Data Portability in Cloud: A Major Concern

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Abstract — Porting has become an integral part of our system. We can see the data being ported from one place to another in fraction of seconds without any hurdle. Have we ever tried to analyse the following questions: functionality behind the system, has our data leaked, was there any loss of data, are we using the right method to port the data? One primary question apart from those was what happens to data once ported, is it still available or destroyed, or being used by someone else for research? In this paper we do not answer to the questions above, we would analyse different types of portabilityissues and few resolutions to the challenges faced by them.

Keywords— Cloud Computing; Data Portability; Security in Cloud

I. INTRODUCTION

In this scenario we should not confuse with the terms Interoperability and Portability. Interoperability is defined as the ability for two or more systems or applications to exchange information and mutually use the information that has been exchanged. Whereas Portability is defined as the ability to move the data from one system to another so that it is usable on the targeted system. As our main focus is on portability and not interoperability we shall learn more about portability in coming sections. Portability can primarily be categorised into data portability and application portability and platform portability.

Data portability refers to the portability of data from one machine to another machine, and across different applications. It focuses mainly on data components. Application portability refers to the different applications being transferred across different systems. Application components are the major concern for portability, not the data. And, platform portability refers to the portability in different operational environments. It can be again categorised into two types - Platform Source Portability and Machine Image Portability. The former deals with the recompilation of data, whereas the later type of platform portability deals with the image of applications and platform.

II. DATA AND APPLICATION PORTABILITY

Portability is a concern, whether it is been used by the implanted system or for marketable systems. If the data is managed properly then, portability of data saves significant amount of development time. The success of the system will depend on the data being supplied by the source system. If the source enters the data in exactly the format that is accepted by the target system then we can achieve success else it is a failure. The major factor incorporated behind the system is that even the format of data should match because while transforming the data from one format to another in different operating systems there are chances of interpreting the data in a different way, hence, resulting in loss of data.

In contrast to data portability, application portability is a lengthy process. The application needs tobe reliable enough to support in terms of cloud computing. Porting custom applications in cloud shows how dynamic the organization is to deliver the product in time to the client. Cloud computing with porting of application results in accessing the data from anywhere in the world and from any system.

III. ISSUES AND CHALLENGES

Nothing is built successfully if there are no challenges. In the case data portability, movement of data in and out of cloud plays a vital role. Especially in the case of Saas (Software as a Service), cloud service customer data which is the concern for data portability. Since for these services, the content, data schemas and storage format are under the control of cloud service provider and the customer will need to understand how the data can be imported into the services and exported from the services. Furthermore, in application portability Paas (Platform as a service) and Iaas (Infrastructure as a service) services of cloud computing is essential. As Saas (Software as a Service) belongs to the cloud service provider which cannot be ported elsewhere by the customer. The app environment should be user friendly and system friendly which helps in using the application on any system.

In data portability, it is typical for the cloud service provider to have the format and the content of the cloud service provider. Data portability can be achieved if the formats are different between the two, since there are straightforward standard tools that can be used to perform some data transformation. If the standard tools does not achieve the goal, a custom tool can be built to meet the requirements as there should not be any different in the extent or in the semantics of the data which could be major barrier to achieve data portability.

While in the case of application portability, some of factors like admin interface, business interface, consumer interface and security should be considered. As we are trying to port an application from one system to another, the linking between the interfaces is really important. Once the application is ported with the help of cloud, security of data like loss or leakage of data in any kind or in any form should not happen.

CONCLUSION

To continue with data portability, few factors like word size, data alignment, word endianness, complier differences, word library, synchronization and nonportable features should be kept in mind. Cloud factors like private cloud, public cloud, community cloud and hybrid cloud should be noted in the case of application portability. The loss of data can happen anytime and anywhere either in the form of accidental data loss or incidental data loss. The reasons for data loss are electrical power problems, failure of devices, improper codding, database bug's, and no backup of data.

Usage of standards like Open Virtualization Format that is designed to address the portability and deployment, Open Cloud Computing Interface which defines the protocol and API for all kinds of cloud computing management task, and many more which helps in establishing the trust for porting the data or application securely. Apart from data portability and application portability, portability and interoperability can be categorised as Platform Portability, Application Interoperability, and Management Interoperability.

References

[1] *Cloud Computing Portability and Interoperability : Cloud Portability and Interoperability*. (n.d.). Retrieved from The Open Group: http://www.opengroup.org/cloud/cloud/cloud_iop/cloud_port.htm

[2] Expert Group Report, Europen Comission. (2009). The future of cloud computing - Opportunities for cloud computing beyond 2010. *Information Society and Media*.

[3] Gantz, J. F., & Toncheva, A. (2012, March). Cloud Computing's Role in Job Creation.

[4] Gens, F. (2008, October 08). *IT Cloud Services Forecast – 2008, 2012: A Key Driver of New Growth*. Retrieved from IDC: http://blogs.idc.com/ie/?p=224

[5] Rouse, M. (n.d.). *data portability definition*. Retrieved November 17, 2015, from http://searchcloudapplications.techtarget.com/definition/data-portability

[6] *Security Breaches, Data Loss, Outages: The Bad Side of Cloud*. (n.d.). Retrieved from Data Center Knowledge: http://www.datacenterknowledge.com/archives/2015/03/16/security-breaches-data-loss-outages-the-bad-side-of-cloud/