CASE STUDY: HYBRID CLOUD

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ABSTRACT

The notation of cloud engineering in the context of cloud computing had been widely used in discussions, presentations and seminars in various occasions in the middle of 2000s. The term cloud engineering was formally coined around 2007 and the concept of cloud engineering was officially introduced in April 2009. Cloud engineering- which is the application of several engineering disciplines to the concept of cloud computing. It is a systematic and scientific approach to the top level concerns of commercialization, standardization, and governance of cloud computing applications. This concept adopts and uses the tools and methods of engineering in conceiving, developing, operating and maintaining cloud computing systems.Cloud engineering is a field of interdisciplinary engineering that focuses on providing certain cloud services, such as "SaaS- software as a service", "PaaS- platform as a service", and "IaaS- infrastructure as a service". Today, more and more businesses are making use of cloud architecture nowadays. many IT industry experts are predicting that hybrid cloud environment will become a great demand by people in the near future. Many enterprises are becoming aware of the benefits of blending in-house and outsourced computing and networking resources. The industry is now ready to experience the major cloud vendors preparing platforms to suit the hybrid model. This paper presents a concept of hybrid computing.

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I INTRODUCTION

Hybrid is a combination of things. A hybrid cloud is a cloud computing environment in which an organization provides and manages some resources in-house and others externally. generally, the hybrid model allows a business to take advantage of the scalability and cost-effectiveness that a public cloud computing environment offers and that too without exposing the critical applications and data to third-party vulnerabilities and attacks. This type of hybrid cloud is also referred to as hybrid IT. Hybrid can be a combination of many things - public, private, traditional IT, etc

A Hybrid Enterprise is a composition of cloud, non-cloud, internal and external IT service delivery models that bound together by an integrated management environment, and common technology, processes and policies to optimize agility, enable data and application portability, and reduce risk.

II TYPES OF CLOUDS

Public Cloud

Means using someone else's Data Center to host the applications or subscribe to applications or use the data on the Web. these clouds provide many benefits to the enterprises, such as reduced capital expenditures, but there are still several problems associated with public clouds.

Most of the concerns related to public clouds are the security issues. From a security perspective, there are number of potential vulnerabilities, both in the WAN networking domain and at a data center level which can harm the data. Such as, if the customer is sending any unencrypted data via the Internet to a public cloud provider and has no idea of the data location, either within a particular virtualized data center or even without knowing at what data center his data resides. Therefore, from an enterprise perspective, the majority of applications that make use of public cloud provider transfer limited and non-critical applications and data, e.g. web servers and associated CRM systems, storage and sometimes collaboration and productivity tools.

Private Cloud

usually this is one's own data center, and can possibly be hosted by someone else also. These tools allow you to scale your data center to take advantage of Cloud features. Establishment of a internal private cloud environment (enterprise cloud) can be another option for enterprises not interested or willing to trust the public cloud for their applications. Even Private clouds do lack the benefits of public cloud, such as

- Requirement of large investments in purchasing and maintaining IT infrastructure/resources and data centers
- Lack of economies of scale – making own investments is more expensive as compared to a public cloud provider
- Assuming over-capacity in IT resources to handle temporary peak-loads – leading to underutilization of data center
- Maintaining more highly qualified and costly IT experts in-house is also a disadvantage with private clouds.

However, when it comes to security and data privacy issues, many would conclude that private clouds are a much safer alternative. But it also doesn't provide a security guarantee. The data would normally reside within the enterprise data center and therefore it will not be exposed to the dreaded "uncertain" data location and potential infringements, both due to WAN networking transport vulnerabilities and external data center conditions.

Hybrid Cloud

With hybrid clouds, IT managers can easily decide- what data and applications should reside within and be run in the internal private cloud and which should be moved out of the public cloud. Minimizing the resources used and balancing critical applications and data and less critical apps/data to the public cloud should be the goal.

API compatibility is another important issue. Several public cloud providers, including Terremark and Saavis, have also deployed WMware vCloud Express in their data centers, thus making it possible for enterprises to extend their private data center to a public cloud provider.

It seems likely that hybrid clouds will be an important element in making cloud computing more accessible and valuable for enterprises.

Such as You combine two cells in Excel and make it one cell, similarly as you combine two technologies into one, it's a mixture of two element – a hybrid environment. Similarly hybrid cloud computing environment is mixture of two or more cloud models that are independent but linked together where at least one private cloud and other could be public cloud to form a partnership with each other.

Fig.1

Hybrid Cloud Computing is a model in which organizations provide and manage resources in-house and other resources are manages externally or as out- sourced. In the light of above definition of hybrid cloud -you can be on safe side while selecting better cloud model for your organization. There are many services available by public cloud providers and you ideally can make use of them and can use another private cloud environment to store data where you can manage your hybrid cloud. That is why we call it hybrid cloud. Hybrid Cloud Computing environment gives the user full control over their data and application and therefore have fewer dependencies over public cloud environment. By implementing this strategy the user is securing his data on cloud environment.

The hybrid cloud model is said to combine the advantages of public and private cloud computing, but its complexity could undermine the potential benefits sometimes as well.

Leveraging a hybrid model accomplishes several goals:

1. It provides a clear use for public cloud computing. Specific aspects of existing IT infrastructure such as storage and compute occur in public cloud environments, and the remainder of the IT infrastructure stays on premise.

2. Using a hybrid model is a valuable approach to architecture, you can mix and match the resources between local infrastructure, which is typically a sunk cost but difficult to

scale, You place the applications and data on the best platforms, then span the processing between them.

3. The use of hybrid computing acknowledges and validates the fact that not all IT resources should exist in public clouds and some may never be stored in public clouds. Considering compliance issues, performance requirements, and security restrictions, the need for storing data at local is a fact of life. the hybrid model helps us all get better at understanding what compute cycles and data have to be kept local and what can be process remotely.

III HYBRID CLOUD BENEFITS AND FUTURE IMPACT

When using the hybrid cloud, one can select which data and applications will go into the public cloud and which will stay in the private cloud. The user has the ability to use multiple clouds for different applications and they can allocate different elements of an application to external or internal environments. The age of the hybrid cloud may be too narrow for a description. It may be better to say that it is now the age of cloud computing.

A hybrid model for cloud computing uses both in-house servers and cloud services. While some cloud offerings may include the entire operating system, like the Windows Azure Platform, others may only offer specific software services. In the case of the former, a hybrid situation would have the user's locally-hosted applications interface with the remote cloud platform. In the latter case, locally-hosted applications would interface with cloud applications. In both cases, there is a mix of cloud and traditional software.

The advantage of a hybrid model is that the users can still have their dedicated server and all of the flexibility that it gives to the user, he can also reap the benefits of having access to hosted services and applications from cloud hosting providers. This allows him to expand his web presence and still maintain some level of autonomy and privacy.
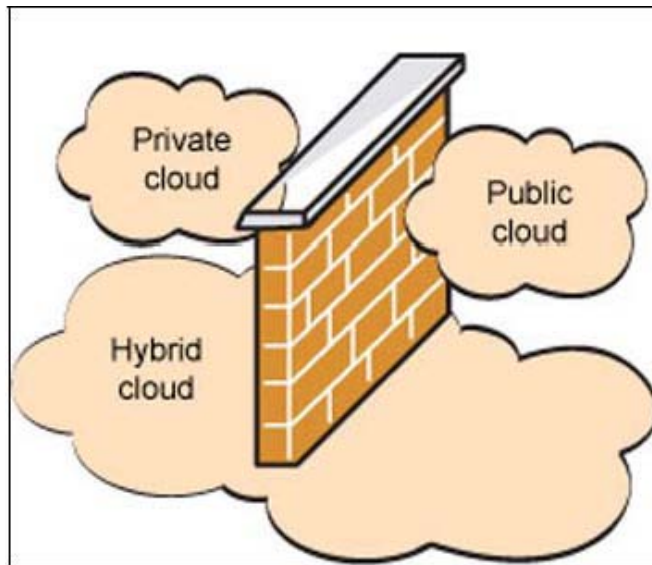
Fig.2

IV TYPES OF HYBRID CLOUD COMPUTING-

Enterprise Hybrid Cloud Computing

On an enterprise level, hybrid cloud computing usually means very similar to the public outsourced cloud to provide computing power and functionality that are too expensive to develop in-house while storing sensitive data on its own computers and storage media. Access to the cloud is controlled in-house via a virtual interface that allows easy access to the outsourced functionality and therefore the users are able to work from any remote location with a secure Internet connection.

Software as a Service and Hybrid Cloud Computing

Another example of hybrid cloud computing is software-as-a-service (SaaS), where costly software is accessed on a shared server that is controlled by the software provider and SaaS clients pay only for the amount and type of access they need, and the software remains on the provider's computers .Even security solutions are being offered in a hybrid cloud environment.

Hybrid Cloud Computing for Development

Often, a developer of complicated applications sometimes needs access to programs and other resources which are extremely expensive or otherwise hard to obtain. In addition, he needs a public environment where clients can easily and quickly access the applications which he develops for them. Therefore, a hybrid cloud platform, in which the basic tools are stored on his own computer or network along with unfinished work or work that does not need server access,

whereas specialized resources which he needs are accessed via a public cloud, is ideal.once the applications are ready, a client can be given access to them on the cloud

Hybrid Cloud Computing for Web Hosting

A new concept which adds benefit to the hybrid cloud computing is hybrid hosting. Hybrid hosting means when a dedicated server is partnered with access to cloud server hosting. The Hosting package that maintains the advantages of a dedicated server can also harness the power of the cloud at the same time.

For example, the dedicated server can store and serve the website under regular conditions, but in the case of traffic peaks that require additional disk space, memory or bandwidth, the cloud servers can provide the necessary resources on an ad hoc basis, and then cease to provide the extra resources when they are no longer needed.

The Hybrid Cloud: Why It Works for the Market

hybrid cloud computing has the formidable presence of conquering the market where it is now becoming more and more common.

These indicators are summarized as follows:

1. It is a more practical model, considering how you can customize the resources between on-premise infrastructure and off premise infrastructure. You simply place the applications and data on optimal platforms, then extend the analytical processing between them saving you from the tedious task of migration.

2. It showcases the best of both worlds. By playing on the strengths of two established platforms-public and private. hybrids present a good grasp of familiarity on what essentially should be kept local and innovation with what can be processed remotely.

3. Hybrid computing directly addresses the issues and concerns of the "Cloud Hosting Debate" by empowering the user with more security and control over the new evolution of cloud, drawing less resistance and a better utilization of what it is that the cloud can truly offer.

V CONCLUSION

Cloud computing is a better way to run business. Instead of running your apps yourself, they run on a shared data center. When you use any app that runs in the cloud, you just log in, customize it, and start using it. That's the power of cloud computing Cloud platforms aren't yet at the center of most people's attention. The odds are good, though, that this won't be true five years

from now. The attractions of cloud-based computing, including scalability and lower costs. If you work in application development, whether for a software vendor or an end user, expect the cloud to play an increasing role in your future.

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