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Hybrid Cloud for Educational Sector

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Abstract

Cloud is an emergent field that relates virtual memory and storage to real time application. The organization and architecture of cloud varies on the basis of its set up and uses. It has profound applications in the field ranging from education sector to social networking and extended to international relations and business. To evolve and instrument a cloud architecture by modifying the platforms and implementing the concept of hybrid cloud along with cloud building techniques, using Big Data Analytics to formulate the statistical organization of the cloud service. In this paper we propose the hybrid cloud interface where the user from different educational sectors interact with the cloud environment and request the cloud provider to showcase the resources

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Keywords: cloud computing,private cloud,public cloud,hybrid cloud;

1. Introduction

Various cloud architecture have been introduced with their implementation in several fields. The architecture of the cloud can be tailor-made and can be used according to your own requirements. The cloud platform has been proved significant in the development of various sectors, with the integration of the required features with the existing technology to present a new innovation in the cloud architecture[2][3]. There are various uses of cloud as it provides a scope of implementing data collection and distribution on a wide platform. Apart from data

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processing, cloud presents a platform for application and software development along with online usage over a wide range of domain.

2. Proposed Architecture

The architecture diagram will be designed and reshaped to implement the functionality of the existing platforms to make it tailor-made according to the requirement of the organization. Through the hybrid cloud interface the user from different educational sectors interact with the cloud environment and request the cloud provider i.e. the international organization to showcase the resources. This hybrid cloud interface is responsible for service creation and deletion, interacting with each of the individual educational sector for its separate requirements, sharing of the specified data and information hiding for privacy. Certain data would be common between each educational sector, between the educational sectors and an international organization, between the users and other organizations as a whole.

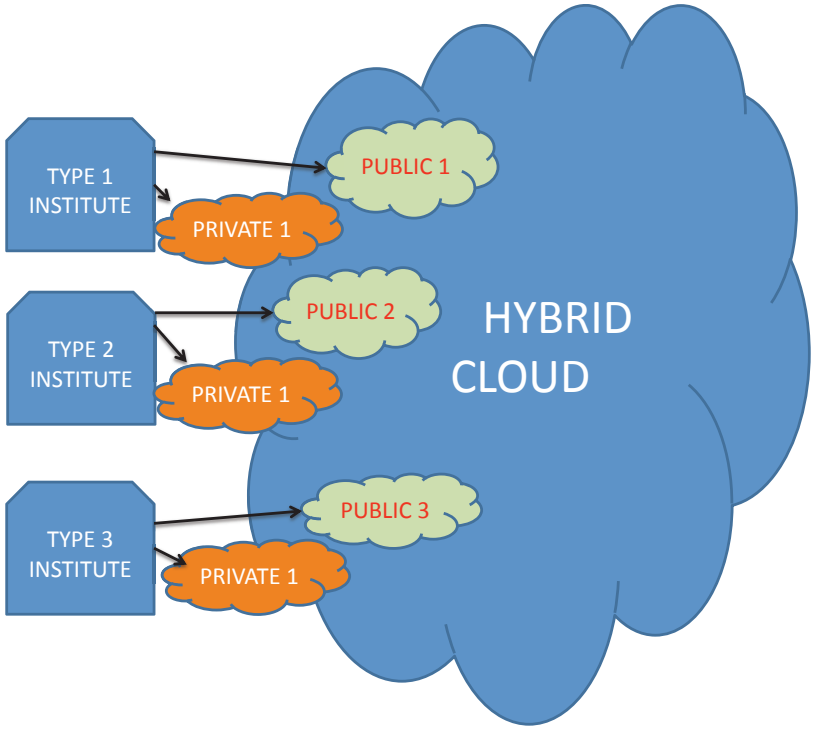

Fig. 1 Creation of Hybrid Cloud from educational sectors

3. Essential Characteristics

On-demand self-service: A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Broad network access: Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., tablets, laptops, mobile phones and workstations)[1].

Resource pooling: The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or data center). Examples of resources include storage, processing, memory, and network bandwidth.

Rapid elasticity: The capabilities can be easily provisioned and released, in some of the cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.

Measured service: Cloud systems automatically control and optimize resource use by leveraging a metering capability1 at some level of abstraction appropriate to the type of service (e.g., processing, storage,bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

4. Methodology and Implementation

The proposal suggests including cloud providers, for the formation of the required type of cloud with a better architectural design. It would also include making a pact between the Indian educational organizations (i.e. technical universities, medical universities, B-schools etc.). Initially, a public and a public cloud would be developed for each institution; then the project would be collaborated with an international organization that is working for the educational sector and improving the system of education throughout the globe[2]. There would be a hybrid cloud which would be formed from merging the public cloud of all the Indian educational institutions and some part of their private cloud. This cloud would be given to the international organization, where the hybrid cloud would be analyzed upon looking for the loopholes in the educational system, suggesting more number of innovative courses to the Indian education, and sharing of the study materials, new emerging fields and areas of research.

This would be a stepping stone to achieve uniformity in the educational system throughout the globe with better facilitated research and knowledge transfer. The students moving from one country to other for higher education will not face any kind of discrepancy in their studies. The international organization would also be playing a very crucial role, the information provided to them would be collaborated and worked upon to come to a concluding decision of the courses to be share world-wide. They would be the one involved for the designing of the new hybrid cloud which would be publically shared for the educational system to reach to wide audience. There would be a data path enabled between the individual institutes as such for planning strategies and methods for the distribution of education through cloud.

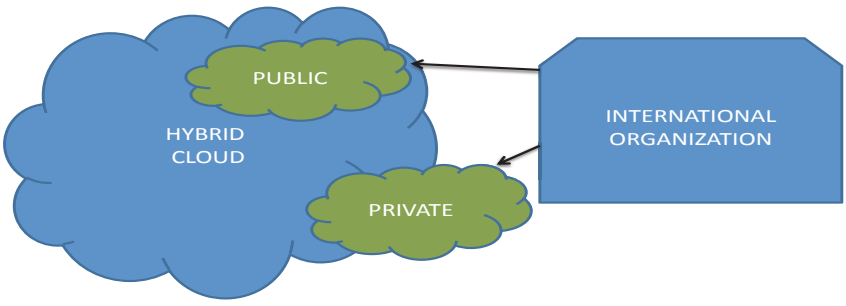

Fig. 2. Integrating hybrid cloud of educational sector to cloud of international organization

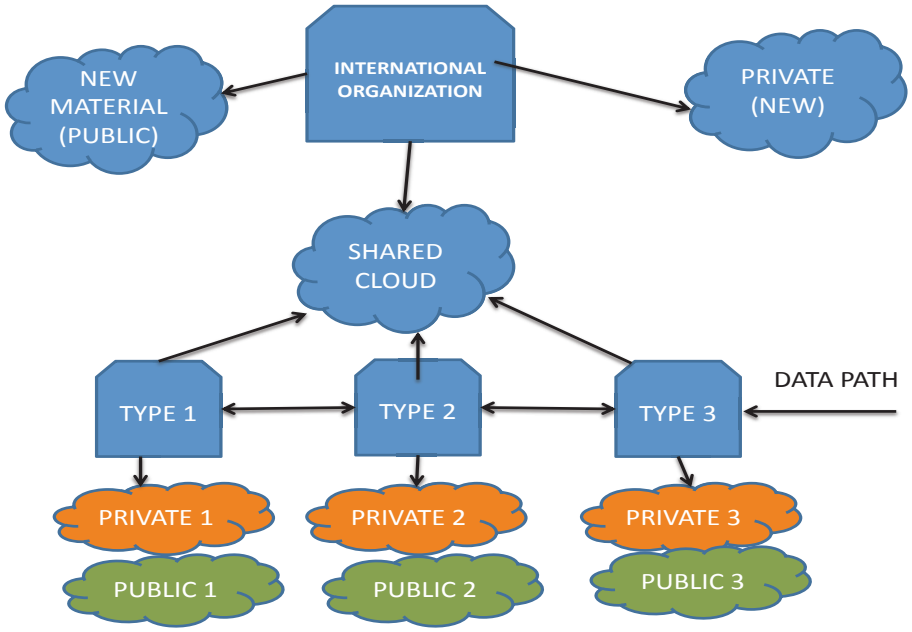

Fig. 3. The final cloud formation from the International organization and distributed to the educational institutes

If you were going to implement a private or hybrid cloud yourself, you would need to design, implement and manage a virtual network on top of your existing resources. To provide users with the same features found in commercial public clouds, private and hybrid clouds must perform a number of technically complex tasks. They must provide a uniform, homogeneous view of virtualized resources, regardless of the underlying virtualization platform. They must manage the full cycle of Virtual Machines, including dynamically establishing networks for groups of Virtual Machines and managing their storage requirements, such as deploying virtual machine disk images or creating software environments on-the-fly[4][6][8].

They must support configurable resource allocation policies to meet the organization's specific goals (such as high availability, server consolidation to minimize power usage, and so on). Finally, they must adapt to an organization's changing resource needs, including peaks in which local resources are insufficient, and changing resources, including addition or failure of physical resources.

So, a key component of managing private or hybrid clouds is the management of virtual infrastructure, that is, the dynamic orchestration of Virtual Machines to meet the requirements outlined above. Unless you have already the expertise to do this in house, you will need the support of an experienced private or hybrid cloud services vendor to manage this in order for you to obtain its benefits. Only with this kind of support in place, can small businesses immediately enjoy the full benefits of a hybrid cloud infrastructure without having to implement and administer it themselves[9][11].

5. Conclusion

The proposed architecture of the hybrid cloud poses a new era for the educational sector, through which online educational and research can be implemented. This will provide a way by which the courses and educational advancements can be shared between nations and the Indian educational sector could be improvised.

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