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Virtualization and Cloud: Workload Automation Offers Critical Missing Link

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At the heart of many of today's business transformation case studies are virtualization and cloud computing. These technologies help organizations address longstanding issues, such as IT complexities, long software implementation cycles, and spiralling costs. But with so much talk about the technology benefits, one could be mistaken that there is nothing else to discuss. Consolidating servers via virtualization requires a close watch over different workloads, and by automating repetitive tasks required in the computing environment, organizations can begin to drive greater efficiencies and focus on creating business value.

The following questions were posed by Hitachi Asia to Simon Piff, Program Director for IDC's Asia/Pacific Enterprise Infrastructure Practice Group, on behalf of IT directors and CIOs.

Q. Virtualization and private cloud environments seem to be a current focus for IT. What is the value of these technologies to the business?

A. IT budgets are under constant pressure and scrutiny, which means IT directors and CIOs will find it easier to justify technologies that provide the same, or greater, computing capacity but at lower costs. This is precisely what server virtualization is able to deliver: the ability to consolidate the computing requirements of multiple applications, each with their own unique characteristics, onto a common computing platform that can be designed to cater for various workloads. This leads to economies of scale with regards to server capital expenditure, systems management procedures and the costs associated with power and cooling. This also can help to reduce the overall costs of running and managing a datacenter.

However, budgetary pressure is not the only factor driving the adoption of server virtualization in x86 server environments. Virtualization delivers several advantages which include:

- Ability to run multiple operating systems on a single computer
- A reduction in the instances of unplanned downtime
- Faster provision of new services
- Creating an easier and more effective test and development environment
- Improvements in availability and performance

All of these features of a virtual server environment can contribute to a more efficiently run environment. Indeed, when you start to examine the credentials of a highly virtualized datacenter environment, you will find many of these environments to be aligned to the definition of a private cloud computing platform.

Over the past couple of years, the new cloud computing model for consuming and delivering IT services has been highly publicized in the technical and business press. No longer solely reliant on the service and support of the internal IT department, today's line-of-business managers have options. They can choose to subscribe to a complete software package online or, at the other end of the spectrum, opt for infrastructure and platforms as a service where they can develop their own applications that are hosted outside the traditional datacenter. Driving some of this interest in going outside the organization is the perception that internal IT is either too slow or too expensive to meet the demands of the ever-changing business. Consequently, IT departments in many organizations are finding themselves being pushed to provide some kind of cloud offering internally, in order to ensure they do not be perceived as providing no value to the organization. In leading organizations in the Asia/Pacific, private cloud is on the CIO's agenda, although there are also laggard organizations choosing a reactive stance.

So whilst virtualization is a logical extension to the server consolidation projects that were instituted at the end of the last decade, cloud computing is the logical extension of the virtual server environment. These technologies offer economic and strategic advantages to any business; but there is an often overlooked, critical component of the technology if private cloud is to deliver the most benefits: workload automation.

Workload automation is the ability to automate many of the batch jobs and processes that IT departments spend a lot of time manually executing. Without the highest levels of automation in place, it is difficult to achieve the true benefits of a private cloud environment, since the dynamic nature of the platform requires a high degree of 'lights out' automation that, for many system administrators, is a challenge to deliver upon.

Q. Despite this interest, not all organizations are jumping on the bandwagon to implement cloud computing and virtualization. Can you explain this?

A. The adoption of virtualization is increasing in the Asia/Pacific region. According to IDC's *Server Virtualization Market Sizing 2010–2014 Forecast: From Virtual to Reality*, the rate of server virtualization adoption will reach 21.4% in 2014, almost double from 11.5% in 2009. With all the information available about the value of server virtualization, the often-asked question is: Why is the penetration rate not higher? To begin with, for the most part, this wave of virtualization is focused squarely on the x86 server platform, in spite of the x86 platform dominating the Asia/Pacific server shipments (1.3 million new x86 servers shipped in 2009 compared to 58,638 units across the other three platforms: CISC, EPIC and RISC).

A 2010 IDC survey with 990 IT decision makers across Asia/Pacific revealed several reasons why some organizations have been slow to deploy virtualization. These include difficulty in demonstrating business value and return on investment (ROI), concerns about performance and availability as well as support issues and the lack of qualified IT personnel.

The results of this survey provided some interesting and unexpected results. One of the key value propositions of server virtualization is the ability to reduce costs; however, the inability to prove a return on investment (ROI) was the main reason most non-users cited for not adopting the technology. The second reason was the concern about the level of performance and availability. In 2010, the major virtualization vendors began suggesting that virtualization was an alternative to the more established clustering and availability approaches, and that a highly virtualized environment, by definition, will provide high availability – this does presume that sufficient computing power is delivered by the underlying hardware platform – but this is a hygiene factor that most systems administrators and server vendors would address at a very early stage.

But more critical were the last two reasons of support issues and lack of qualified IT personnel, which IDC believes are the more likely reasons why server virtualization is not

being adopted as rapidly as the economics would imply it should be. Managing any computing environment is a challenging prospect due to the issues of complexity that have to be balanced with the business expectation of 24/7 uptime. Consequently for many IT directors and CIOs across the region, much time is spent simply 'keeping the lights on', that is to say due to the evolution of the systems and infrastructure that they are left to manage, the issue of constrained budgets is not nearly as important as the lack of available free time and trained resources to seriously study the impact and benefits of moving to, what is essentially, a new architecture for the datacenter. This is not to say that IT directors or CIOs are not aware of the potential benefits. With their systems administrator team constantly providing manual intervention into the systems and processes, there is often little time available to think beyond the immediate needs of the moment. Considering the difficulty in releasing resources from the day-to-day management tasks for more strategic planning, these types of environments would benefit materially from implementing higher degrees of automation into their environment, thereby providing them the ability to plan for the future in greater depth.

Q. What advice does IDC have for organizations that continue to have concerns about these technologies?

- A. Managing IT is about many things, but probably high on the list is to mitigate risk. For many, this manifests as high availability or disaster recovery, but this misses the critical core feature of IT – it evolves. IT is constantly changing and constantly improving as new technologies and better processes are introduced.

The challenge for IT administrators is to ensure that, whilst the immediate demands of the organization are constantly met (the highly available, secure environment we have all come to expect), there is also a continuous review of the longer term strategic IT plan – a plan which, by the way, will almost never be implemented in the manner it was first envisioned. The concept of the 'five-year IT architecture roadmap', or something similar, is a highly valued document, but in the five-year gap between inception and anticipated delivery, so much within the IT markets would have changed that the original plan would be outdated within a matter of months. And although the process of planning itself is invaluable, IT management cannot assume that what they have in place is ever going to be current for longer than that moment in time that it was implemented. Almost immediately something new will have arrived that leaves the current system, not necessarily obsolete, but certainly dated.

So clearly for any organization that has neither a plan nor the interest to implement a highly virtualized datacenter or move to any form of cloud computing, private or otherwise, it is time to rethink and closely examine the technologies available and the business drivers. Yes, there are some organizations and parts of some infrastructures that either cannot (due to legislation or a core requirement) or will not (i.e., applications sit within a non-x86 environment with no x86 alternative offerings available, such as some ERP applications and, to a larger degree, highly customized or in-house developed applications, and cannot migrate) move to a cloud environment, many organizations have an abundance of applications and services that could benefit from this move.

Besides the core technologies, however, there is a requirement to re-examine the existing processes and policies of an organization, in order to derive the maximum benefits. For example, whilst a highly virtual environment has the technical ability to provision a server in a matter of minutes, as opposed to hours or days, if the approval processes are not considered and it can take months in some organization types to receive such approvals, then the benefit of the technology is moot and the business benefit of advanced agility is almost totally lost.

Furthermore, there has been a lot of focus on the overall management of the virtual environment and here, the new ideas and concepts are sometimes totally the opposite of what many system administrators have been taught and have evangelized as best

practice. For example, the entire virtual concept separates the application from the hardware. In the early days of virtualization, this caused a lot of concern for organizations that had grown up with the application and server being physically a single system. What happened to the early adopters of virtualization was that they gradually weaned themselves off the dependency of this linear alignment, admittedly as the availability, quality and reliability on the tools to manage a virtual environment grew. Today, in some of the datacenters being built, there is no permanent connection between the application and the hardware, the management tools manage the connections virtually, and the levels of automation have reached new levels that non-virtualized environments are challenged to envision.

Clearly the tools to ensure the system is running smoothly are a critical part of this entire ecosystem; monitoring tools have evolved, and indeed some vendors offer tools that can monitor both virtualized and non-virtualized environments. As the tools have evolved to have a greater reliance on the automation components, those systems that can monitor the virtual environment and report on the levels of compliance have become essential. To prosper in the virtual environment, many of the preconceived notions of how applications servers and storage need to be connected have to be suspended, and greater trust in the tools that manage this virtual world has to be assumed.

Q. Why are tools like job scheduling and workload automation important when implementing these technologies?

A. The virtual server environment can be a highly dynamic environment — the ability to load balance workloads as required by policy and the ability to rapidly provision new server workloads, with the associated compute and storage capacity, are examples. Critical to this ability, however, is the requirement for automation.

Job scheduling and workload automation, with the latter viewed by many as the more advanced of the two processes, drive deep efficiencies within the computing environment. By automating many of the repetitive tasks, such as running scheduling services on a regular and predictable schedule (e.g., daily backup procedures and updating of databases within the computing environment), organizations can begin to more efficiently meet the needs of the business. By automating and scheduling these processes, the systems administration team can manage the system by policy, as opposed to by task, and thereby be more efficient. The ability to create a process once, define its schedule and its interdependencies, and then have the system run this process at the predefined time enables the systems management team to focus on more value-added operations since the 'housekeeping' is automatically taken care of.

At the same time, these tools provide valuable logs and reports of the status of these events. In the IT world, where time is the most critical resource, the ability to not only have to manage by exception, but to have ongoing status updates as well, allows the IT management team to remain focussed on aligning systems to the business requirements, not the day-to-day management chores that have taken up much of their time in the past.

Key benefits of implementing job scheduling and workload automation software include:

- Increased speed and efficiency of batch-type jobs
- Decrease in likelihood of human error
- Provides continuity of business and guards against IT staff turnover

Clearly, as we see more organizations embracing virtual server environments and private cloud, these tools will become more critical to success. This is key since the speed at which virtual environments can operate is only hampered by the relatively slow pace of human interaction.

ABOUT THIS ANALYST

Simon Piff has more than 17 years of regional experience in the IT industry, serving in various sales and marketing management roles for hardware, software, services and online businesses. As Director for IDC's Asia/Pacific Enterprise Infrastructure Research Practice, Simon is responsible for the execution and delivery of the program in the Asia/Pacific region focused on providing advice around the technologies that define enterprise infrastructure (servers, storage, networking and infrastructure software) and technology areas such as security, private cloud and virtualization.

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