in our data centers.

How difficult is it to get more power to your data centers?

If you call the power company up and say, "I need another couple gigawatts in my data center," they're not just going to string it up and go. They're going to require that you invest quite a bit in the facilities and the digging up of roads and things to make that happen. It all depends on where the power is coming from, but if they don't have it right there at your facility, and often they don't, then yes, you have to make that happen.

Are you using server virtualization [the ability to run multiple software programs on one computer]?

We are but we're being cautious with diving too deep into that because the technology itself is not perfected. If you lose one box today, you might lose one application. I don't want to lose all of my applications.

In some of your call centers, you use so-called "thin client computers" that don't have any local processing or storage but are instead connected to other computers where all the work is done. I

understand that has reduced energy consumption by about 30%— is that correct?

It has, and it's a pretty neat technology because it's just the screen, keyboard, and mouse. There's no desktop to suck down any power. It's roughly the equivalent [power consumption] of a lightbulb, which is far less power than what the traditional computers run.

Over time, PCs have gotten more power-efficient, but this really takes it to the next step because you eliminate that fan and all the CPU components. You save power two ways there: the physical draw of the power from that box, and those boxes produce heat that requires you to cool the environment, so that's a second way to save money when your air conditioning bills go down. That's where the 30% comes from. It's a combination of those two.

You also use software that lets network managers turn computers on and off remotely. Can you tell me about that?

We have to patch and update machines and we don't want to do that during the day. We don't want to disrupt our customer service agents helping our customers by patching them in the middle of the transaction, so we would do that overnight.

And, in the past, we've had to say, "Leave your machines on because there are patches coming," or it just became standard practice to leave machines on. Instead, everybody turns their machine off when they leave, and in the middle of the night this product wakes it up, does the patch, and shuts it back down, so it really does minimize the amount of time that computer needs to stay on.

Are your employees good about shutting down their computers? Don't some simply forget?

It's habit. Some people are in the habit of leaving them on. But that's the other great thing about this product—it can go out and shut it off automatically. We've messaged everyone that this new technology does exist, and people are getting better about turning off machines.

If you were to look at your entire energy bill, what percentage comes from lighting, what percent from heating, and what percent from computing?

It's going to vary by location. In a call center, for example, probably 40% of your power is computers, the rest would be heating and lighting. But keep in mind that call centers are a densely packed environment, with a lot of computers.

In an office space, it would be more like 10% computers, and in a data center it would be more like 75%, because you've got a lot of machines and that's the primary draw on the facility. In a data center, the other 25% would be lighting, cooling, and other functions.

Are there any other costs besides the $20 million you already mentioned that you save by being energy-efficient?

The $20 million is on the data center front. In the call centers, we're looking at roughly $60,000 per year off the utility bill per call center. We've got Sun Rays [Sun Microsystems' thin client computers] implemented in three centers today with a couple more happening here in a few months.

As we move forward, we'll be rolling this out to all of our call centers—either the Sun Ray technology or a similar energy-efficient desktop-less environment. If you look across all of our call centers, that translates to over $1 million per year in power savings. Add NightWatchman [software that turns machines on and off remotely] to that—we only have early numbers on NightWatchman that say somewhere around $500,000 per year in savings.

It's unusual as a CIO that you're so aware of energy consumption. Isn't that usually left to another department?

If it's going to affect our bottom line and our customer experience, then we're going to be very involved in it.

Have you investigated any forms of alternative energy?

[Other forms of alternative energy are] really not prime time ready for a data center yet. The other thing we certainly try to do on our network side of the business is to have test-drive vehicles that go out and test our network. We look for those to be as fuel-efficient as possible.

Literally, there's a guy going around saying, "Can you hear me now?"

There are many, in fact, driving a lot of miles throughout the whole country every year. In fact, we drive more miles than any other carrier to make sure our network is better than our competitors'.

In the technology industry, it seems that server makers are really good about getting the most power out of the smallest size, but not as much attention has been paid to energy efficiency until recently. Why is that?

I think that's right. I think for a while the focus was on footprint, and people were adding so many servers because more and more processes and functions are automated.

There's incredible growth, so the typical person running a data center would say, "I don't want to build 10 more data centers, so help me with size." From the late '90s through 2004-05, the focus was on size, shrink the size. And the suppliers did a great job of that.

But, to your point as they shrunk the size, the smaller box would draw even more power than a larger box would have in the past. Total cost of ownership in an environment is most important, in addition to reliability, and as I go to buy from a Hewlett-Packard (HPQ), IBM (IBM), Sun (SUNW), Cisco (CSCO), whomever, those are some of the questions we ask them before we make those decisions.

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