SmartCloud

IBM Global Technology Services

Thought Leadership White Paper

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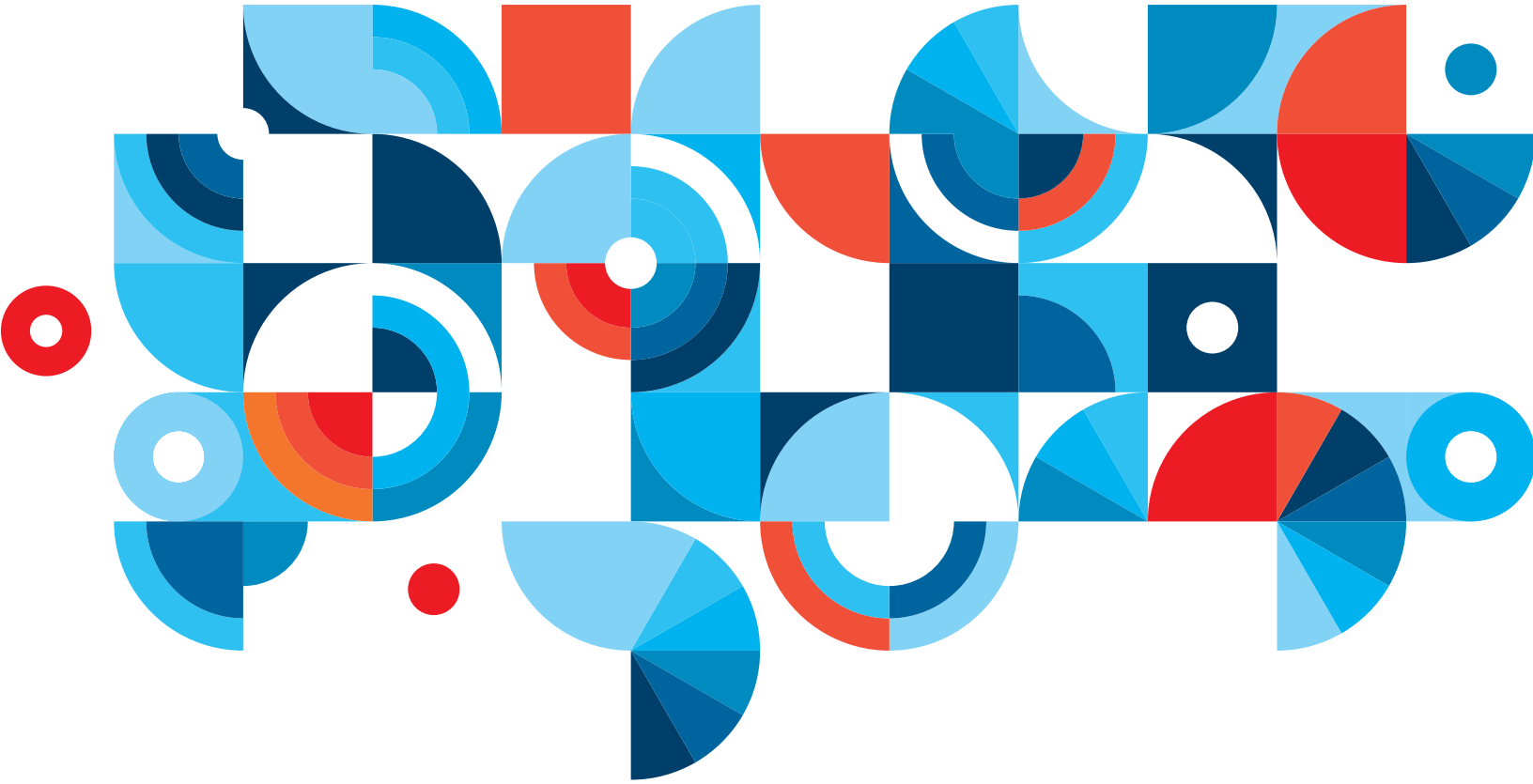
Choice and control

IBM shares considerations for developing enterprise cloud strategies



IBM

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Setting the stage: cloud challenges and opportunities

Cloud computing is becoming an increasingly important technology. Its adoption is expected to accelerate rapidly. In a recent study by the IBM Institute for Business Value, for example, almost three-fourths of business leaders surveyed said that their companies have already piloted, adopted or substantially implemented cloud technologies. Ninety percent expect to have done so within three years.[1]

The reasons for cloud adoption are varied. Chief information officers, information technology vice presidents, line of business leaders and others look to cloud computing to solve ubiquitous challenges in the server environment. These challenges include low server-utilization rates; significant operational inefficiencies; arduous processes to procure, build and maintain server environments; long application deployment times; and, of course, rising costs. These business leaders also believe in cloud's promise to bring new value to their organizations. They know that cloud computing can more tightly align IT activities with overall business goals. By increasing IT speed and agility, cloud computing can help organizations quickly respond to competitive challenges and opportunities. Finally, cloud computing can help satisfy end user and customer demand for always-on, easy-to-use applications.

But enterprise-wide cloud implementation can be a challenging process, requiring a thoughtful, strategic approach. Too many organizations lack the money, manpower and skills needed to develop and deploy a cloud environment that aligns with both short-term and long-term business objectives. Operating under ever-tightening budgets, IT staffs typically spend most of their resources to simply maintain existing server environments. Even those organizations capable of building their own clouds often find, emerging from the testing stage, that they would benefit from outside management support.

Because of these challenges, organizations must carefully think about how to best source their cloud technologies. In making a sourcing decision, they should keep in mind business design, necessary service levels and deployment models. The question of who will migrate, integrate and manage applications must also be addressed. After considering these issues, many organizations choose to turn to third-party technology partners for help with enterprise cloud endeavors.

Technology companies are well aware that many organizations want outside help designing, building and managing cloud environments. These technology companies encourage their clients to outsource cloud initiatives, often leading CIOs and other IT leaders to believe that they can achieve the benefits of cloud computing while bypassing the difficulties of building an in-house solution.

But IBM sees three significant problems in the third-party cloud marketplace today. First, many technology companies position cloud computing as an answer to all IT woes. The client presents a problem in its server environment, and the answer is "cloud." IBM disagrees with this assessment. While cloud technologies are playing an ever-more-important role in enterprise IT environments, not all workloads are suitable for cloud migration. Second, too many cloud providers offer "one size fits all" deployment models. Again, IBM disagrees with this approach. Many organizations will need a mix of public, private and hybrid clouds to meet their business needs—along with a host of hardware, software, and services offerings to support those clouds. Third, in survey after survey IT professionals cite loss of control as a barrier to using third-party partners for cloud architecture and management. IBM empathizes with this position. Too many cloud providers put IT professionals in the unenviable position of surrendering control if they wish to take advantage of cloud capabilities and cost benefits.

"IBM's recent SmartCloud services and software announcement introduces a consistent cross-IBM cloud architecture and branding scheme covering a wide range of new and enhanced offerings for cloud service delivery. Spanning multiple IBM business units, SmartCloud solutions are designed to provide enterprise customers with integrated hardware, software and service building blocks to quickly design, implement and manage private and public cloud solutions."[2]

—Mary Johnston Turner
IBM SmartCloud Foundation Offers Faster On-Ramp to Private Cloud IDC, 2011

These issues are common in the cloud marketplace, but they can be avoided. It's a matter of an organization first determining its cloud strategy, then—if outside help is warranted—choosing the right cloud partner.

Charting your organization's unique cloud strategy

The value obtained from cloud implementation largely depends on how organizations choose to use cloud technologies. Any organization planning a cloud implementation project should first determine what it hopes to obtain from cloud computing. Today, most organizations adopting cloud are **optimizers**—they use cloud technologies to improve organizational efficiency and to provide increased value to the customer. In doing so, they often achieve server optimization and cost reduction, but obtain limited or no increase in revenue. Cloud **innovators** use cloud technologies to significantly enhance customer value, resulting in enhanced business processes, new revenue streams and improved competitive ability. They employ cloud computing to create new products and services, to deploy new sales channels and payment models and to develop new operating capabilities. They gain competitive advantage by increasing the value they provide their customers and by obtaining customers in adjacent industries and markets. Finally, **disruptors** harness the power of cloud computing to address previously unforeseen customer needs. They create new industry economics and disrupt existing players. While they can significantly increase revenue through their cloud activities, they also face the risk of deploying untested business models.

After determining whether it plans to use cloud computing to optimize, innovate or disrupt, an organization must answer some strategic questions in the fields of cloud scope, service levels and deployment models:

- **What's my desired business design?** How will my organization use cloud computing to shape business processes? What are my organization's availability, performance and security needs? How much computing power, storage and bandwidth does my organization need?
- **What service levels do I need?** What type of workloads does the cloud need to support? Does my organization want to create born-on-the-cloud applications in support of business processes? Or do I just want to optimize and efficiently run existing applications in a low-cost and scalable environment? What type of management support will my organization need to maintain both these workloads and the cloud itself? What type of service delivery do I need?
- **What deployment model do I want?** What type of cloud does my organization want? What type of architecture? How much customization? Does my organization want flexible or fixed pricing? Do I want to own cloud assets, or use a third party provider's? How will my organization's cloud strategy dovetail into our broader IT strategy? How will cloud computing integrate with our traditional server elements?

With answers to these questions in hand, the organization may decide that it has the skills and money to implement a cloud solution in-house. Or the organization may turn to a third-party cloud partner for assistance in either the development of an overall cloud strategy or in any aspect thereof.

Factors for enterprises to consider when forging a cloud partnership

As an alternative to teaming with a company that considers cloud to be the solution to virtually all computing problems, IBM suggests finding a third-party provider that offers its clients a choice in the areas of scope, service levels and deployment. IBM believes the partner should offer deep expertise in strategic visioning and in cloud migration. This expertise is necessary to provide the client with an educated and honest view of which workloads are suitable for cloud migration and which should remain in their traditional, physical state. Not all discussions will lead to cloud migration, and the partner should recognize that. The partner should also be able to help the client organization make additional determinations, such as whether the client organization is well-suited to manage the cloud on its own, or whether the partner should manage the cloud environment.

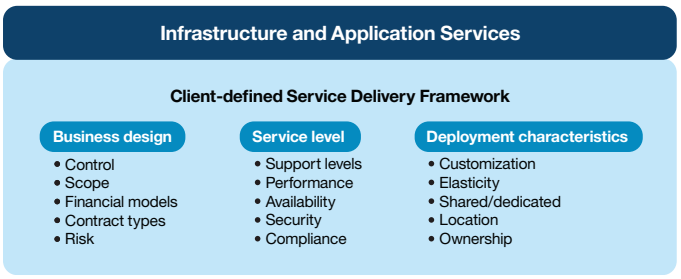

Figure 1: The client-defined services delivery framework allows IBM and our clients to explore the key considerations of adopting cloud services delivery models.

Configuring cloud operations is never simple, but organizations should choose a technology partner capable of easing the process. This means contracting with a company able to offer configurable cloud options. These options should give the client organization choices that accommodate its desired scope, service levels, deployment models and risk/reward tolerance. The partner should further understand that deployment methods must evolve to support ever-changing business needs and therefore offer a continuum of deployment models. (See Figure 1.) Partner service level agreements should align with the client's specific business and usage requirements and cover levels of support, performance and security needed. The partner should be dexterous enough to handle the client's operating system of choice (UNIX, Windows, Linux and others), and to easily mesh cloud and non-cloud environments. Open standards should be used, so the client is not locked into a proprietary environment. The partner should deploy analytics and automation as appropriate to bulk-migrate simple workloads, while offering high-touch services to migrate more difficult applications.

Since many organizations will also need help once the cloud environment is up and running, IBM believes it is best to choose a technology partner that offers cloud management services. Ideally, the partner can also provide alternate solutions—management services for traditional server environments, as an example—for those computing challenges that can not be solved by cloud migration.

Additional organizational concerns typically arise in the areas of availability, cost and security. Cloud partners should be able to address these concerns. The most attractive technology partners offer a broad spectrum of availability options. Flexible, pay-as-you-go payment plans, billing schedules and financing should be offered, aligned to the client's usage, platform and services.

To protect the client's cloud infrastructure, technology partners should provide multiple security and isolation choices, robust security practices and hardened security policies proven at the enterprise level. Security procedures should be transparent, providing visibility into cloud activities and threats. Data monitoring and reporting must be offered. Since business needs are ever-evolving, the best cloud partners also offer a full portfolio of associated services in the fields of security, business resiliency and business continuity.

Finally, the client organization should be able to maintain control over its cloud environment. Technologies that provide this type of control include online dashboards, which can allow the client organization to manage the cloud environment from virtually anywhere in the world.

IBM SmartCloud Services: an overview

Earlier in this paper, we discussed organizations' key considerations for cloud delivery. IBM SmartCloud™ Services have been designed to meet these considerations. These services answer enterprise needs for tailored cloud architectures and management services replete with near-total reliability, security and client control. IBM offers two sets of SmartCloud Services: SmartCloud Infrastructure Services and SmartCloud Application Services.

SmartCloud Infrastructure Services consist of IBM SmartCloud Enterprise and IBM SmartCloud Enterprise+.
IBM SmartCloud Enterprise is an agile computing infrastructure as a service (IaaS) designed to provide clients with rapid access to enterprise-class cloud environments. These environments are well suited for development and test activities, batch processing, web hosting and a broad spectrum of

born-on-the-web applications. This solution, developed for organizations that want a low-cost cloud environment suitable for running moderate-risk applications, can also help dramatically reduce the client's IT costs.

IBM SmartCloud Enterprise helps research team shorten analysis times

At a large university, scientists and researchers process massive amounts of data as part of a large-scale study of protein structures and functions. The study's goal is to find new diagnostic markers for disease. This type of research requires extremely high computing capacity for short timeframes. Researchers had been using the university's cluster servers. However, university-owned servers were shared by many groups, and researchers often experienced long wait times and insufficient resources to work effectively.

The research organization turned to IBM for help. IBM deployed its SmartCloud Enterprise platform. Using SmartCloud Enterprise, the research team gained access to almost 250,000 computing hours on a total of 1,000 parallel CPUs. As a result, researchers were able to shorten their analysis times from several months to two weeks. Additional computing time is available whenever the organization needs it.

IBM SmartCloud Enterprise+ is an IBM-managed cloud IaaS. This service has been developed for driving business value and competitive advantage while reducing operational risk. It offers a robust, security-rich, cost-effective multi-tenant private cloud infrastructure used for running production workloads (including SAP applications). A broad range of architectural elements is provided, including hardware, hypervisor and isolation elements.

Additional features include:

- Higher levels of availability, reliability, service
- Security, backup and resiliency services
- Flexible configuration options to facilitate differentiation for competitive advantage
- IT Infrastructure Library processes such as image lifecycle management, asset and license management and configuration management
- High-speed Tier 1 storage
- A standard set of software images (operating system, middleware, databases)
- Committed service level agreements aligned to business and usage requirements
- Around-the-clock access to online support tools and live experts
- Optional dedicated capacity for greater workload isolation and control.

Application services are also available. **IBM SmartCloud Application Services** is a pay-as-you-go platform as a service (PaaS) that provides enterprises with a cloud environment for a wide range of enterprise applications. **IBM SmartCloud for SAP Applications** provides clients with a family of cloud computing offerings with specific benefits for SAP users. These benefits include reduced complexity through standardized, configured-to-order solution components, dramatic acceleration of complex SAP provisioning and copy services; and significantly increased flexibility.

Client succeeds by virtualizing its SAP environment

In order to reduce infrastructure costs and obtain economies of scale, a leading provider of flow equipment to worldwide energy companies needed to virtualize its SAP environment. IBM SmartCloud for SAP Applications Beta helped the company transform its SAP landscape. As a result of this offering, the company reduced capital costs, decreased provisioning times from weeks to minutes, and gained agility and flexibility.

The IBM SmartCloud Services difference

While IBM SmartCloud Services do offer all the features listed in the *Factors for enterprises to consider when forging a cloud partnership* section of this paper, we believe we further differentiate ourselves in the fields of reliability, security, control and deployment.

High-level cloud reliability—up to 99.9 percent—is provided through a hardened and proven cloud management platform, offering around-the-clock monitoring and management of the infrastructure. World-class security measures include best-of-breed technologies, enhanced physical security, intrusion protection services and vulnerability scans.

Perhaps more important to our clients, though, is their ability to control the cloud environment. To accommodate this need, IBM offers a self-service web-based management portal. This portal provides the client with quick access to IBM SmartCloud Services environments. It allows authorized users to log on at any time, from any place, to monitor, manage and control the cloud. (See Figure 2.) Designed for ease of use, the portal guides clients through the processes of bringing applications online and offline, of moving applications between cloud and physical environments, of provisioning servers, and of other monitoring and management tasks. Additional services and tools offered through the portal include operating system monitoring and management, alert monitoring and response, database and middleware management, vulnerability management and disaster recovery.

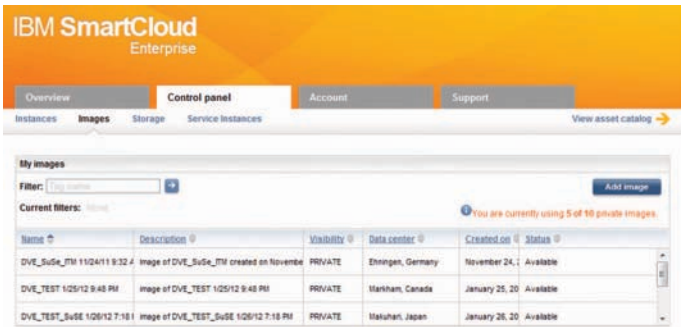

Figure 2: The IBM web portal allows authorized users to access and manage the cloud environment anytime, from any place. It guides clients through the processes of bringing applications online and offline, moving applications between cloud and physical environments, provisioning servers and other monitoring and management tasks.

Finally, IBM offers clients a Continuum of Deployment model for cloud projects. (See Figure 3.) IBM understands that workload requirements can change rapidly and that cloud environments must accommodate these requirements. Therefore, different types of cloud deployments may be necessary for any client—and these deployments may sometimes have to take place simultaneously. To meet this need, the IBM Continuum of Deployment model provides client organizations with everything

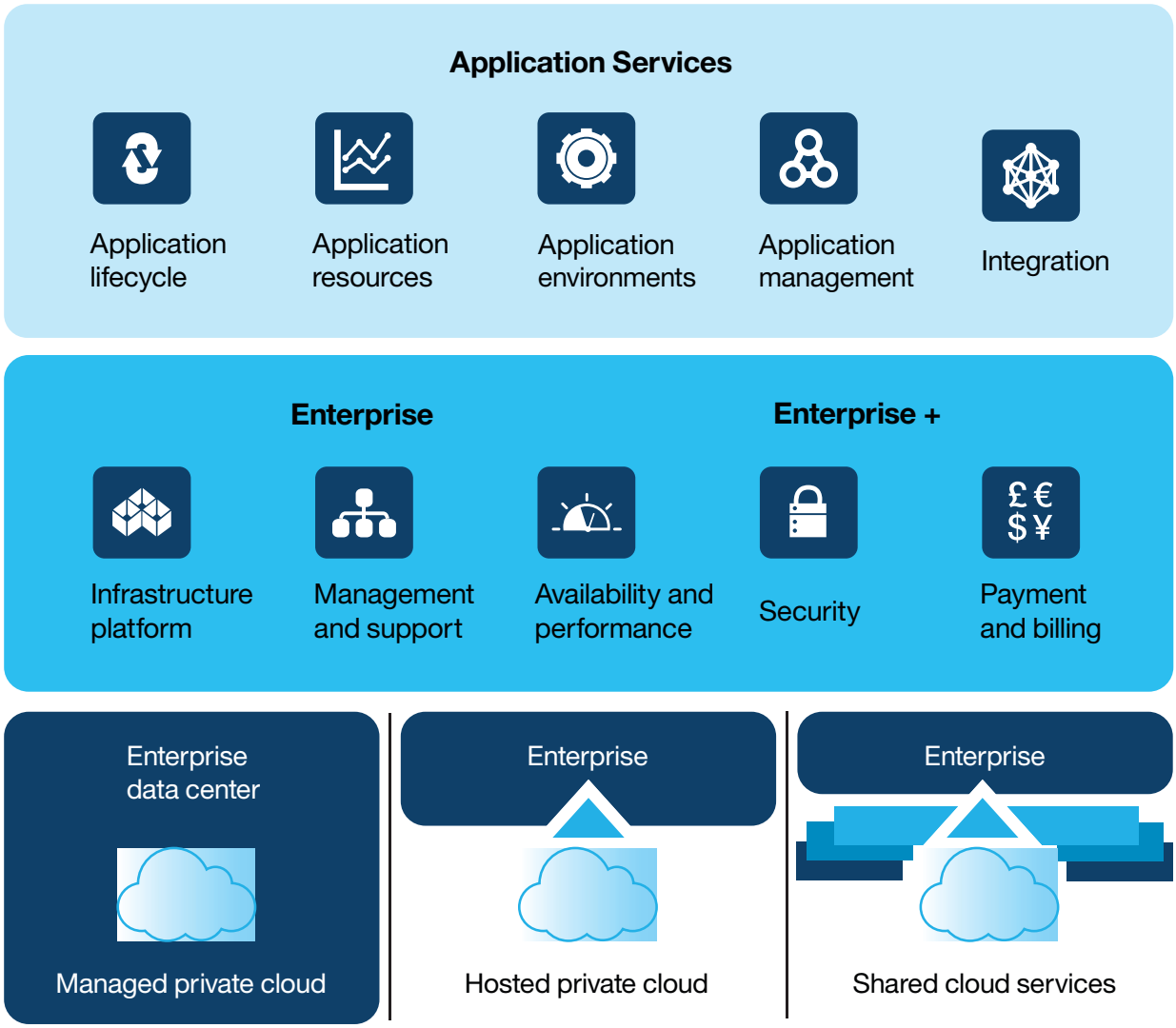

Figure 3: The IBM SmartCloud Services delivery platform allows clients to choose among a number of key enterprise capabilities to consume both infrastructure as a service and platform as a services capabilities.

from low cost, fully-managed multi-tenant cloud ecosystems to ultra-secure private cloud environments—and anything in between. And it is possible to enhance any IBM cloud solution in the continuum with the broad portfolios of our Internet Security Systems and Business Continuity and Resiliency Services divisions. The proven capabilities of these portfolios harden the client's overall cloud solution and provide the client with greater assurance of the efficacy of its cloud environment.

As a result of IBM SmartCloud Services, clients often achieve:

- A more agile and reliable infrastructure with flexible, scalable operations to help enable nimble business processes and improve the organization's competitive position
- The ability to mitigate business disruptions by keeping corporate infrastructures and applications up and running
- A smoother cloud transition, one that reduces the risk of downtime, human error and business disruption
- Unprecedented choice, security and portability of applications
- Consistent service quality
- Significant cost benefits and faster return on investment via IBM's pay-per-usage pricing structure.

Charting a path to value

Whether choosing to work with IBM or another technology partner, or opting to develop a cloud solution in-house, there are certain steps organizations can take now to begin plotting a more effective cloud strategy.

IBM suggests organizations first gather a cross-functional group of stakeholders to determine whether the organization wants to use cloud computing to optimize, innovate, or disrupt—or a combination of the three. (See the *Charting your organization's unique cloud strategy* section of this document.) Next, this group must determine how to align cloud computing projects to meet this overall goal, along with goals such as cost control, the acquisition of new business capabilities, and quicker deployment of new services. In empowering this group, CIOs and other IT executives should establish shared responsibility for cloud strategy and governance across business and IT operations. This group—usually led by a senior business executive and the organization's CIO—can link cloud adoption strategy with business and marketing strategies.

With these strategies in mind, organizations should consider how to best source cloud development, deployment and management. As part of the sourcing decision, organizations should keep in mind cloud computing scope, the organization's availability needs, risk tolerance and control requirements. Businesses must determine whether applications moved to the cloud should be heavily managed, lightly managed, or self-serviced. Finally, organizations should take a deep look at the skills of the in-house IT staff, determining whether the organization has the skills to design, build and manage its own cloud computing environment.

Organizations that have this type of information in hand will be better able to decide their next cloud computing step: to build a cloud in-house, build a cloud with help from a cloud professional-services provider, or contract with a third-party partner who will provide and manage the cloud infrastructure.

"We see IBM as a strategic partner because they, of course, have an unparalleled degree of experience in working with large financial institutions and large enterprises to build solutions that are tailored to their needs.

The cloud does not have to be all things to one. Our cloud has to take into account security and scale and operational maturity that only organizations like IBM—that have experience in these large financial institutions—can provide.

That partnership is critical to us as we build and provide state-of-the-art innovation in lending transactions."

—Ravi Balwada,
Software as a Service Operations Executive,
CoreLogic Dorado

Why IBM?

Designing, building and managing an effective cloud environment can be a complicated process. That's why so many organizations choose to partner with IBM. We are thought leaders in the fields of business transformation and cloud development. We have the strategic vision to help clients decide which workloads should stay in their physical state, which should go to a cloud, and whether clients should contract out for management of the cloud environment. In IBM SmartCloud Services, this knowledge merges with the architectural and management expertise clients need to intelligently source and manage their cloud environments. We are qualified to help clients develop a cloud plan, migrate appropriate workloads and operate a security-rich enterprise cloud environment—all while leaving the client with control over that environment. We help our clients:

- **Leverage cloud computing with certainty.** IBM offers reliable, high-performance cloud computing backed by business-centric SLAs aligned to enterprise needs and usage requirements.
- **Configure cloud with flexible options for enterprise differentiation.** IBM SmartCloud Services help clients configure their clouds their way to meet enterprise goals and better compete.
- **Accelerate adoption to drive business momentum.** IBM helps clients quickly get started at the right point for the organization and accelerate adoption as needed to build business momentum. Because IBM is able to deploy cloud services quickly, we can also help the client achieve faster return on investment.

Client reduces costs with IBM SmartCloud for SAP Applications

A leading distributor of industrial chemicals wanted to improve the quality of its SAP applications while reducing costs. To do so, it needed a fully managed cloud environment to host SAP applications. IBM SmartCloud for SAP Applications met the client's needs while providing 99.5 percent production availability. As a result, the client was able to cut costs, reduce lead time, and improve the quality of SAP operations.

With cloud infrastructure and application management experts located in 140 countries, IBM offers global reach and local expertise to help clients with cloud development and services virtually wherever clients need them. We employ specialized teams who focus on cloud architecture, strategy, and services. That's how IBM can successfully complete thousands of cloud projects each year and support more than 4.5 million cloud transactions daily. IBM expertise may be especially pertinent to those organizations that need help moving their SAP applications to the cloud. SAP itself recognizes IBM as the largest SAP systems integrator in the world—we employ more than 2,200 SAP practitioners. And the in-depth, cloud-specific offerings of our Internet Security Systems and Business Continuity and Resiliency Services divisions are always available for clients who want an extra layer of resiliency.

Working with IBM SmartCloud Services, organizations can develop a cloud environment that can help overcome many of the challenges facing IT today. Concurrently, this rapid-scale enterprise-class environment can help enable the type of agile infrastructure that aids organizations in quickly meeting the demands of an ever-evolving marketplace, thereby providing true business value.

For more information

To learn more about how IBM can help your organization develop and manage a cloud environment, please contact your IBM marketing representative or IBM Business Partner, or visit the following website: **ibm.com**/smartcloud

For IBM insights and perspectives on the issues that matter most to IT and business executives, visit: **ibm.com**/c-suite

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[1] The power of cloud: Driving business model innovation, IBM Institute for Business Value, 2011.

[2] IDC, IBM SmartCloud Foundation Offers Faster On Ramp to Private Cloud, doc #23091811, October 2011.

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