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Video Transcript: Optimizing the Green Data Centre

An ROI Innovation Report



From the Green IT Innovation Series

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This document contains an edited transcription of a video interview with Steve Sams, Vice President, Global Site and Facilities Services for IBM, and Bernie Oegema, Data Centre Sales Leader, Site and Facilities Services for IBM Canada. Our interview was held in Toronto on March 1, 2010, and was conducted by Michael O'Neil, Chief Content Officer for IT in Canada.

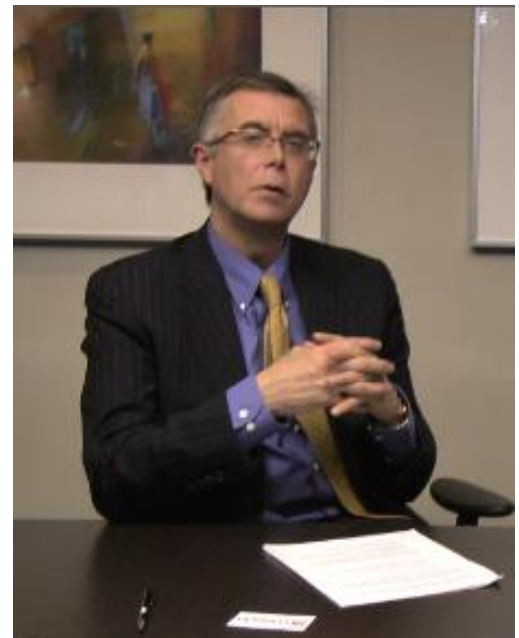
Michael O'Neil: Welcome back to our discussion on innovation and ROI and green in the data centre. I'm Michael O'Neil, and I'm joined today by Steve Sams, vice-president, Global Site and Facilities Services, and by Bernie Oegema, data centre sales lead for Site and Facility Services for IBM Canada. Gentlemen, thank you very much.

Steve Sams: Happy to be here, Michael.

Michael: So the final step in our journey is to look at what comes after the implementation of a new data centre, or the retrofit of an existing facility, at optimization after initial deployment. This is a particularly important focus for green facilities, where we're continually trying to find new operational efficiencies. Steve, what are the most common actions that your clients take to gain additional payback on new facilities once they've completed their initial build-out?

Steve: You know what? I had a boss once who had a phrase that actually applies to this, although it was targeted for a different reason, and that was: you can't manage what you can't measure. And quite frankly, that's true in the data centre infrastructure. There are a series of tools available now that can actually provide to clients things like server and storage utilization, things like energy metrics on the data centre, things like available capacity from their UPS systems, from their cooling systems, et cetera.

And quite frankly, if you can put all of those pieces together, then you have a comprehensive set of capabilities to manage the efficiency of what you've got, give you some prediction capability of when you're going to run out of capacity and when you need to be able to plug in the next set of power and cooling capacity or whatever you think that you're going to need in your



Steve Sams, Vice President, Global Site and Facilities Services, IBM

infrastructure, give you warning signs of whether you've reached a density level that's going to cause overheating problems or other operational issues in your data centre infrastructure.

So we're huge supporters of this idea that management and measurement is really the key follow-on step to any new data centre build. In fact, about two weeks ago, we opened a new demonstration at Epcot Centre around the Smarter Planet Initiative. That site has one of our Scalable Modular Data Centers on display that's actually running the facility as well. And we showed the prototype of some new management and measurement systems that we'll be announcing later this year that'll give customers this full capability.

Michael: That echoes back something that you said in the very first one of our discussions, about the need to combine optimization services, efficient technology, and then software that helps provide the data needed to use those services to manage the technologies.

Steve: Right.

Michael: And at the same time, you also made a point about autonomic software as well that operates technology automatically in an efficient capability. Is that one of the ways in which your customers are looking to gain additional payback from new facilities?

Steve: Absolutely. So let me give you a very simple example. Tivoli, as an example, does something called policy-based automation. Traditionally, it had been focused on service levels. So, for instance, you would say, "This application, I want at the highest levels of service, and these applications, I'm willing to defer their capacity and capabilities to support this higher-priority application." So as an example, a bank might have a trading-floor application that's generating billions of dollars of transactions a minute. And it may be reaching a crisis point, and so they may sacrifice the web-hosting people looking up their bank balances and give them five-second response time instead of a three-second response time. What we're doing is, we're moving policy-based management into the data-centre operation side.

I'll give you an example. An example would be, Tivoli's analyzed the workloads across the server environment, found that the workloads, between 8:30 in the morning and 4:30 in the evening, have a critical load, but that that demand wanes – it doesn't go away completely, but it wanes during the off hours.

And so Tivoli may say, "Look, those applications being run on 10 servers, actually, during the off hours, could be run on only three servers. So let me automate that as a part of a policy."

So you, Tivoli, you optimize my energy consumption at the service level that I've defined. And Tivoli might then virtualize all the applications after 4:30 in the evening, move the applications from all ten servers and consolidate them only to three, power off the seven servers that aren't being used, power them back on at 7:30 or 8:00 in the morning, move the applications back so they're ready and capable as the demand goes up again, all on an automated basis. You wouldn't have somebody who would do that physically, but you could automate that capability.

Michael: Does it auto-configure the cooling and power around that?

Steve: Absolutely. So, again, you would tone down the power and the cooling capacity to only three servers of load versus 10 servers of load, and then power that capability back up.

Michael: So, Bernie, Steve's just painted us a really appealing picture of how technology works in an ideal situation. How often do Canadian customers step up to that level of ideal operations and deploy things like policy-based autonomic computing?

Bernie Oegema: This is cutting-edge stuff – it hasn't been applied very often. Most people, unfortunately, they get something up and running, a data centre or IT architecture, and once it works they go, "Oh, great, it's working," and then they start thinking about other stuff.

So this is very progressive-type thinking here. And we could even take that to the level of time of use. So there's certain applications we want to run at night, when power's less expensive. That's something that's also coming into the visibility of IT and companies in general.

Michael: But in general, do you find that Canadian companies are keeping pace with the global peers that Steve's working with to implement best practices, to continue to optimize the efficiency of their data centres?

Bernie: Unfortunately not, no. It's not widely run. The sites that we work on, like we're involved in some high performance computing facilities, where, since we're helping to operate the facility, we take a proactive approach, adjusting chilled water temperatures, which is very commonly used in high performance computing or large data centres. We say "Hey! Why can't we run this at a higher water temperature? The computers will run fine, and I can take advantage of a less costly cooling system or even operate in free-cooling mode for more hours of the year."

Michael: And that would seem like a good example of stuff that can be done pretty readily, with low investment, and on a trial-and-error basis, where it could be the set point, instead of working with free cooling -

Bernie: Absolutely. This is all part of our Smarter Planet initiative, of interconnecting all those points, which traditionally have not been interconnected in using that information intelligently.

Michael: OK. So that's lower-tech. Do you find that Canadian companies are at par with the adoption of set-point experimentation?

Bernie: Again, unfortunately not. If things are running, most people become complacent and say that, if it's working, they're just going to leave it.

Steve: Well, what's interesting is that this environment is ripe for improvement in a variety of ways. It's ripe for improvement because the clients are potentially not necessarily at the same level as others. And it's also ripe for improvement because the environmental factors here in Canada support some of the environmental technologies, like free cooling, a lot better than if you were in Texas or Shanghai or other climates that are a lot warmer than this. And so the challenge is, the downside has been, I think, that energy costs in this country are lower than they are in the majority of other countries around the world, where they may be two, three, four times the cost per kilowatt-hour. And so the incentive hasn't been there yet. But I think it's there.

Michael: So, other than make our electricity more expensive, which would be not a popular approach, are there other things that you've seen, in other jurisdictions, that Bernie and the rest of his team could roll out to help encourage Canadians to embrace some of these best practices?

Steve: Well, I think the simple fact of the matter is that, if we have the opportunity to really look at a client's site, we will find a whole series of things that are relatively low-hanging fruit. So, as an example, we do these things called "energy efficiency assessments," where we go in to a client's existing environment and we evaluate – we actually measure their energy consumption, and evaluate where there are opportunities for improvement. The average client here in Canada has had a reduction in their energy consumption of 23%, and paid for things that are paid for just by the energy savings in two years or less.

So, that basically says it's free. And, by the way, a 23% reduction in energy consumption means I just gave that data centre 23% more capacity for other things. And I did it for free, because it was just paid for by my energy savings in two years or less.

Michael: And I think you said, in an earlier segment, that energy itself accounts for roughly 60% of OPEX.

Steve: Yeah, exactly.

Michael: So a 23% reduction in energy is roughly a 15% knockoff on OPEX.

Steve: It's a big-ticket item. In fact, we had a client to whom we recommended five actions when we did this study, and the total cost for taking those actions was about \$15,000. The total energy savings for taking those actions was just over \$100,000 - \$100,000, by the way, every year. So imagine going to a bank, depositing \$15,000 once, and having them give you \$100,000 every year in return. That's an ROI that a CFO would love.

Bernie: Exactly. And there is cost-avoidance in that, too, as Steve said. That frees up capacity, which means you don't have to buy another air conditioner or...

Steve: Or build a new data centre.

Bernie: Or a new data centre; right.

Michael: Or scale out your UPSes further.

Bernie: Right. And, in many environments, if you actually make it run more efficiently, things often run better. So if you can remove hotspots, servers won't fail as often.

Michael: And, going back to our green theme, which is accurately reflected in your shirt and tie today.

Bernie: I try, Michael.

Michael: The other really powerful benefit of reduced power consumption, reduced cooling, and reduced UPS deployment is also greener operations. And maybe we can close out there. Do you guys have any advice for our visitors, in terms of steps that they can take to make their data centres greener?

Steve: I have one simple statement, and that is, "Go get the facts." You can't do anything until you really understand what your energy consumption is, what your bills are, how much they've been increasing, where the opportunities for efficiency improvement really exist, and how simple those things are to do. And it's not all that difficult to get the facts. What we found is, in many cases, clients just aren't paying attention.

Bernie: Absolutely.

Michael: So, if you were going to give us that checklist of three things that a customer should do to get those facts and be greener in their data centres, what would that be? What would your advice to the Canadian group be?

Bernie: Armed with those facts, one of the most common things we find is that the air distribution is usually not very good in the data centre – so simple things, like hot aisle/cold aisle, blanking panels, proper orientation of the equipment...we find things backwards in racks, and that type of stuff. That, in itself, will be like near-zero cost, but a huge benefit in cost reduction as well as better operation of your facility.

Michael: Great. And, beyond air distribution, one or two other things?

Steve: 80% of the time we found that there are air conditioning systems powered on that aren't required. There's a CRAC unit somewhere on the floor that actually is cooling nothing: it's running all the time, and all it's doing is creating cold air that it then sucks in and re-cools. And then the third, I would say, is set point. Typically, if you walk into a data centre and you're freezing, it's too cold. You don't need to have it freezing. You can turn the temperature up. And, for every degree you turn it up, there's a significant savings in energy consumption.

Michael: That's tremendous. Gentlemen, thank you so much for working through the ROI innovation cycle.

Steve: Thanks, Michael.

Michael: Bernie. On behalf of our watchers, I'm Michael O'Neil. Thank you for joining us.