

Hybrid Cloud Computing: Data Sharing & Security Issues

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Abstract:

Data deduplication is a technique for reducing the amount of storage space an organization needs to save its data. In most organizations, the storage systems contain duplicate copies of many pieces of data. For example, the same file may be saved in several different places by different users, or two or more files that aren't identical may still include much of the same data. Deduplication eliminates these extra copies by saving just one copy of the data and replacing the other copies with pointers that lead back to the original copy. Companies frequently use deduplication in backup and disaster recovery applications, but it can be used to free up space in primary storage as well. To avoid this duplication of data and to maintain the confidentiality in the cloud we using the concept of Hybrid cloud. To protect the confidentiality of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this paper makes the first attempt to formally address the problem of authorized data deduplication.

Keywords:

Deduplication; authorized duplicate check; confidentiality; hybrid cloud

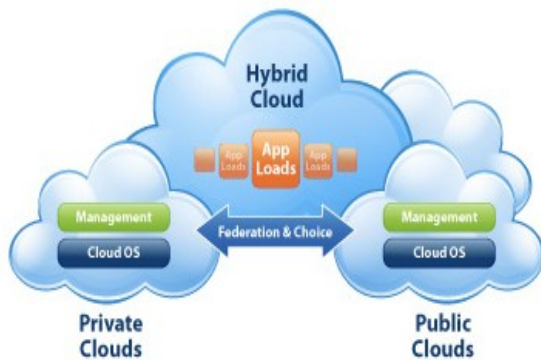
Introduction:

Hybrid cloud is a composition of two or more clouds (private, community or public) that remain distinct entities but are bound together, offering the benefits of multiple deployment models. Hybrid cloud can also mean the ability to connect collocation, managed and/or dedicated services with cloud resources hybrid cloud service as a cloud computing service that is composed of some combination of private, public and community cloud services, from different service providers. A hybrid cloud service crosses isolation and provider boundaries so that it can't be simply put in one category of private, public, or community cloud service. It allows one to extend either the capacity or the capability of a cloud service, by aggregation, integration or customization with another cloud service.

Varied use cases for hybrid cloud composition exist. For example, an organization may store sensitive client data in house on a private cloud application, but interconnect that application to a business intelligence application provided on a public

cloud as a software service. This example of hybrid cloud extends the capabilities of the enterprise to deliver a specific business service through the addition of externally available public cloud services. Another example of hybrid cloud is one where IT organizations use public cloud computing resources to meet temporary capacity needs that can not be met by the private cloud. This capability enables hybrid clouds

to employ cloud bursting for scaling across clouds.



Hybrid Cloud Problem

The following problems or challenges typically drive the need to integrate infrastructure cloud services from external providers into existing environments:

- Existing hardware, software, or staff resources cannot meet the demand for new technical capabilities and/or services within the environment.
- Periodic demand “spikes” require acquisition of hardware and software resources that sit idle during normal, non-spike usage periods.
- On-premises cloud services are usually not as cost effective as consuming the services from an external provider. Private cloud solutions make sense for maximizing

flexibility and efficiency on-premises, and provide a path to integrating with or migrating to public cloud services, we should not forget that extreme economies of scale are only going to be realized via public cloud services offerings.

Organizations with a large application portfolio will need to be able to determine hybrid cloud infrastructure requirements before starting new applications, or moving existing applications into a cloud environment. Different applications will have different demands in the areas of networking, storage, compute, identity, security, availability and performance.

Envisioning the Hybrid Cloud Solution

After clearly defining the problem you’re trying to solve, you can begin to define a solution to the problem that satisfies your consumer’s requirements and fits the constraints of the environment in which you’ll implement your solution.

Solution Definition

To solve the problems previously identified, many organizations are beginning to integrate infrastructure cloud services from external providers into their environments. In many organizations today, a department within the organization owns and manages network, compute (virtual machine), and storage technical capabilities. The people in this department may provide these technical capabilities for use by people in other departments within the organization, and/or, with additional technical capabilities, provide these capabilities as services, or even cloud services within their

environment.

The design considerations in this document are for a solution that enables an organization to:

- Set up an organization-level account and billing with an external provider of cloud infrastructure services, so that its consumers don't do so at an individual level.
- Allow its consumers to provision new virtual machines with the external provider that have capabilities similar to the capabilities of virtual machines that are provided on premises.
- Allow its consumers to move existing applications that run on the organization's on-premises network into a public cloud infrastructure as a service offering.
- Allow consumers of applications in the organization to resolve names and authenticate to resources that are running on the external provider's infrastructure cloud services, just as they do with resources that are running on premises.
- Enable core security, data access controls, business continuity, disaster recovery, availability and scalability requirements

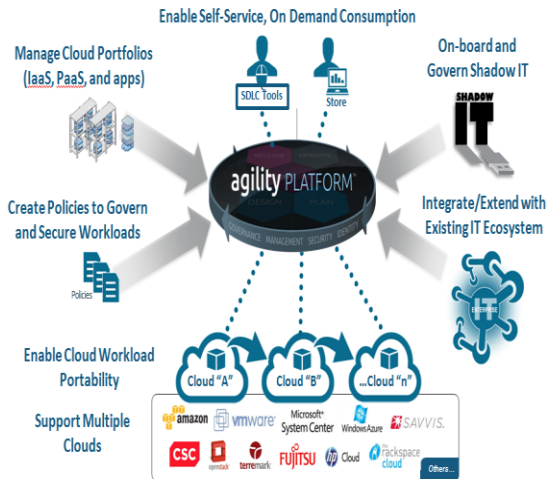
Requirements

- 1 Infrastructure Technical Capability Requirements
- 2 Solution requirement
- 3 Platform requirement
- 4 Infrastructure Services Capabilities Requirements
- 5 Management and Support Technical Capability Requirements
- 6 Service Operations Requirements
- 7 Service Delivery requirement

The number of managed cloud service providers offering hybrid cloud services continues to expand from the basic infrastructure, platform and application services to vertical industry solutions and enterprise architecture. Typically, the hybrid cloud service pack of managed services will provide migration tools to enable fast relocation of existing services between dedicated, private cloud and public cloud infrastructures, that may include virtual servers and SAN storage, integrated on-demand servers, dedicated databases, firewalls, load-balancers, content delivery network (CDN) and streaming services. Leading global providers include Amazon, Verizon Terremark, Rackspace and CenturyLink (through its acquisition of Savvis and Qwest

HYBRID INFRASTRUCTURE





Conclusion:

As a buyer in a fast-moving market, keep your options open and make sure you can port your data and apps if you find a better offer or the current provider goes bust or changes ownership. That is partly a contractual matter, partly a question of portability and open portability APIs. Finally, keep an eye on the OpenStack community as it aligns with the software defined network evolution. With the introduction of OpenStack, software-defined networking and APIs for programmatic control over both physical and virtual infrastructure, new infrastructure as a service concepts are emerging. This may lower costs and open up higher levels of software and hardware integration with high security right across the corporate hybrid network.

6. REFERENCES

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