

VIRTUALIZATION IN THE CANADIAN MARKET – A FIRST LOOK AT 2010



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Canadian Market Insight from IT Market Dynamics

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Synopsis

Virtualization is an important force in the Canadian IT industry – as a means of reducing CAPEX and OPEX, as a green IT tactic, and as a stepping-stone to cloud computing. ITMD quantitative and qualitative research shows that virtualization is spreading beyond large enterprise and becoming more important in the Canadian SMB market.

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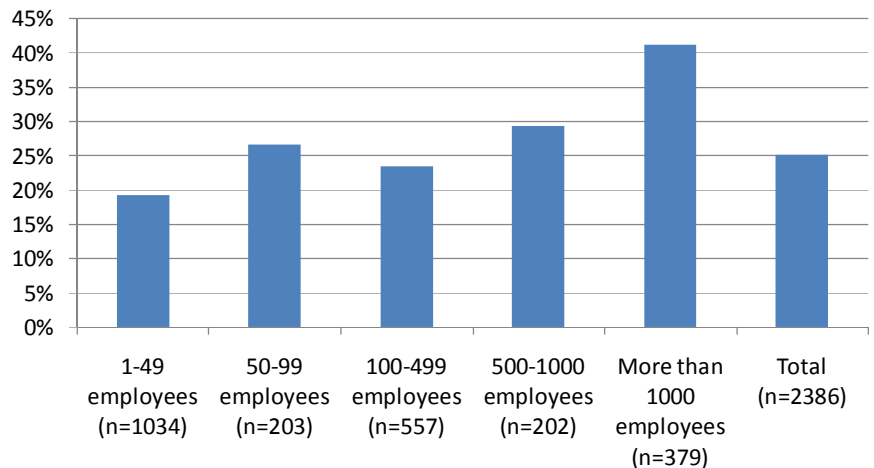
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2009 IN REVIEW

Although it is commonly thought that virtualization can benefit all but the smallest companies, we tend to think of virtualization as a natural fit for large data centre environments. Because they have more servers and server workloads to allocate, large firms have more potential scope of benefit from virtualizing. Major enterprises may also be better able to manage risks incurred during initial virtualization deployment and tuning, since it is easier for a large organization to allocate non-production workloads (such as test and development) to virtual machines.

Given these factors, it's unsurprising that responses to a question contained on the IT Market Dynamics MTI (Market Tracking Initiative) survey, asking about six-month purchase intentions, would uncover more virtualization activity in large enterprises than in smaller environments. However, as Figure 1 demonstrates, a substantial proportion of smaller organizations also reported investment intentions for virtualization in 2009.

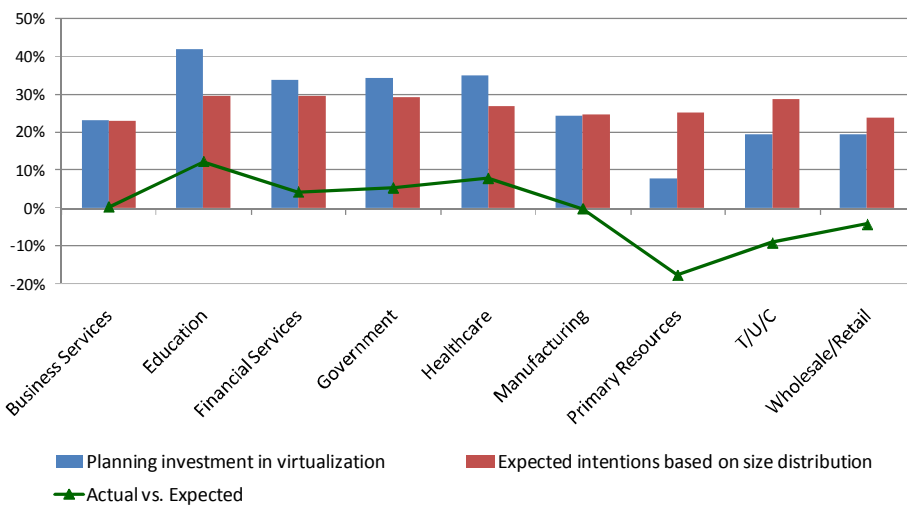
FIGURE 1. 2009 VIRTUALIZATION INVESTMENT PLANS BY E-SIZE



A look at this same data by industry segment presents a second perspective on how virtualization is spreading through Canadian industry. In this chart, we need to consider both the actual proportion of survey respondents reporting virtualization investment intentions, and the proportion that we would expect to see based on the distribution of large enterprise, mid-sized, and small organizations within the sample population for each industry. These two percentages are shown in the blue and red columns (respectively) in Figure 2. The green line demonstrates the difference between the two figures – the gap between what we would expect to find, and what the survey data shows us.

This gap helps us to identify industries with high and low levels of virtualization activity. Looking at Figure 2, we see that virtualization is most prevalent in public sector environments – particularly in education, but also in healthcare and government. Within the private sector, financial services is the segment most active in deploying virtualization. The data indicates that the primary industry and transportations/utilities/communications segments have been slowest to embrace virtualization.

FIGURE 2. VIRTUALIZATION INVESTMENT ACTIVITY BY INDUSTRY



Source: IT Market Dynamics MTI Survey for 2009. N=2425

A third way to look at investment intentions is to compare the perspectives of firms with different budget considerations. If we look at 2009 virtualization spending intentions by the overall IT budget trend within the respondent’s organization – increasing IT spending, flat budgets/no change from previous year, and decreasing IT spending – we see (in Figure 2) that organizations with rising budgets are about twice as likely as those with flat or declining budgets to be pursuing new investments in virtualization. This is an important point, because in our survey on 2010 spending intentions (through mid-January), we have found that the proportion of Canadian firms

THE IMPACT OF VIRTUALIZATION ON POWER MANAGEMENT

If you’ve heard that virtualization software helps organizations improve their environmental footprints, you heard right. But any “green” gains can be offset by poor power-distribution planning, according to one electricity expert.

Chris Loeffler is the Program Manager, Distributed Power Solutions at Eaton Corp., a global power-management company headquartered in Cleveland. He points out that virtual servers certainly do draw less power than traditional servers do. After all, virtualization does away with much of the physical, power-hungry hardware associated with previous-gen servers.

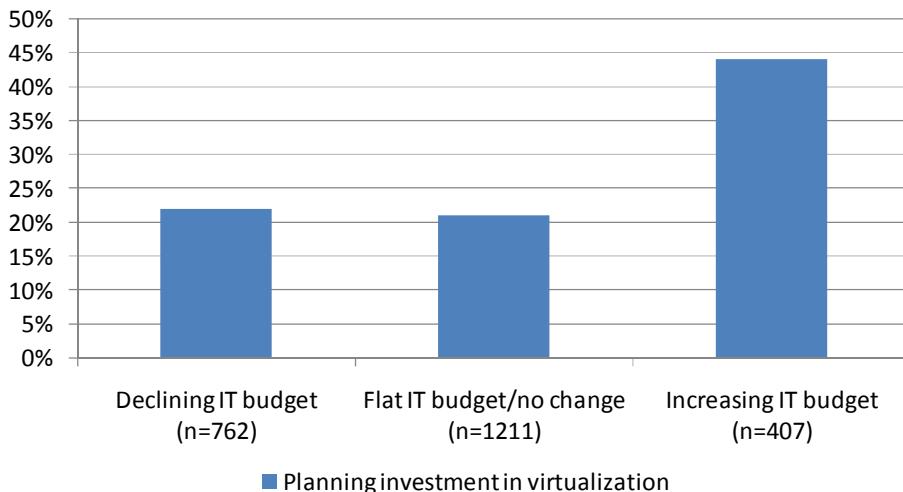


Chris Loeffler, Program Manager, Distributed Power Solutions, Eaton Corp.

But organizations need to be smart about their server infrastructure if they want (continued)

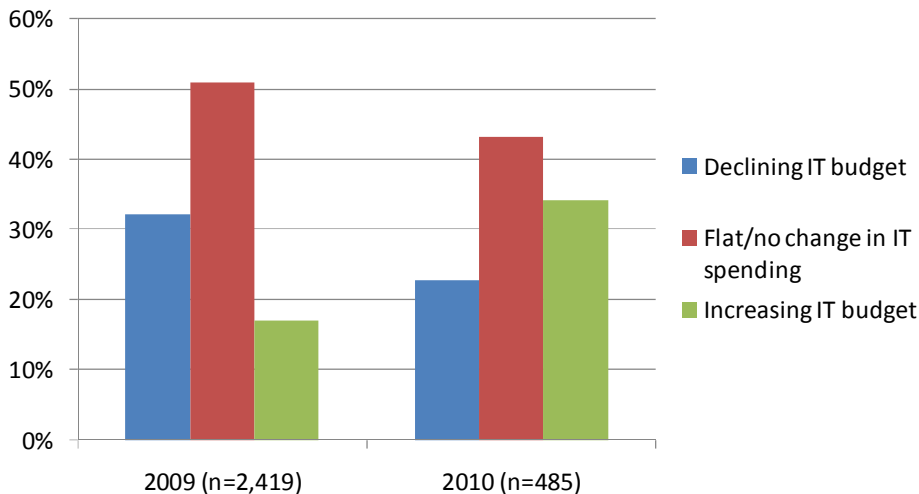
anticipating IT budget increases has doubled, while those with flat or declining budgets has dropped by 20% (Figure 3).

FIGURE 2. 2009 VIRTUALIZATION INVESTMENT PLANS BY IT BUDGET TREND



Source: IT Market Dynamics MTI Survey for 2009

FIGURE 3. BUDGET TRENDS, 2010 vs. 2009



Source: IT Market Dynamics MTI Survey for 2009 and 2010. Please note – 2010 data is still preliminary.

virtualization to make a real impact. That means shutting down older machines that organizations might still have in their data centres.

“For some people, even though they’ve switched over and gone to this virtualized infrastructure now on server platforms, they don’t like to decommission other equipment... which really doesn’t help your power requirements,” Loeffler says. “The people that do it very effectively use the virtualization [to]... shrink the IT platform.”

Power considerations should be top of mind for companies implementing virtualization, he says. In virtualized environments, each physical server holds multiple virtual servers – so if one physical server goes down, many applications could be affected.

“It could become very, very important that you ensure that that system stays up and running all the time,” Loeffler says.

Advanced power distribution units (PDUs) segment electricity loads such that any overloaded circuits wouldn’t disrupt others. Poly-phase technologies ensure an even flow of power to the servers – particularly important in large data centres where servers draw megawatts of electricity. Since the servers are processing more information, it’s critical that the power infrastructure can support

(continued)

2010 OUTLOOK

As we look ahead to 2010, IT Market Dynamics believes that we can expect to see expansion in both the number of Canadian organizations investing in virtualization, and in the depth and technical scope of these investments. Three trends in particular should help shape virtualization in Canada in 2010:

- *Increased penetration of virtualization amongst small and mid-sized Canadian organizations.* The Canadian VAR channel, which is the primary source of supply to the Canadian SMB community, has dedicated significant resources to understanding virtualization – how it works, how best to deploy and support it, and how to describe its benefits to customers. At the same time, the tools available to SMBs are increasingly powerful and easy to deploy – the Hyper-V hypervisor enables virtualization through Microsoft’s ubiquitous Windows Server 2008 R2, and vendors such as VMware and Novell also have capable products that ease the deployment and tuning of virtualized environments. SMBs are able to “hop aboard” a supply infrastructure that can offer advanced support to customers in most locations, and of almost any size.
- *Increased rollout of virtualization within current adopters.* Within the large organizations that have been the pioneers of virtualization, deployment is rarely a one-step process. Most will launch virtualization in a controlled, non-production environment (such as development or QA), and then gradually migrate production systems to the new platform. We expect the pace of migration to increase in 2010, as an improving economy drives demand for rapid deployment of new systems.
- *Increased scope of technology deployment (“beyond servers”).* The term “virtualization” is often used as shorthand for “server virtualization,” but IT managers are beginning to use the technology in other areas. In particular, desktop virtualization offers real CAPEX, OPEX, and green advantages in environments where client devices are fixed in a single location – and especially so when these devices need to be re-imaged regularly, when they are used to access applications and data that is server-resident, and/or where security is a key concern. This makes desktop virtualization a natural fit in several different environments, including financial services, call centres, and healthcare. In 2010, we expect to see the scope of virtualization technology deployment expand to include the desktop in at least some of these environments.

them. “So what we’re seeing from that... is of course increased power demand from the servers themselves on the UPS (uninterruptable power supply) systems.”

Done right, virtualization can have a positive impact on an organization’s electricity bill. Loeffler says virtual storage and desktop infrastructure also play important roles.

“With storage virtualization, you can actually reduce your power consumption,” he says, explaining that virtual storage infrastructure reduces the number of disks required to support an organization’s information, and fewer disks spells less electricity. As for the desktop, it no longer features a massive PC with its own hard drive, because all of the processing power resides on servers. “My screen and my keyboard sitting out at the desktop don’t use very much power, so of course there’s my reduction in power usage.”

As organizations implement virtualization, they should consider adding enclosure PDUs to ensure that the right amount of power is delivered to the server racks, Loeffler says. “Of course, with that goes the requirement for getting the heat generators from all the power being used by all the processors and the equipment in the rack... out of the area. We look at making sure that they don’t take it to the limit so far that they run themselves into additional problems with either power delivery or with heat extraction.”

MANAGEMENT PERSPECTIVES

In virtualization, as in most advanced technologies, one additional key factor will be the ability of Canadian IT managers to reference success stories that are relevant to their organizations – the examples of peers in Canada who have already ventured down the virtualization path, and who can help illuminate the benefits and potential pitfalls associated with deployment. In this document, we present three current Canadian case studies on virtualization: City of Edmonton, Bank of Montreal, and Muir and Associates Consulting. Examples like these are essential to helping Canadian public and private-sector organizations to understand and capitalize on the benefits associated with virtualization.

EDMONTON PUBLIC SCHOOL BOARD

The Edmonton Public School Board (EPSB) first deployed virtualization software in 2008 to make it easier to spool up and tear down the test servers it used in development. Since then, the board has expanded the implementation to cover production as well – and the technology has had a significant impact on the organization’s backup and recovery infrastructure.

“In the past, we did file-level backups... to tape, and you ran a client within the operating system itself,” says Kirk Davis, senior network analyst, EPSB. “Nowadays, with virtualization, you can back [the servers] up at an image level.”

That spells speedier recovery. “If this machine goes down, I can take this image and quickly throw it onto another machine,” Davis says.

The technology impacted the board’s IT infrastructure in other ways. The organization’s data centre now features blade servers operating as the physical layer of the virtualized environment. Smaller than traditional servers, the blades afford more free space, so Davis’s team can add more physical servers as required. The virtualization software helps as well – the EPSB runs 53 virtual machines on 15 blades, and the organization has room for many more virtual servers in its existing system.

“We’re not doing a really high concentration of, say, 20 or 30 virtual machines per server,” Davis says. “We wanted to make sure we do it slow, maintain the performance of those machines.... We’ve only been into it for a year, so we wanted to make sure that we’re not over-utilizing these and causing performance degradation.”

The blades have made a difference in terms of data centre cooling and power requirements. Blade servers generate more heat than traditional servers do, so the EPSB had to bring in new air conditioning to keep the devices from overheating.

“They take a little more power, but not when you break it down per server,” Davis says, explaining that the 15 blades running more than 50 virtual servers are less power-hungry than the traditional equivalent: 50 old-fashioned servers.

Forecasting a stable budget for 2010, Davis notes that virtualization didn’t result in significant capital cost reductions. The school board had to invest in the new blade servers and the virtualization software. But the technology has affected the IT team, allowing the organization to optimize its human resources.

“It doesn’t matter if your budgets are low this year or next year, or the economy is down or the economy is up,” Davis says. “I find that every year, people want to do more and more with technology. That’s ever increasing. So what we’ve been able to do is maintain the people we have and allow them to do more.”

BANK OF MONTREAL

Virtualization isn’t for everyone, says Mark Kovarski, senior business technology consultant at the Bank of Montreal. Although his company is implementing virtualization for both servers and desktop computers, the financial institution does so only where Kovarski and his team feel that the technology has the greatest impact.

“Some workloads, like very high IO intensive workloads, might not make sense to virtualize,” he says. “High IO databases are definitely a challenge.”

He explains that databases operating at high input-output levels often need all of the processing power that a physical server can provide, so it’s difficult to put more than a single instance or two of a database on each machine. This breaks the virtualization benefit model. The technology is supposed to make it easier for organizations to put numerous virtual servers on the hardware, increasing server utilization rates; high IO databases don’t consolidate as easily as other applications do.

The bank has virtualized approximately 20 per cent of its server infrastructure, and just 20 or so desktop computers in a proof-of-concept project to investigate the benefits of desktop virtualization.

“I think in 2010 we’ll see a significant increase,” Kovarski says. “That’s right on par with what I’ve seen in the latest research... for CIOs, that in 2010 they’re hoping to see a surge in the desktop virtualization space.”

“The thinking around that is to leverage the technology to ultimately reduce costs, but also allow more flexibility, quicker time to market,” he says.

Virtualization could help the Bank of Montreal streamline its server and computer management workload, affording the tech team more time for other tasks.

“We see a lot more efficiencies to be gained, from a staffing perspective. Then again, it’s just re-tooling, re-training, as well, that we’ll need. I always say that technology is only one part of the equation. People and process become even more

important as you go through this transformation.”

Kovarski figures virtualization could help large financial institutions manage processing workloads across their infrastructures. Institutions would be able to move their batch processing to idle virtual machines, ensuring that server utilization is optimized.

Heating, ventilation and cooling requirements change with virtualization, because servers supporting virtual machines process more data than traditional servers do, and that results in hot-running boxes. Keeping them from overheating is a concern, Kovarski says – but it’s also easier to move virtual machines from server to server. “You can distribute it in terms of cooling and heating more evenly.”

Note – Mr. Kovarski also shares his perspective on virtualization in IT in Canada’s [ROI Innovation](#) site, in the Cloud Computing section.

MUIR AND ASSOCIATES CONSULTING

David Muir heads up Muir & Associates Consulting, a Delta, B.C.-based technology consulting company serving the mining and resources industry. His firm employs virtualization to be able to quickly switch from one sort of desktop operating system to another.

“We wanted to run both Linux and Windows software,” he says. “On Linux machines we had virtual machines for XP, and on XP machines we had virtual machines for Linux.... I’m developing software for both Linux and Windows, so it was kind of useful to be able to quickly test stuff on either machine.”

Muir also uses desktop virtualization to serve his customers. SJ Geophysics Ltd. conducts geophysical surveys and analyses for the mineral exploration, environmental, engineering, and oil and gas industries. As SJ’s technology consultant, Muir installs virtualization software allowing SJ’s employees to use Windows and Linux on their computers.

“Some software, for instance, will only run under Windows,” he says. “We have a lot of Linux workstations, so we have virtual Windows... to run the software that won’t run under Linux.”

In many cases, virtualization users and vendors suggest that the technology leads to fewer expenses. Often employed for server consolidation, virtualization allows companies to run less hardware, resulting in lower hardware-management costs, lower operating costs, and lower capital expenditures in the long term.

Muir’s situation suggests that desktop virtualization offers a different set of benefits. Users are more productive because they have multiple operating systems at their finger tips, allowing them to access a wider range of applications. But as the user base grows, the IT management overhead increases.

“They all have virtualization so that they have the other operating system available to them,” Muir explains. “That means a little bit more setup... because all the

workstation are dual.”

Muir expects access to funds for technology projects will increase throughout 2010 as SJ increases its employee count, aiming to meet new customer demands.

“We’re getting involved in more types of geophysical surveys.... Our budget in computing and departments and staffing, everything’s going up.”

Muir says his company’s virtualization needs – and those of his clients – won’t change all that much in the next 12 months, however. He figures the bulk of the increased IT budgets will go to support increases beyond the virtual environments.

“I’m going to be putting together a small cluster for my own use, for testing purposes and stuff, so I’ll probably get four (Intel Corp.) i7s.... And I’m looking at the new Fermi graphics card that Nvidia’s going to be putting out.”