

The background features a stylized sunburst with rays of light in shades of blue and yellow, emanating from behind a layer of white, fluffy clouds. The overall color palette is light and airy, with various tones of blue and white.

*An
Industry Shift Toward*
Cloud Computing

An Industry Shift Toward Cloud Computing

Since inception, the IT industry experienced a variety of natural evolution points, most marked with rapid change followed by years of internalization and consumption. According to most observers, the industry is rapidly evolving toward services as a core component of how consumers and business users interact with both software and one another. This is being referred to, in different contexts, as “software as a service,” “cloud computing,” “Web 2.0,” or simply “services,” and it represents a new deployment choice for the industry. The hype is deafening in places, and the key to success is recognizing that “cloud” adoption does not represent an all-or-nothing proposition.

The notion of cloud computing ushers in an exciting collection of business opportunities, particularly for small and midsize companies. Business strategists and information technology leaders across the industry are imagining the possibilities of essentially neutralizing the advantages of an established competitor’s massive, on-premises IT infrastructure investment by tapping into the promises of cloud computing. Broadly, the industry is equally excited by the possibilities of enabling rich interactions between on-premises client and server applications with the flexibility and scalability of Web-based services.

It is no surprise that in the current economic climate, companies are considering cloud for potential cost savings and business agility. In some scenarios, businesses can realize immediate benefits by moving assets to the cloud or building new assets in the cloud. In fact some organizations are actively reaping the benefits of outsourcing or extending solutions to the cloud. These scenarios typically involve commodity workloads like payroll management or specific ‘bursty’ applications requiring significant, though infrequent, computational power. Conversely, some businesses will quickly realize the cost of maintaining legacy applications in virtualized cloud infrastructures offers limited additional value and can actually cost the organization more than simply maintaining and optimizing existing, on-premises investments.

However, the industry hype around cloud has reached a fevered pitch. Excitement about the potential of cloud computing is leading to marketers overpromising about the immediate business impact of adopting cloud computing. Numerous issues, many extremely difficult to solve, are lurking under the surface. Our purpose here is to sift through the noise, expose the core cloud definitions and issues affecting small and midsize companies, and help ensure that your company is one of the success stories resulting from the cloud computing phenomenon.

Cloud Computing Basics

Cloud computing is described by many as something new, and for many scenarios it is. However, the idea of centralized command and control architecture allocating compute resources efficiently is as old as the computer itself. Adopting these capabilities in new contexts, when handled judiciously, will benefit users and organizations and will increasingly make services delivered over the Web and through the browser and mobile devices a central component of every user's and organization's portfolio of technology assets.

Remote access to compute and storage capacity in the cloud offers flexible, seemingly limitless consumption opportunities for compute resources and storage. Such access is likely to reduce upfront costs, improve provisioning, offer greater elasticity, and change licensing models. Cloud computing will enable organizations to pay as they go for the exact amount—or pre-purchase reserves for the anticipated amount—of resources used by a specific application.

It is essential for business and technology leaders to understand cloud computing and pragmatically assess the potential cloud computing offers when attempting to advance business objectives.

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Emerging Industry Terminology

Cloud computing represents a broad concept that can be subdivided into numerous categories and consumed in many ways. Several cloud services providers have emerged over the past few years that offer different capabilities for a variety of market segments. Below, you will find descriptions of differing cloud flavors, and the various categories emerging within each.

Cloud Computing. Cloud computing offers a seemingly infinite pool of readily available computing resources, typically housed in a data center. Cloud promises to eliminate the necessity of upfront hardware investment and is typically available on a short-term, pay-as-you-go basis. Some providers offer pricing discounts in return for predictability in customer need using reservations or subscription.

Software as a Service (SaaS). SaaS represents applications delivered as a service, typically over the Internet. Several examples include business applications (CRM/ERP), communications and collaboration tools (such as e-mail and Web conferencing), payment, mapping, and a myriad of other capabilities.

Public Cloud. The most familiar flavor of cloud computing, a public cloud is a data center made available in a metered manner to the public for purchase, resale, or some other pay-as-you-go manner. The easiest way to think of this is as a cloud housed completely outside the confines of your corporate firewall. The readily apparent benefit to this approach is the lack of upfront infrastructure investment. Furthermore, public clouds can more readily scale and address demand-based or workload-based fluctuations. Whether you are using 100 servers for 1 hour or 1 server for 100 hours, the elasticity of the public cloud reduces or eliminates any premium previously associated with large scale.

Infrastructure as a Service (IaaS). IaaS is particularly helpful in satisfying the compute needs of services whose needs are high or varying, such as batch processing, seasonal traffic increases, and short-use microsites. The provider is solely focused on keeping the infrastructure “lights on” within the availability parameters defined within the purchase agreement. IaaS requires highly skilled developer resources within your organization. You simply get out what you put onto the purchased “resource,” and the burden of application deployment, management, monitoring, failover, backup, and support lies with the purchaser.



Platform as a Service (PaaS). In contrast to IaaS offerings, PaaS providers focus on offering rich management, monitoring, and failover needs of the purchaser's application. Value-add offerings are available as needed for an additional fee. Such offerings include rich relational database capabilities, simplification of identity and access requirements, or providing infrastructure for complex business-to-business interactions between, and outside of, corporate firewalls. Think of this as building and deploying applications in the cloud, with the cloud provider abstracting away all the hardware and software complexities associated with deploying, securing, managing, and scaling an application.

Private Cloud. This is a private data center not made readily available for purchase or reuse to the general public. Private clouds are typically owned, run, managed, and supported by an individual business or organization and are contained within the organization's firewall. Private clouds are usually considered by companies with larger-scale IT infrastructures seeking to better take advantage of existing hardware and software assets. Pooling and sharing resources between various business units creates scales of economy for these organizations, and better enables IT to recapture lost cost by charging for these resources.

Hybrid Approach. This increasingly accepted approach of adopting cloud computing mixes on-premises investments with emerging cloud technologies. Microsoft often refers to this approach as software-plus-services. In this model, you can choose to either move some applications or functions to the cloud or provision a portion of your users on cloud-based services.

Is Cloud Computing Right for My Business?

At a very high level, cloud computing is simply an opportunity to do certain things “faster, better, cheaper.” Depending on the requirements of your organization, you can combine in-house server applications and private clouds with public cloud services to obtain a solution that is optimal for your business needs. However, to see cloud computing as an all-or-nothing proposition—or to ignore it completely—is to miss an exciting opportunity.

The truth is that few companies will benefit from an all-cloud approach in the near future. There is still a need to drive value from existing investments and have control over customized and locally running software installations. Similarly, few companies will succeed by continuing to maintain an all on-premises approach that ignores the benefits of the Web’s scale and ubiquity or the hidden cost in existing IT infrastructure.

The addition of the cloud as a deployment option—and with it the business flexibility to deliver service on-premises, in the cloud, or both—allows savvy companies the opportunity to rethink what they can do to advance their business interests with flexibility, usability, security, and richness. This approach frees IT personnel to deliver the functional value they support first and the technology deployment of that functionality second.

The key to success is a fundamental understanding of where the principles of cloud computing intersect with your business needs, customer requirements, and existing application architecture—combined with the realities of governmental requirements. Companies taking advantage of what the cloud can do alongside traditional technology deployments will be the ones that are best positioned over the next decade and beyond.

“We pay a total of \$125 a month for our Microsoft Online Services subscriptions and storage, versus \$1,500 a month for a consultant to manage our on-site servers.”

- Jim Nolan, Owner, James C. Nolan Law Office

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Core Issues to Consider

While we tend to focus on the potential technical and environmental roadblocks to cloud computing, there are also organizational and behavioral obstacles to adopting cloud that you must consider in order to optimize your chances of successfully incorporating cloud within your company.

Cost. You might assume that using a cloud computing solutions provider for storage and processing resources automatically saves you money because you don't have to buy equipment, configure it, and maintain it. However, cost savings depends on the flavor of cloud you adopt. If you buy IaaS, then you still need to configure and maintain your applications and servers. Do your homework and realize that some cloud implementations can save your business money, while others may add more costs to your business.

Data Ownership, Confidentiality, Lock-In, and Interoperability. One of the natural concerns with cloud computing is the issue of security and privacy. If you are sending your information to a third party, how do you know that prying eyes aren't taking a look at your data? How do you protect yourself against data theft? And are you aware of who owns your data? The point is, if you have an application that handles or processes sensitive or proprietary data, you should conduct a very careful analysis of the confidentiality, integrity, and overall security of the solution. And be sure that if you create a service using a particular language on a particular service platform that it will be able to speak with or operate with a completely different language supported by a competitive service provider.

*Watch a video on
Security & Reliability of Microsoft
Online Services.*

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Service Availability and Application Performance. What types of service-level agreements (SLA) are promised—if any—by the service provider you are considering around the issues of availability, security, and privacy? Because network outages are a nightmare for internal IT staff, you can use cloud computing to shift much of the burden onto the service provider. A good cloud computing solutions provider should be well staffed and well equipped to manage such outages. When you're looking at service providers, make sure you choose one who offers a high-availability guarantee in its service-level agreement and 24-hour support, and can demonstrate its ability to respond quickly to emergency situations.

Regulatory Requirements, Geolocation, and Security. What are the local governmental requirements for outsourcing data? Is there a data center near you? Is the data center close enough to your customer base to assure avoidance of latency issues? How can you meet regulatory requirements for data transparency and reporting when using the cloud? How is your application being secured—how is the service provider protecting itself and how is your application being protected against malicious attacks? How is the physical infrastructure of the data center you are using being protected? Be sure to ask questions and understand the answers so your solution meets your business needs.

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The Unique Microsoft Approach to Cloud Computing

Microsoft platform technologies span the client (Windows, Windows Mobile, Xbox, etc.); the enterprise (Windows Server, SQL Server, Visual Studio, System Center, etc.); and the cloud (Microsoft Business Productivity Online Standard Suite (BPOS), Azure Services Platform, etc.). Just as technologies on the client and the server can be looked at through the lens of applications and platforms, Microsoft services offerings have both an application and a platform element:

Applications (SaaS)

Live Services are intended for individuals and small businesses. There are half a billion people using Live Services such as Live Hotmail and Live Messenger. Millions of gamers subscribe to Xbox LIVE, and hundreds of thousands of small businesses depend on Office Live to reach their customers. Live Services complement software running locally to deliver immersive and social experiences.

Online Services are “professional grade” services for midsize and large companies that want to consume certain Microsoft applications from the cloud. Tens of thousands of businesses use SharePoint Online, Microsoft Dynamics CRM Online, and Exchange Online, including Energizer Holdings, Coca Cola Enterprises, and Blockbuster Entertainment. Often these services complement software running on a device, such as Outlook, or software running on a server, such as a federated Active Directory system running within Windows Server.

“Before, I’d have to schedule a meeting blind, contact each individual to check his or her availability, and go back and forth to nail down a time that ultimately worked for everyone. Now I can simultaneously compare calendars to set up a meeting, which reduces my administrative time by at least 50%.”

- Jennifer Boyd SCG Administrative Manager

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Microsoft Business Productivity Online Standard Suite (BPOS) is a set of messaging and collaboration solutions hosted by Microsoft. These online services are designed to give your business streamlined communications with high availability, comprehensive security, and simplified IT management. Your business benefits from up-to-date technologies that are deployed rapidly, maximizing your valuable IT resources and reducing your needs for infrastructure investments. These enterprise-class, hosted services include:

Exchange Online. This service provides employees access to e-mail, calendars, and contacts from anywhere they have Internet access (i.e., from their PCs, Web browser as well as mobile devices).

SharePoint Online. Employees can use this service to share, collaborate, search, and manage content from a single location.

Office Communications Online. Employees can use this service to connect with colleagues, customers, and partners in real-time using instant messages. The presence information available through this service permits access to real-time communication capabilities through a range of Microsoft Office products.

Office Live Meeting. Employees can use this cloud-based Web-conferencing service to connect with their colleagues and engage customers through real-time meetings, training sessions, and events.

Platform (PaaS)

The Azure Services Platform (Azure) is an Internet-scale cloud services platform hosted in Microsoft data centers that provides an operating system and a set of developer services that can be used individually or together. The flexible and interoperable Azure platform can be used to build new applications to run from the cloud or enhance existing applications with cloud-based capabilities. Its open architecture gives developers the choice to build Web applications, applications running on connected devices, PCs, or servers, or hybrid solutions offering the best of online and on-premises.

Private Clouds

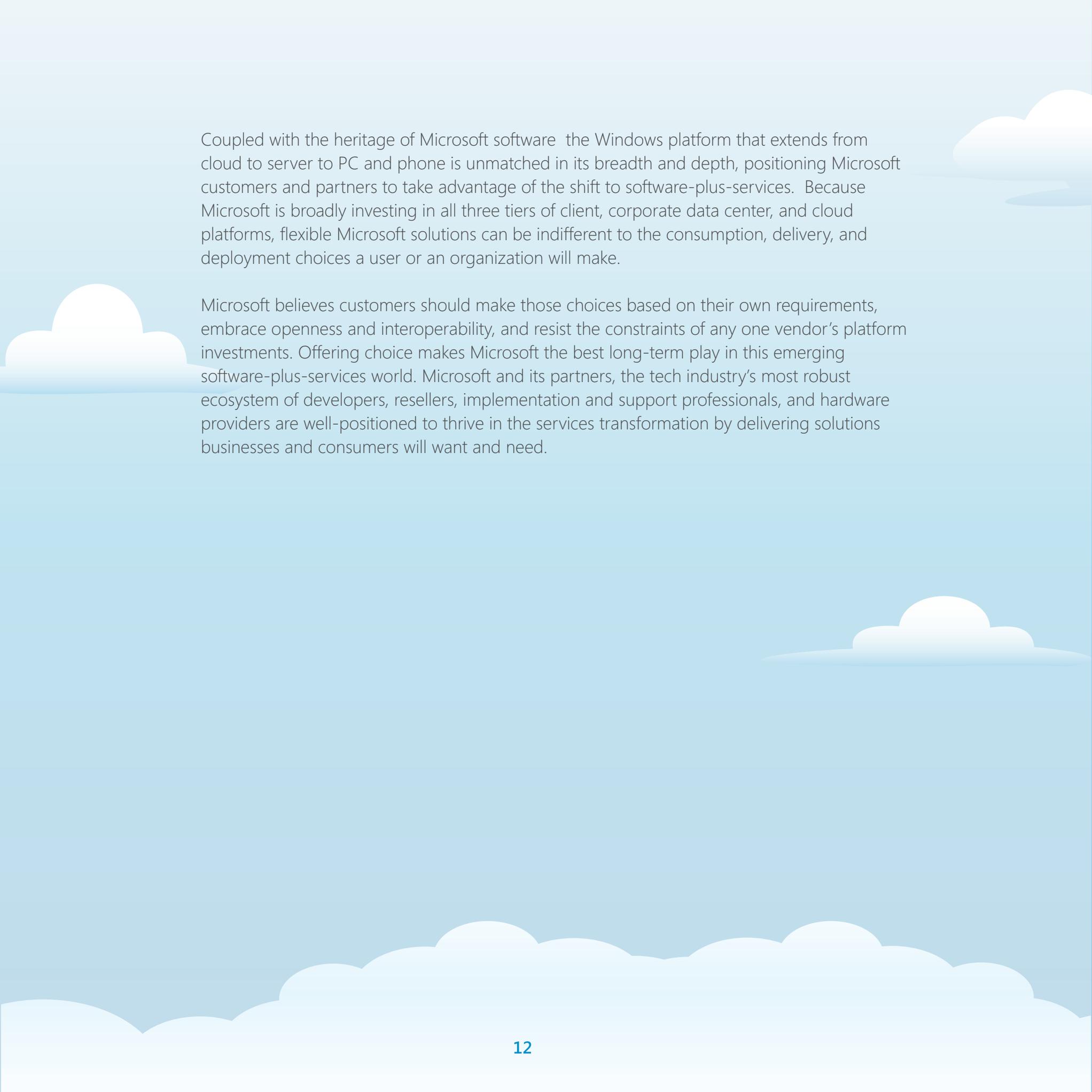
Some businesses are interested in deploying cloud technologies for private or on-premises use. By employing techniques such as virtualization, automated management and utility-billing models, IT managers can evolve the internal data center into a “private cloud” that offers many of the performance, scalability, and cost-saving benefits associated with public clouds. Microsoft provides the foundation for private clouds with infrastructure solutions to match a range of customer sizes, needs, and geographic regions, including Windows Server 2008, Virtualization with Hyper-V, the Dynamic Data Center Toolkit for Enterprises, System Center Online Desktop Manager, Microsoft Forefront Online Security for Exchange, BPOS, and System Center Operations Manager 2007 R2.

“Microsoft is working toward an integrated approach that bridges on-premises data centers and the external cloud, which offers our customers the benefits of both approaches.”

- Bob Kelly, Corporate Vice President of Infrastructure Server Marketing, Microsoft Corporation

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Coupled with the heritage of Microsoft software the Windows platform that extends from cloud to server to PC and phone is unmatched in its breadth and depth, positioning Microsoft customers and partners to take advantage of the shift to software-plus-services. Because Microsoft is broadly investing in all three tiers of client, corporate data center, and cloud platforms, flexible Microsoft solutions can be indifferent to the consumption, delivery, and deployment choices a user or an organization will make.

Microsoft believes customers should make those choices based on their own requirements, embrace openness and interoperability, and resist the constraints of any one vendor's platform investments. Offering choice makes Microsoft the best long-term play in this emerging software-plus-services world. Microsoft and its partners, the tech industry's most robust ecosystem of developers, resellers, implementation and support professionals, and hardware providers are well-positioned to thrive in the services transformation by delivering solutions businesses and consumers will want and need.

Conclusion

We will live in a hybrid world of software and services, with online services often combining with software. Businesses will focus not only on the needs of a company and its employees, but also the needs of its customers and partners by delivering integrated functionality across the enterprise and the Web that can be accessed through a wide selection of devices. To address all their constituencies' needs, forward-looking businesses will utilize their existing investments and scale out across the enterprise and the Web to balance devices, servers, and services. To satisfy these increasingly demanding requirements, developers are exploring the cloud—in conjunction with the server and the device—to understand what is best for their business and user needs.

Now is the time to evaluate the opportunities cloud computing presents to your business. Deciding how to best benefit from cloud computing really comes down to mapping the actual technology benefits to the needs of your business. Be pragmatic in your approach to both the technologies and the solution providers you choose to work with. Make absolutely certain you fully understand your agreement terms with any service provider. Microsoft, and many of its competitors, recognizes that the best user experiences occur when the reach of the Web is combined with the richness made possible by increasingly affordable and powerful connected devices.

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*Bob Muglia,
President, Server
and Tools Business at
Microsoft, discusses the benefits of
cloud computing.*

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