Enterprises See Key Benefits in Deploying Cloud Services with Virtualized Network

The promises of increased cost efficiency, flexibility, and improved scalability continue to drive interest in cloud computing services. But while promising significant benefits, moving to the cloud also requires organizations to take a new approach to IT. Full migration to cloud computing is a big step, and certain "foundational technologies," such as chargeback and self-service provisioning, need to be in place.

So how are IT decision makers at global enterprises actually using cloud computing services today? Where do they stand in terms of implementation? What are the top drivers for implementing cloud computing services? How satisfied are decision makers with the effectiveness of their cloud investments? What are their future plans?

To answer these and other questions, IDG Research Services surveyed IT executives from the United States, the United Kingdom, Hong Kong, and Singapore. A total of 300 surveys were completed between March 14 and March 23, 2012.

This IDG White Paper summarizes the key findings of the survey. It begins by exploring how respondents rate the current state of their cloud implementations. It then looks at their future plans for cloud computing services. Finally, it gauges respondents' interest in cloud computing services that include a virtualized network.

» Current state of cloud: Full speed ahead

The survey confirms that cloud computing continues to gain momentum. More than one-third of respondents worldwide (38%) have implemented cloud in one or more locations, and another 23% are pilot-testing cloud projects. According to the survey, U.S. respondents are significantly more likely than their counterparts in other regions to have implemented cloud in one or more locations.

Increased cost efficiency is the top driver for implementing cloud services at these organizations, followed by flexibility and improved scalability.

Overall, respondents report high levels of satisfaction with the effectiveness of their cloud investments. Among those who have implemented or are pilot-testing cloud services, 73% say those investments enabled flexibility, 71% say they enabled improved scalability, and 65% say they enabled improved SLAs/scalability. Just 51% say those investments enabled simplified network management.

With regard to current server provisioning for cloud computing services, the majority of organizations are using, evaluating, or planning to implement a combination of company-owned and third-party infrastructure.

Security concerns and adequate in-house IT infrastructure are the top reasons for relying on company-owned servers. Respondents in the United States, Hong Kong, and Singapore are also likelier than U.K. respondents to cite more flexibility as a reason for not provisioning servers solely from third-party vendors. In addition, U.S. respondents are more likely than others to indicate compliance as a reason.

» Looking ahead: More third-party provisioning

When it comes to future cloud plans, the survey suggests some

Current Server Provisioning for Cloud Computing Services

■ Total   ■ U.S.   ■ EMEA   ■ APAC

Using, evaluating, or planning to implement company-owned and third-party provisioned servers combined
- 53%
- 48%
- 48%
- 65%

Using, evaluating, or planning to implement company-owned servers only
- 31%
- 31%
- 35%
- 26%

Using, evaluating, or planning to implement third-party provisioned servers only
- 16%
- 21%
- 17%
- 9%
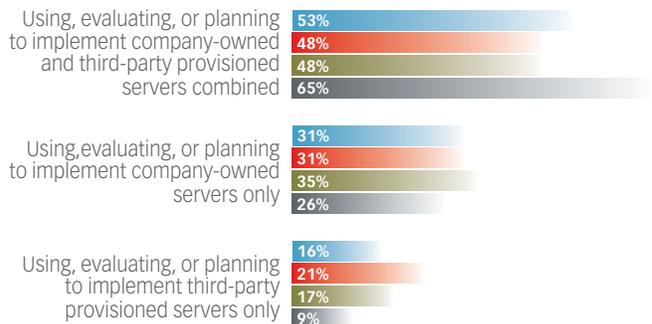
SOURCE: IDG RESEARCH, MARCH 2012

changes are in order. For example, an increasing percentage of companies are looking to use third-party provisioned infrastructure versus solely relying on company-owned infrastructure to support cloud computing services. In fact, 88% of respondents expect their companies will be using only third-party servers or a mix of company-owned and third-party servers going forward.

When respondents were asked about their reasons for implementing third-party provisioned computing infrastructure to some extent, improved availability, low initial investment, and shorter lead time topped the list. (Also, U.S. respondents are significantly more likely than others to report that low initial investment is a benefit of using third-party provisioned computing.)

Respondents were also asked to identify specific network performance issues as they continue to evaluate, plan, and implement cloud computing services. Capacity limitations and possible downtime when changing network configurations top their list of performance issues.

» Interest in a virtualized network service runs high

The survey reveals a high level of interest in cloud computing services that include a virtualized network service. A virtualized network service is a software-defined network that allows for optimal flexibility in capacity control and immediate changes of network configurations using switching software such as Open-Flow. Specifically, this definition of network virtualization refers to its ability to:

» Allow on-demand network resource usage and/or procurement

» Create logical paths for optimal network connectivity and/or bandwidth use undefined via physical hardware environments.

According to the survey, 40% of the respondents report a high level of familiarity with virtualized network services. (Familiarity is highest in Hong Kong and Singapore.) And most respondents say they are interested in learning more after seeing a description of virtualized network services.

What expectations do respondents have about a virtualized network service? The highest expectations are around improved performance, reliability, and cost efficiency. U.S. respondents are also more likely than others to expect better bandwidth utilization.

» Virtualized network in the spotlight

Trends such as user mobility, server virtualization, IT-as-a-service, and the need to rapidly respond to changing business conditions are placing significant burdens on traditional networking architectures. Virtualized network (also known as software-defined networking) has been proposed as a way to customize networks and speed network innovation. The goal is to provide a new network architecture that transforms traditional network backbones into rich, service-delivery platforms.[1]

The OpenFlow interface is a key component of this new networking approach. OpenFlow focuses on controlling how packets are forwarded through network switches.[2] Specifically, OpenFlow allows the path of network packets through the network of switches to be determined by software running on multiple routers. This separation of the control from the forwarding allows for more sophisticated traffic management than is feasible using access control lists and routing protocols.[3]

The key point here is that instead of each switch needing to be managed independently, there would now be a central controller, able to auto-configure new switches as they are deployed. Since OpenFlow would allow companies to manage switches from different manufacturers seamlessly, IT would be more likely to purchase a mix of different brands of network switches based on price, features, and service.[4]

As the IDG survey and numerous recent studies demonstrate, enterprises are enthusiastically embracing both public and private cloud services, resulting in the unprecedented growth of these services. Enterprise business units now want the agility to access applications, infrastructure, and other IT resources on demand and on a pay-as-you-go basis.

Adding to the complexity, IT's planning for cloud services must be done in an environment of increased security, compliance, and auditing requirements, along with business reorganizations, consolidations, and mergers that can change assump-

Expectations with Regard to the Implementation of a Cloud Service that Includes a Virtualized Network

	Total	U.S.	EMEA	APAC
Improved performance	57%	61%	44%	68%
Improved reliability	54%	54%	43%	64%
Improved cost efficiency	51%	62%	56%	38%
Flexibility	50%	56%	54%	41%
Improved scalability	45%	59%	48%	31%
Better availability of IT resources	32%	45%	30%	25%
Better bandwidth utilization	31%	45%	26%	25%
Simplified network management	24%	38%	25%	13%
Other	1%	1%	1%	0%
Don't know	5%	6%	6%	2%

SOURCE: IDG RESEARCH, MARCH 2012.

Future Plan Regarding Server Provisioning for Cloud Computing Services

■ Total ■ U.S. ■ EMEA ■ APAC

Would like to use both comany-owned and third-party provisioned computing infrastructure
- 72%
- 69%
- 65%
- 80%

Would like full migration to third-party provisioned computing infrastructure
- 16%
- 15%
- 17%
- 17%

Would like to use company-owned computing infrastructure only
- 12%
- 15%
- 18%
- 3%
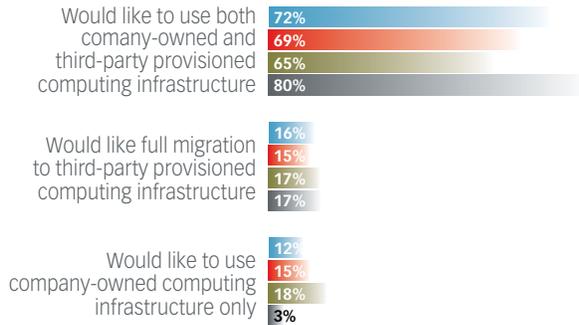
SOURCE: IDG RESEARCH, MARCH 2012.

tions overnight.[5] Providing self-service provisioning, whether in a public or private cloud, requires elastic scaling of computing, storage, and network resources, preferably from a common viewpoint and with a common set of tools.

Virtualized network was designed expressly to meet these kinds of requirements. Among the benefits of virtualized network:

» Centralized, policy-based flow control for better network operation

» Rapid innovation through the ability to deliver new network capabilities and services without the need to configure individual devices

The potential implications of such an approach include the ability to establish on-demand "express lanes" for time-sensitive voice and data traffic, as well as for large telecommunications companies to combine multiple fiber-optic backbones temporarily to handle short-term peaks in traffic.[6]

Bottom line: Cloud services that include a virtualized network service don't require network configuration changes as they expand capacity, freeing enterprises from costly IT procurement for that purpose. By leveraging open protocols such as Open-Flow, virtualized networks will enable enterprises to expand network bandwidth on demand, allowing them to pay for only what they need at any given moment.

NTT Communications offers seamless cloud services worldwide. With its OpenFlow-based virtualized networks, NTT Communications can connect multiple data centers to offer a cloud service platform beyond a single data center environment. Customers can leverage this new cloud infrastructure via a customer portal, which they use to access and manage global server and network resources for more flexible IT resource procurement.

"NTT Communications will provide a global and scalable cloud platform with a leading-edge virtualized network service to establish connections within and between data centers," says Motoo Tanaka, senior vice president of cloud services at NTT Communications. "We plan to roll out this new private cloud service incorporating a virtualized network in eight countries by March 2013. Adding more portal-based services is under way, allowing users to manage and control their server and network resources via the portal for more flexible, on-demand IT resources use."

Conclusion

As IDG's survey amply demonstrates, today's enterprises continue to be enthusiastic about cloud computing services, and they report high levels of satisfaction with the effectiveness of their cloud investments. But some changes are in order.

Companies are looking to move toward a combination of company-owned and third-party infrastructure to support cloud computing services. They're also keeping a watchful eye on some critical network performance issues as they continue to evaluate, plan, and implement cloud services. Perhaps most important of all, these companies express a keen interest in cloud services that include a virtualized network.

As enterprises increasingly rely on cloud computing services to meet their strategic goals, they will require the ability to expand network bandwidth on demand, unconstrained by the limitations of current networks. Cloud services embedded with a virtual network may well prove the surest means to that end. ■

[1] "Software-Defined Networking: The New Norm for Networks," Open Networking Foundation, April 13, 2012

[2] "Google and Other Titans Form Open Networking Foundation," PCWorld, March 23, 2011

[3] "Intro to OpenFlow," Open Networking Foundation

[4] "What is OpenFlow and why should enterprises care?" Sean Mitchell, TechDay, April 27, 2012

[5] "Software-Defined Networking: The New Norm for Networks," Open Networking Foundation, April 13, 2012

[6] "Open Networking Foundation Pursues New Standards," John Markoff, The New York Times, March 22, 2011

For more information, visit www.ntt.com/bhec_e/

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