



# Hybrid Cloud Models Enable Organizations to Leverage Existing Resources and Augment IT Services

As dynamic business demands continue to place unprecedented burden on technology infrastructure, IT managers remain ever-vigilant to ensure sufficient resources are available to support business-critical applications such as ERP and CRM, or other systems that are used heavily by specific industries or job functions. The good news is that IT departments now have compelling new options for effectively balancing the need for additional infrastructure and capacity with limited staff and budget resources.

Cloud computing represents one of the most significant technology developments in recent years, and an increasing number of IT departments have been given direction to move toward this service-based delivery of infrastructure, platform and application services. While traditional on-premise client/serverbased deployment approaches tether core applications (i.e., operating systems, email, ERP, CRM, etc.) to servers and storage devices that must be maintained by internal IT staff, cloud computing provides a way to increase capacity or add capabilities on-demand without requiring large capital outlays for hardware and software licenses or the resources required to maintain them.

As service-based delivery models for computing resources first came to market, some proponents

referred to it as "utility computing." Analogous to sticking a plug into a wall socket for electricity, utility computing often emphasized the notion that the end user did not know the origin of their computing resources, they simply recognized that the service worked when accessed. Years later, that flexibility continues to resonate for IT organizations because networks have become faster and more secure.

As data volumes continue to grow exponentially and servicelevel agreements (SLAs) provide greater assurances of availability and reliability, many businesses are looking to the cloud to deploy a more elastic infrastructure that can scale up and down as business demands dictate. In today's ROIdriven business climate, the cloud enables IT staffs to "meter" their services, much like a utility meter, as well as to monitor and modify their usage as needed. As cloud technology has matured, different deployment models have evolved based on varying needs associated with security, storage, infrastructure and compliance requirements.

This white paper will define the primary cloud-based models, highlight considerations for deploying a cloud solution, and address key questions designed to help businesses evaluate and determine the model that works best for their particular needs and situation.

## Five Characteristics of Cloud Computing

- On-demand selfservice: individuals can set themselves up without needing anyone's help
- Ubiquitous network
  access: available
  through standard
  Internet-enabled
  devices
- Location-independent resource pooling:
  processing and storage demands are balanced across a common infrastructure with no particular resource assigned to any individual user
- Highly-scalable:
  consumers can
  increase or decrease
  capacity at will
- Pay per use:
  consumers are
  charged fees based
  on their usage of
  a combination of
  computing power,
  bandwidth use and/or
  storage

Source: NIST (National Institute of Standards and Technology)



### **Cloud Deployment Considerations**

Moving business-critical applications away from traditional on-premise software solutions and toward the cloud can present challenges. As IT and business managers examine existing and future organizational goals—and how IT can support them—the size and scope of the cloud begins to take shape. Here are some primary questions to consider:

# What are the capabilities and limitations of your IT infrastructure?

The cloud has gained greater market acceptance, in part, because of its ability to significantly "lighten the load" on a company's existing IT resources. Companies that leverage the cloud can do so without committing to large initial outlays for hardware and licenses associated with on-premise installations. For organizations that have already invested heavily in on-premise server systems and do not want to abandon existing infrastructure, the cloud can be a viable alternative to traditional expansion or upgrades.

# How can you ensure sensitive and confidential information in the cloud is secure?

Ensure the cloud vendors you're evaluating have solid security mechanisms and processes in place, including multiple levels of security such as physical firewalls, usernames and passwords, encryption, etc., to protect against unauthorized access. Also make sure cloud solution providers store data on modern, high-performance servers located in secure state-of-the-art facilities with automated backup procedures and redundant servers to secure data against system failures.

## What are your specific requirements?

Because business and technology needs often vary significantly by industry, in addition to the fact that most organizations have their own unique requirements, cloud offerings also vary greatly in capabilities and price. Embarking on a cloud deployment that must integrate seamlessly with other systems as well as support a diverse set of users deserves a careful and methodical approach. A strong understanding of both the technical features of the proposed solution and your own existing business processes is a prerequisite for any successful cloud initiative.

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## **Deployment Models Defined**

# **Hybrid Cloud**

# **Public Cloud**

# Private Cloud

#### **Public Cloud**

Most people associate cloud computing entirely with the public cloud. A public cloud consists of a service provider offering resources, such as applications and infrastructure (server, operating system, network connectivity, storage, etc.) to an organization, a group of organizations and/or individuals or the general public over the Internet. Well-known examples include Amazon EC2, Microsoft Windows Azure, Google App Engine and RackSpace. These services can also include, but not be limited to, business applications such as ERP, CRM, accounting, data backup and document management and enterprise content management (ECM) systems. Providers leverage virtualization to divide up their respective customers into logical users that separately

and independently access their physical servers and devices for services. Public cloud services may be free or offered on a payper-use model.

#### **Private Cloud**

A private cloud (also sometimes referred to as an internal or corporate cloud) is cloud infrastructure operated for a single organization or a limited group or organizations, whether managed internally or by a third-party, and hosted internally or externally. A 'private cloud' would typically appeal to an organization that needs or wants more control over their data.

#### **Hybrid Cloud**

A hybrid cloud environment can combine private or public clouds as well as on-premise implementations that are connected together to deliver the benefits of multiple deployment models. Deploying a hybrid cloud enables organizations to better utilize existing resources as well as provide a more customized degree of fault tolerance and security combined with local access without being entirely dependent on Internet connectivity. If an organization requires that certain business services be implemented and/or data stored on-premise, but wants to leverage the benefits of hosted solutions to ease the burden on existing IT infrastructure, a hybrid cloud deployment offers an effective approach. In fact, GigaOM notes that 60% of businesses plan to implement a hybrid cloud model, combining cloud and on-premise deployments.

#### Source:

GigaOm, "Forget public; private clouds: The future is hybrids!" June 22, 2011

### The Promise of the Hybrid Cloud

Many innovative technologies have been viewed initially as disruptive when the market was not ready for them. Cloud computing began to really take hold a few years ago as the IT community recognized the cost savings, flexibility and elasticity associated with public cloud computing. However, with data security always on the forefront of IT concerns, some organizations were concerned about the potential risk of having highly confidential or mission critical data stored offsite. According to an IT survey by Unisys in January 2012, of the 45 percent of respondents that said cloud computing was their top IT priority for the year, nearly half of those planned to deploy a private cloud. However, 21 percent of respondents indicated they were looking for more operational flexibility and would be exploring hybrid clouds for that purpose.

#### **Utilization of Existing Resources**

Enterprise IT needs are often dynamic, evolving over time, and the hybrid cloud model empowers IT staff to flexibly augment existing on-premise infrastructure and services with those based in the cloud, without necessarily adding to its own workload. As a result, IT can better leverage existing staff, as well as capital investments such as servers, software, network infrastructure, and so on, while also incorporating assets from the cloud to create a more flexible and cost-effective IT environment.



#### **Scalability**

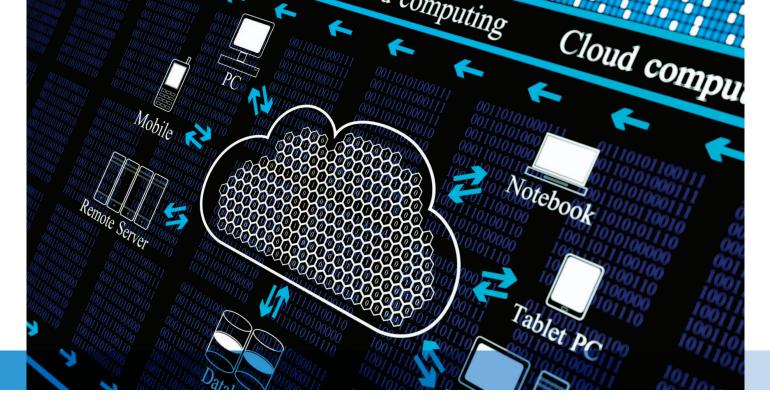
For many enterprises, IT needs such as processing power, application capabilities, storage and network demands can increase or decrease for a variety of reasons at any time. Frequently, resources that were procured in the past when business needs and budgets were different can be underutilized. By deploying cloud solutions to meet new or changing business needs, IT managers have the flexibility to ratchet up or down the amount of computing resources needed on demand. Hybrid cloud deployments can augment existing resources by leveraging cloud-based resources to better handle "bursts" of activity or data access, or for specific projects or workloads hosted separately outside of the internal IT network. It's possible to do this in a very agile manner with cloud-based resources, whether from the public cloud or with a private cloud implemented via a third-party hosting provider.

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#### **Performance**

The complexity of modern IT infrastructures can increase the challenges associated with supporting today's dynamic business needs. Some industry estimates maintain that 70% of current IT investment is earmarked for maintenance, resulting in fewer resources available for innovation. With users demanding faster response times and executives focused on lowering costs, IT needs a better strategy. By adding a public cloud or an externally hosted private cloud to existing systems deployed on-premise, performance and responsiveness can be improved while minimizing associated increases in IT complexity by utilizing efficient on-demand provisioning and easier web-based system administration typically provided with the latest of generation cloud services.

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### **Hybrid Cloud Deployment Models**

Two primary deployment models have emerged for businesses to deploy hybrid cloud solutions. Both involve cloud services offered by a third-party service provider, such as Amazon, Google, Microsoft Windows Azure, etc., combined with computing resources that are more closely controlled by the company, and often completely controlled by the company, as in the case of onpremise deployments. Note that the services offered by a third party can be just a hosted server and other infrastructure that are otherwise fully-maintained by the end-user company, or a complete solution including an application, servers and storage, such as Salesforce CRM, Microsoft Dynamics CRM Online, NetSuite and other hosted CRM and ERP solutions.

## On-Premise and Public/Private Cloud Hybrid

This hybrid approach is an option for organizations with investments

in existing on-premise servers, infrastructure and applications that they wish to maintain, or those that have specialized IT or regulatory requirements that are either not suited for a cloud architecture or are cost-prohibitive to migrate. In this scenario, certain elements of the organization's IT systems are then typically deployed via either a private cloud hosted by a third-party provider yet completely managed internally by the organization, or they are obtained through a vendor offering a complete solution including servers, infrastructure and applications via the public cloud, such as a cloud-based CRM or ERP. It would then also be required that within these environments, the existing on-premise systems and the new private and/or public cloud services be integrated at some level. For instance, a customer listed in the cloud-based CRM would also be accessible from the on-premise system(s).

#### **Private and Public Cloud Hybrid**

Another hybrid cloud option includes no on-premise components, which consists entirely of cloud-based solutions, private and/or public. Additionally, the organization can choose whether the private cloud simply utilizes a third-party hosting facility with all management and maintenance performed by internal IT staff, or for the third-party cloud vendor to also provide management services or full turnkey solutions that can only be accessed by a "private" community. Again, integration between the various cloud-based systems is an important consideration, if not always a mandatory requirement. As Unisys' IT survey points out, many businesses appear to want to migrate to cloud computing at their own pace, so having a variety of options when deploying cloud-based solutions can make the migration as efficient and productive as possible.

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### **Factors for Considering Hybrid Clouds**

Armed with a greater understanding of hybrid cloud deployment models and what they can entail, there are some considerations to keep in mind when evaluating these options.

#### Security



This is the first consideration for a reason. Security needs to be addressed in all areas of a hybrid cloud environment, from the application layer to the network infrastructure. Can the necessary level of security be assured for cloud-based systems and data? When evaluating options, topics to consider are account access controls and data encryption since confidential information is often transmitted via the public Internet. Another consideration is whether existing user accounts and groups can be utilized to create a single sign-on environment that is both secure and efficient.

### Integration



As mentioned earlier, in a hybrid environment, an important consideration is whether ondemand computing resources should be integrated with the organization's private and/or public cloud platforms and systems. If integration is required, the number of vendors and solutions to evaluate are reduced since providing smooth integration between various systems requires well-developed APIs and web services that not all systems provide.

#### Storage



Storage needs can be an important consideration if large amounts of data are involved since cloud-based storage can get expensive depending on the vendors used. On the other hand, hybrid options can often be used to offset the cost of cloud-based storage by using relatively inexpensive on-premise hard drives or NAS (Network-Attached Storage) devices to store large amounts of data, thereby offloading the storage requirements of the cloud-based systems.

#### Compliance



The role that compliance will play in a hybrid cloud environment depends on a variety of factors such as regulatory mandates, industry standards, audit requirements, geographic location and the capabilities and limitations of existing IT infrastructure. For businesses in heavily regulated industries such as pharmaceutical, medical devices, biotechnology, transportation and so on, as well as organizations with significant amounts of confidential data, it may be a requirement that some specific applications and

information reside on-premise behind the company firewall rather than in the cloud. Again, in this instance, the hybrid option can provide a good way to bridge the gap between the need to store certain data on-premise and the potential to improve business operations with cloud-based services.

#### Location



Geography plays a role as some countries have specific rules on how information is stored and secured. For example, the U.K under its Data Protection Act explicitly states that businesses cannot export data to countries that do not have adequate data protection laws. Similar to Sarbanes-Oxley requirements in the U.S., Basel II in European countries has specific requirements about the availability and length of time a provider can store financial data. It's important to determine if cloud providers can explicitly control the country in which servers are located and data is stored, and if so that they meet the requirements of the various countries and regions in which the business collects and stores data.



### **Conclusion**

Cloud computing holds promise for organizations looking to leverage the scalability, anywhere, anytime access and on-demand-nature of this increasingly popular deployment model. However, current economic conditions and business realities may dictate that existing resources cannot just be pulled out and replaced. The hybrid cloud computing model offers the promise of augmenting current enterprise capabilities and systems while enabling organizations to deploy and consume cloud-based resources at a pace that best suits their IT and business goals and budgets.

#### **About M-Files Inc.**

M-Files Inc. develops the award-winning M-Files enterprise content management (ECM) system and cloud-based service M-Files Cloud Vault that runs on the Windows Azure platform. M-Files is easy to deploy, learn and use, and has enabled thousands of businesses in over 90 countries make dramatic gains in efficiency and productivity by improving the way they organize and manage their business documents, information and processes. M-Files is available in 24 languages and is in use at customers such as AstraZeneca, EADS, Flybe Airlines and Parker Hannifin.

M-Files Inc.

5050 Quorum Drive, Suite 600, Dallas, TX 75254 Phone: 972-516-4210 | Fax: 972-516-4211 **M-Files Corporation** 

Hatanpään valtatie 26, 33100 Tampere Finland Phone: +358 3 3138 7500 | Fax: +358 3 3138 7550 sales@m-files.com www.m-files.com

