Managing the Shift to Enterprise Private/Hybrid Clouds

by Phil Hochmuth | June 2010

Executive Summary

Businesses are turning to cloud computing architectures to reduce IT capex, increase IT agility and streamline operations. Cloud computing—which Yankee Group defines as dynamically scalable, virtualized information services delivered on-demand over the Internet with multi-tenant capability, service-level agreements (SLAs) and usage-based pricing—is emerging at just the right time. The majority of enterprises are seeking the value and dynamics the cloud affords, but they want it deployed on their internal network or with a combination of public/private platforms—hence the growth of private and hybrid clouds.

Powering necessary network elements—beyond virtualization—to support the delivery of utility computing in the data center is fundamental in transforming the enterprise. However, CTOs/CIOs must identify the readiness of their company holistically, including the processes and controls that will ensure a more reliable, manageable and secure delivery of IT services.

In this report, and as discussed in the June 2010 Yankee Group Webinar "Management Challenges in the Shift to Internal Cloud," we explore some key building blocks for the readiness, deployment and operational controls of an internal/private cloud and hybrid approaches. We review adoption considerations, as well as how virtualization and cloud delivery of IT services can impact infrastructure management. We also examine the challenges associated with data centers monitoring cloud services and highlight AccelOps as an example of a vendor advancing a holistic approach to infrastructure monitoring, bridging data center and cloud services.

This custom publication has been sponsored by AccelOps.

I. The Move Toward Internal Cloud

As illustrated in Exhibit 1, private/internal (57 percent) and hybrid (31 percent) are the most popular types of cloud computing models, according to Yankee Group's December 2009 enterprise survey. Since perceived and actual issues associated with cloud reliability, security and governance have yet to be resolved, the in-sourcing approach of a private cloud, which enables enterprises to enforce process, security and access without affecting reliability, seems to be a savvy move for CTOs/CIOs looking to revolutionize IT.

Given that IT budgets remain tight even with the pressing need to deliver new applications and improved performance, CTOs opt for solutions that minimize cost and improve manageability. First and foremost, virtualization technology helps enterprises lower costs and accelerate the delivery of enterprise applications. However, virtualization is only a foundation technology. The next step for CTOs is to deploy an on-demand computing infrastructure that hides the complexity of IT from enterprise users, while giving IT more control over resources—including the means to reallocate and realize both capital and operating cost efficiencies. This requires re-engineering of physical infrastructure, business processes and supporting tools, as well as corporate culture, as prerequisites for cloud success.

II. The Building Blocks of a Private Cloud

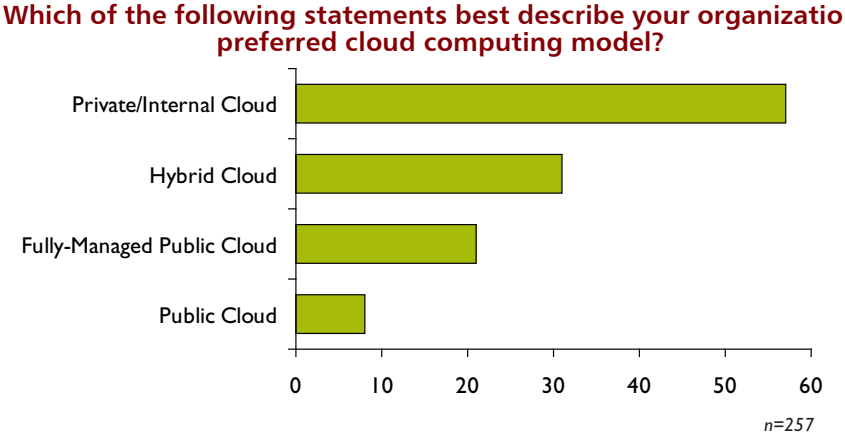
CIOs are building out their IT infrastructures employing virtualization technology, but just because IT now has a faster means to deploy and provision computing resources does not mean productivity automatically improves. In most cases, IT and application owners still need to manually change layers of management processes including scripting and coding to ensure service availability, compatibility and security when deploying pools of virtual machines (VMs). To manage and balance workloads effectively, CIOs must assess their internal processes and management requirements. Of course, user readiness is the last piece of the puzzle to complete the picture.

Preparing for the Shift

The idea of sharing compute resources across all business units and optimizing utilization of resources in the data center is appealing to CTOs. But getting to the point where all business stakeholders fully understand the benefits of the cloud computing model and are able to make strategic investments is an important part of the adoption process. Problems often arise when enterprise IT overlooks the diverse needs of internal users. Companies must first prepare employees for any upcoming changes, including adoption of cloud-based solutions such as the interface for procuring and accessing resources. IT organizations should also assess their expertise, processes and tools that will enable a phased transition to internal/private and hybrid cloud activities. Other aspects to consider include service levels, security, compliance and, with regard to public clouds, the legalities that may come to play—specifically, ensuring that resource access controls, data access, data protection, operating-level agreements (OLAs) and SLAs are defined and known. To that end, business owner expectations and requirements will have to be set. Overall, these organizational readiness tasks present a challenge, but they are necessary to ensure a successful cloud computing deployment.

Exhibit 1: Enterprises Prefer Internal and Hybrid Cloud Computing Models

Source: Yankee Group's Anywhere Enterprise—Large: 2009 U.S. Transforming Infrastructure and Transforming Applications Survey, Wave 1-12, December 2009



Network Considerations

As companies become more dependent on their IT infrastructure to deliver resources from a pool of consolidated computing power and storage, they must not only ensure the ability to meet user requirements on demand, but also the reliability and security of the network, be it on-premise or off-premise. Access control that authenticates at the network layer and endpoint is a prerequisite for delivering cloud-based services. Beyond the usual security concerns, cloud-based controls can be more challenging. Understanding how the record of access controls and respective operational changes is captured, verified and recorded is extremely important for both internal and external clouds, given the degree of automation and potential extension of control to third parties.

Although virtualization offers the benefits of consolidation and provisioning automation, it can adversely impact IT service delivery and reliability. Running multiple VMs and their respective applications across multiple servers creates a dynamic environment with the potential for VM sprawl, VM resource issues and dynamic VM switching. VM movement, which can be automatically or semi-automatically triggered due to resource configurations, can impact how quickly IT can identify, diagnose and resolve an application fault, a compliance issue or performance degradation affecting critical business services. Diagnosing and resolving VM problems across virtualization layers is not trivial task. For example, activity on a physical network, a server hardware issue or a potential attack to the hypervisor console can all impact application performance, but the effects will not necessarily be apparent with conventional virtualization management tools that focus solely on VM resource, configuration and migration parameters. As companies move to utility-based internal or hybrid cloud models, additional virtualization management capabilities will be needed to resolve resource optimization, root-cause analysis and application performance issues.

Management Becomes Even More Critical

A true cloud computing infrastructure allows enterprise IT to dynamically scale compute resources and automate provisioning of compute resources and applications. Another critical area is monitoring and control. Service availability is a given; performance (and potentially OLAs or SLAs) is the measuring stick. One of the significant challenges for enterprise IT is to ensure the stability and performance of resources and applications in both the physical and virtualized environments, as described in the previous section. The ability to collect business-driven performance data is critical for enterprise IT to support service-level management and transparency. Monitoring tools should enable enterprise IT to define and implement controls in a cloud infrastructure. Policy alignment and audit automation are key elements that will also help enterprises demonstrate their ability to support industry or regulatory compliance. Fortunately, network and systems management software vendors, as well as service providers, are all looking to address these new operational challenges. Data center management has to go beyond separately managing physical and virtual machines/resources to ensure the stability and performance of internal or cloud-based applications that affect IT business services.

III. Data Center Monitoring as a Service: A Report From the Field

The growth potential of automated service provisioning and related management has caught the attention of IT vendors. Among them, AccelOps is one of the few taking a holistic view in monitoring IT infrastructure and services across physical and virtualized environments. AccelOps offers an integrated data center monitoring solution as either a virtual appliance or SaaS. The platform offers a wealth of key IT monitoring functions: configuration management database, device health, performance and availability management, application response, virtualization management, logging and security event management, as well as identity and access management. In addition, the solution automates the process of mapping IT business services as groups of applications and infrastructure devices. This enables visibility into data center, network and cloud resources for the purpose of operational visibility, root-cause analysis, reporting and service instrumentation.

The holistic view of the AccelOps solution has been put to use at the Jewish Home of San Francisco, a nonprofit organization serving the greater San Francisco and Palo Alto area community's growing senior health care needs. The Jewish Home has been expanding to address the burgeoning elderly health care market and has appropriately grown its IT capacity. Richard Navarro, the director of IT, leads a staff that supports more than 900 employees at two major sites.

The nonprofit has been using AccelOps' SaaS-based solution for one year. With AccelOps, the IT organization gained a single, unified view of its infrastructure, taking advantage of the platform's automated discovery, cross-correlation, alerting and reporting capabilities. The company is applying the product across IT functional domains and leveraging the business service mapping feature to further collaboration, problem resolution and service reliability. Some of the results include:

- 30 percent improvement in definitive root-cause analytics for fault management
- 70 percent improvement in configuration management in terms of declaring changes and trending patterns
- 40 percent efficiency in identifying Layer 3 issues
- 70 percent efficiency in identifying Layer 2 (user experience) issues
- 80 percent improvement in security and compliance management.

"Overall, the value has proven itself to be highly cost-effective, especially given our needs, the complexity of our infrastructure and our growth," Navarro says.

IV. Recommendations

As enterprises consider either an internal cloud-focused transformation of IT or the use of cloud as an additional IT asset, integrated with internal IT platforms, we suggest IT and business teams follow these guidelines:

- **Ensure the cloud computing business case is sound**. The economics of cloud computing are compelling, but the cloud may not be applicable to every business scenario. Assess the extent to which a cloud service can support and augment your business, as well as benefit your IT staff and end-users in the short and longer term.
- **Don't overlook the implementation process**. An important aspect of successful cloud computing implementation is ensuring a high degree of internal collaboration and accountability. In an effort to break down the technology silos and user resistance, leadership must prepare business users and IT operations. Get internal constituents involved in terms of requirements, processes, liability, service levels, operating controls and security provisions. Identify key controls and what must be monitored to ensure performance and availability.
- **Evaluate your capabilities and preferred partners**. Be sure to evaluate your technical capabilities and process alignment regarding internal/private clouds and exploring external cloud services. This can include training, on-site support, management and reporting.
- **Assess your IT management tool portfolio in the context of cloud plans**. Internal/private and hybrid cloud models require additional and potentially new levels of control and governance. Invest in standards-based technologies and management tools to achieve consistent service experience and management efficiency. This includes the means to automate monitoring capabilities that support bridging internal and cloud-based infrastructure.

Yankee Group—the global connectivity experts

The people of Yankee Group are the global connectivity experts—the leading source of insight and counsel trusted by builders, operators and users of connectivity solutions for 40 years. We are uniquely focused on the evolution of Anywhere, and chart the pace of technology change and its effect on networks, consumers and enterprises.

For more information, visit http://www.yankeegroup.com

Yankee Group's Link products and services provide clients the insight, analysis and tools to navigate the global connectivity revolution.

Research	Leverage qualitative research to make informed business decisions today and plan for the future.
Data	Gain quantitative insight into current markets and new opportunities via monitors, surveys and forecasts.
Interaction	Connect with analysts to gain deeper insight into research and trends.
Consulting	Get in-depth analysis and actionable recommendations tailored to your needs.
Events	Access world-class events live and online with industry leaders and Yankee Group experts.

Phil Hochmuth, Principal Analyst

Phil Hochmuth is a principal analyst in Yankee Group's Anywhere Enterprise research group, with a focus on cloud computing. His research analyzes enterprise demand for cloud computing, including the adoption drivers and inhibitors of software-, platform- and infrastructure-as-a-service models in the enterprise. Phil's research also analyzes and evaluates current cloud computing technologies and business models from both a vendor and provider perspective.

Headquarters

Corporate
One Liberty Square
7th Floor
BOSTON, MASSACHUSETTS
617-598-7200 phone
617-598-7400 fax

European
56 Russell Square
LONDON WC1B 4HP
UNITED KINGDOM
44-20-7307-1050 phone
44-20-7323-3747 fax