



I D C V E N D O R S P O T L I G H T

Workload Automation: The Essence of Successful Datacenter Virtualization

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By Simon Piff

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The benefits of deploying a highly virtualized x86 server environment has been well-documented: cost savings in terms of capital expenditure (hardware and network consolidation) and in operational expenses (such as power and cooling) as well as time – and therefore money – saved due to improved manageability. However, there are two areas that are critical to gaining the fullest return on any virtualization investment, and that is in the area of job scheduling and workload automation. This IDC Vendor Spotlight takes a critical look at today's enterprise challenges and how job scheduling and workload automation can help IT directors gain better efficiency, manageability and performance of their enterprise environment. We also discuss the role of Hitachi Asia and its new vigor in helping Asian enterprises maximize the benefits of implementing the JP1 tool.

Introduction

In 2010, the term "cloud computing" moved from being a marketing concept to a technical reality. Organizations in Singapore and the Asia region had come to realize that their virtual server environments had evolved into a cloud computing infrastructure, albeit in a private computing environment. Today, much of the motivation to establish internal cloud computing has been largely driven by the expectations of business users who have succumbed to the tantalizing messages promoted by public cloud service providers about their services. The vendors' pitch of potential cloud benefits include:

- Rapid provisioning
- Easy to use
- More economical
- Instantly, and permanently, available

The promise of cloud puts pressure on internal IT staff to ensure that these are the same characteristics of the internal IT systems. Should IT fail to deliver to these high standards as positioned by public cloud service providers, then it is a natural outcome that the business will seriously consider subscribing to IT services beyond what is delivered by the internal IT department.

In a 2010 survey conducted by IDC Asia/Pacific, which set out to understand the differences between the major concerns of IT and that of the business, two things became apparent:

- Business users (CxO level) and IT management concerns were not aligned
- The business was, generally, dissatisfied with the level of service from the IT department

This finding was not a huge surprise and reaffirmed that there are significant gaps between business and IT. This perception by the business is not something that developed overnight but usually built up over a period of time. This level of dissatisfaction is also accelerated by the growing awareness of cloud computing.

At the same time, IT departments are either undergoing or have recently undergone a huge transformation within the datacenter; x86 server virtualization has almost become the standard, whilst the flattening of networks and architectural changes that need to cater for power and cooling issues are emerging as significant, new concerns for datacenter managers. Each of these changes comes with their own set of challenges, challenges that the average business user neither cares about nor understands the impact.

Whilst IT management needs to undergo some major shifts in order to remain relevant and strategic to the end users, the challenges that led to this dissatisfaction from the business have not changed and indeed are more prevalent than ever. Issues arising from managing the complexity of existing IT infrastructure are becoming so burdensome that many CIOs are spending inordinate amounts of resources to simply "keep the lights on." The demands of the existing infrastructure place such pressure on the IT team that there is no time left to consider the strategic value of IT within the business context. Instead, all the available resources are exhausted in the process of maintaining the systems that have been built up over a period of time. If something is not done to change this scenario or to ensure that the role IT remains strategic within the business, the future of cloud computing will spell a cloudy future for internal IT resources.

Opportunities for IT Management

There are, however, opportunities for improvement within the previously described environments and the business demands for cloud-like attributes provide just the opportunity to embed some of these tools and processes into the more strategic infrastructure transformation projects.

Workload automation, for example, is a highly underutilized tool within many organizations but has the propensity to relieve the IT team of mundane tasks that absorb so much of their time, allowing the IT department to re-deploy valuable assets to more strategic and value-added projects.

In the current IT markets, the evolution of the x86 platform has resulted in a rapid shift from server consolidation to server virtualization over the past few years. What started out as a project to reduce the physical server footprint has transformed into the deployment of a highly virtualized x86 server infrastructure, where the standard operating procedures of the last decade are no longer relevant. The old processes for provisioning a server and its associated network are almost redundant, with greater emphasis on how the virtual environment will automate much of the tasks done manually. This is forcing IT departments to reassess their environments and leading to a greater reliance on software to take care of workloads that had previously been manual.

This wave of automation is not necessarily having the same effect on the existing legacy systems, many for which are not on the x86 platform and, therefore, not being buoyed by the current wave of focus. However, there are also many opportunities to automate jobs. Consider the enterprise resource planning (ERP) tools that have been deployed on these other platforms, and at a time when much of the procedures were designed to be manually driven to ensure consistency and relevance to the business. Times have changed, and so should these processes.

Cloud computing is also changing people's approach to IT management. There is a lot of emphasis on monitoring of systems and resources, which in turn leads to opportunities for event-based activities which, by the very nature of the systems upon which they are being built, should provide opportunities for automation. Cloud, especially private cloud, is becoming more prevalent and cloud, by its very nature, needs to be a highly automated platform.

Therefore, the opportunity for IT management can be summarized as the need to address the following areas:

- Systems management, especially job scheduling and workload automation
- The need for tools and processes that can span multiple platforms

- The move towards private cloud environment and the associated automation that is necessary

Given the pressures on the IT department to ensure system availability and reliability with limited budgets and resources, IT management needs to take a fresh look at making existing systems more efficient, more effective and less reliant on human intervention. In short, understanding how and where workload automation can be extensively applied.

Benefits of Effective Workload Management

Job scheduling and workload automation are not new concepts and have been around for a long time. However, with the evolution of computing paradigms, the shift from the mainframe to mini-computers, through client server computing to the Web-based world we are in today, the focus on workload automation has changed over time.

More enterprises in the Asia/Pacific region have started to look at workload management. Many are putting more focus on systems and process management tools as these tend to have the potential to make high-impact changes that could radically change the demand on resources for intensive IT management tasks. CIOs need greater visibility into their existing workloads, especially in highly virtualized environments, in order to gain insight into what can be managed automatically and what requires human intervention.

By having the ability to identify which end users are using what service, and by understanding the connections and relationships between services and activities, IT departments will have the potential to differentiate themselves with regards to IT operational management. In order to achieve this, IT departments will require monitoring tools that can detect server problems and issues, but also provide information on the effective utilization rates of underlying physical assets, and this will need to span both traditional and virtualized environments.

Job scheduling and workload automation provides multiple benefits. Not only in the ability to reduce human intervention, which in itself can be hugely beneficial in the ability to reduce human error in repetitive mundane tasks, but also in the areas of security and compliance. Security and policy requirements can be implemented relatively early in the IT refresh cycle, thereby enabling administrators to refocus efforts on more value-added workloads.

Considering Hitachi JP1

Job scheduling software is used to manage the flow of work on systems. Traditional job scheduling is based on managing the execution sequence of a set of batch jobs. Job execution sequences can be based on a number of factors, including time-of-day and calendar-driven requirements, resource availability, external priorities, and completion of other jobs and other types of "triggers."

Many business processes are based on the completion of complex job sequences that are controlled by job scheduling and workload management software. Enterprise job scheduling brings automation and centralized control to the execution of the steps needed to execute business workloads and processes. Enterprise job scheduling helps to support key IT and business priorities, including efficient operations, cost savings, delivery of required service levels, application integration, and communication of status to IT operations staff and users.

System-level job scheduling generally invokes applications and does not include detailed knowledge of application-specific details. Many enterprise applications include heavy batch processing requirements and contain an internal job scheduler. Examples include SAP, PeopleSoft, and Oracle E-Business Suite. An external enterprise job scheduler can support wider levels of application automation than an internal scheduler alone. This allows integration of other custom or packaged applications with the enterprise application.

Job scheduling was initially designed to process workloads running in mainframe environments. Classic examples include the use of job schedulers to schedule the execution of batches of

financial transactions such as those accumulated during the day to be processed during an overnight or third shift "batch window." Today, job schedulers also exist for distributed platforms, especially Unix and Windows. Workloads can include jobs that run on multiple platforms, requiring cross-platform job scheduling. These kinds of jobs must be scheduled in a coordinated fashion, such as using triggers that signal when a job on one platform has completed and a job on another platform can be started. Integrated job scheduling software can enable a single group of IT staff to manage the schedules across platforms without requiring specialized platform or application skills.

Traditional job schedulers are driven by time-of-day and calendar processing requirements. The large growth in online and distributed applications has raised the need for event-driven scheduling, which can initiate a job in response to an external event, such as the arrival of a financial transaction from an end user, over the Web.

Event-driven job scheduling extends automation to real-time and online applications, driven by the competitive need for Web-based access to IT services.

IT departments are employing a variety of tools and methods to automate the operational management of jobs and workloads. The need for real-time access and operations, the complex infrastructure environments, and the need to combine job scheduling with other IT management functions have led to a patchwork of point-to point connections and specific product integrations, often achieved by the use of hard-coded scripts. However, such techniques are typically tactical in nature and often lack a higher-level focus on workflows, IT processes, and business services.

Hitachi's Job Management Partner 1 V9 (JP1) is an integrated systems management suite of tools that combine workload automation and job scheduling with monitoring and compliance capabilities. Initially designed as a job scheduler leveraging Hitachi's experience with the mainframe market, but specifically for the Unix platform, V9 was launched in December 2009 and offers a range of tools that will help IT management teams with the processes of monitoring, compliance and automation. It is available across all major operating systems currently in use today. One critical requirement in today's environment is the ability to manage these roles within a virtualized environment, and JP1 is capable of doing this.

Multi-Platform Support

JP1 can be run on multiple platforms including Microsoft Windows, HP-UX, IBM-AIX and Oracle (formerly Sun) Solaris, and the JP1 AS/400 linkage option can provide a seamless integration into the execution schedule.

User Friendly Interface

JP1 provides a user-friendly interface that allows for the efficient definition of jobs as well as the relationship between jobs and jobnets. This customizable menu allows functions to be tailored to the role and authority of the user or classified according to user objectives.

Flexible Automation

Various execution styles are available, including planned execution (at specific dates and times) event execution (events occurring as a result of the specific actions taking place within the system) and immediate execution style to cater for ad hoc requirements in the environment.

Easy Configuration Management

Virtual and physical server configurations can both be managed through the easy-to-use GUI.

Visual Monitoring

At a glance, users can see which jobs are running or completed, and identify any problems that may occur.

Virtual and Physical Server Environment Monitoring

JP1 provides the ability to monitor both physical and virtual server environments, but also permits the tracking of the utilization status of both physical and virtual environments.

Customer Use Case

Many of these tools proved invaluable to printer manufacturer Epson Singapore which implemented Hitachi JP1 to automate their job management. Prior to this implementation, Epson suffered from a lack of visibility into much of their job schedule, and a lot of the tasks were manually triggered. With its operations in Singapore, Indonesia and Malaysia to oversee, this clearly was an inefficient process that Epson needed to address.

Post implementation, Epson was able to realize a single view of all jobs in a graphical format. This clearly provides them with a more efficient way to understand the systems and manage the system "by exception."

This high degree of automation also has benefits for the IT department in that these jobs can be run after hours, and with the notification systems in place, enable the IT team to reduce overtime and refocus their energies on more value-added tasks.

Opportunities and Challenges

Hitachi JP1 V9 is a strong product which addresses many of today's CIO concerns across both physical and virtual server environment, such as balancing the ongoing issues of managing a complex IT environment with restricted budgets, whilst delivering upon the rapidly changing demands of the business. Although the tool has made a name for itself in Japan, particularly in the banking sector, awareness is the major hurdle that Hitachi has to overcome for JP1 V9 to be more widely accepted in Singapore and the Asia region.

Despite the growing interest in the compliance and monitoring markets, and with the pressures on CIOs to streamline their operations and to become more efficient, end-user education is needed to ensure the message that Hitachi can deliver to the market is received by the right audience.

Included in this audience is a need for systems integrators and implementers to understand the capabilities of this offering and how it can contribute to their current portfolio of products and services. Clearly, Hitachi has a good product and yet it does need to work on establishing partnerships with the right channels that have the expertise, skills and processes to implement the technology.

Conclusion

Cloud computing is becoming a reality that cannot be avoided, and virtualization is fast becoming the de facto standard for deploying on the x86 platform. For IT departments to stay relevant to their business users in the years ahead, there needs to be a more consolidated focus on the optimization of processes and procedure, automation and job scheduling being a much underutilized component of this strategy.

The other consideration is that efficiency is the much sought-after goal of all CIOs. The ability to efficiently manage the IT systems, to efficiently manage the available human and capital resources, and to efficiently ensure the organization is receiving from the IT systems what it needs to excel in the business environment.

Contrasting this are the unending demands of the business for more capacity, flexibility and agility while the existing systems, generally built up over a period of years with old operating procedures, provide constant friction, slowing the path to efficiency.

To overcome these issues, IT systems need to be updated, refreshed and upgraded and yet the budgetary will-power to finance a new datacenter is not a reality for many organizations today.

The much overused dichotomy of "do more with less" must by now be jarring the bones of most CIOs. Unfortunately, this situation is exacerbated by the current drive towards cloud computing and the corresponding (and sometimes unrealistic) expectation of the business users, putting further pressure on CIOs to address these issues.

Workload automation is one area that can deliver direct and immediately realized benefits to the IT organization, allowing for less manual intervention and correspondingly fewer errors whilst freeing up people to be re-deployed to more strategic tasks.

Hitachi JP1 V9 can deliver on these requirements and provide monitoring and IT compliance opportunities. Hitachi does need to expand its customer references beyond the current, mostly Japanese client base, but the opportunity for them is substantial, assuming they are able to educate the end user and channel markets sufficiently.

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