Online Data Migration between Heterogeneous Cloud Storages

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ABSTRACT: Today, There are many applications such as search engine clusters, video-on-demand servers, sensor networks and grid computing whose data stores on storage server. A storage server typically consists of set of storage devices. In such a system migration of data from one cloud storage to another requires a lot of effort as each and every server runs on different protocol. Most of the previous results on data migration assume that each storage node can perform one data transfer at a time. A storage node can typically transfer multiple data and it can reduce the total migration time significantly. Moreover, Storage devices heterogeneous capability increases as its demand increases. Here we consider the heterogeneous data migration problem, so an intermediate protocol must be required which may integrate the protocols of one server to another server. The proposed work shows that how can data migrate between two cloud storages, which may be heterogeneous or homogeneous, using an intermediate technology WCF (Windows Communication Foundation).

 KEYWORDS: Data Migration; Windows Communication Foundation (WCF); Extensible Application Markup Language (XAML);

I. INTRODUCTION

Data migration is the process of moving data between two different cloud servers. There are many types of data migration and one and the most important is the database migration. Database migration is the process of moving the business logic, schema, physical data and database dependencies from current system to a different system.

There are many applications such as search engine clusters, video-on-demand servers, sensor networks and grid computing whose data stores on storage server. A storage server typically consists of set of storage devices, which typically connected using a dedicated high-speed network. It is critical to migrate data to their target disks as quickly as possible to obtain the best performance of the system. Many organizations used external hardware to transfer the data which have many side effects like data security, its integrity etc. So online system needed to migrate the data. Windows Communication Foundation (WCF) is a universal framework that used managed code to build and run SOA application. The reason of why WCF will be the new generation development technology lies is not only its technology advantage but also its convenient programming model. WCF can create the next generation of secure, reliable and interoperable services. XAML (Extensible Application Markup Language) language is used in WCF. Visual Studio or Microsoft Expression Blend can be used to generate the XAML. XAML, like all XML (Extensible Markup Language)-based languages, is case sensitive.

The main purpose of using WCF is that it is a new generation technology. And it can be used to migrate the data from one cloud storage to another and results may enhance the migration protocol services, a cross breed layer architecture system for the future migration works and also the integrity of the different protocol architecture clouds.

II. RELATED WORK

In [1] authors include a tool called Migratool, which aims to migrate the geospatial data among both distributed and heterogeneous data sources. This tool is based on three tier architecture and it has been implemented using the J2EE architecture. But it does not satisfy all the accuracy regions and also this tool is platform dependent. Paper [2] tells

handling a large amount of unstructured data on web, providing elastic scalability, etc. RDBMS would not be sufficient enough. Therefore, new document oriented distributed data stores are emerging to cater to these requirements. Moreover, different cloud data stores are following different schemes to store the data. So data transfer between that is very difficult. Paper [3] focused on the migration of virtual machines (VMs) one cloud to another. Although the paper has provided vital information regarding the virtual machines but virtual machine are not always feasible at each and every platform of server and also virtual machine (VM) migration is not possible among different service providers. Paper [4] focused on the data migration between any organization's cloud storage that are located at different geographical locations with different data formats and also excepting to achieve high level of data security, accuracy and privacy. But does not tell the data migration between different organizations and also this system is still under development. In [5] authors describes about the use of WCF in the cloud application. WCF is one of the major components of our research work. The paper briefs about the advantages of WCF but the author fails to provide any relevant information regarding the integration of the cloud networks using WCF services and also that the service contract of WCF services might become useful at the time of migration of structure from one cloud to another. The paper [6] describes the features of XAML. XAML is used to transfer the data from one end to another and works on WCF and Silver light (tool of writing and running rich Internet applications, features like as Adobe Flash).

III. PROPOSED WORK

Here, we consider the two cloud storages say Microsoft Azure and Go Daddy.

✓ Let t_1 time taken when data is transfer from one cloud to another with the same service provider say Microsoft Azure.

✓ Let t_2 time taken when data is transfer from one cloud to another with the different service provider say between Microsoft Azure and Go Daddy.

Then,

$$t_1 < t_2$$

This is happened because the data transfer rules and constraints are same in t_1 but different in t_2 during migration.

Data transfer between same cloud storage is very easy but data transfer between different cloud storages requires a lot of effort. So, it needs a data migration service or application that can integrate these two service protocols. WCF is a new framework and is used to generate the secure, reliable and interoperable services.

Here, new built data migration service must contain the rules and constraints of both sided service protocols.

For example, primary key is a constraint in a Microsoft azure i.e. it requires data insertion occur only along with a primary key otherwise data is not loaded in it.

A. *Design Considerations:*

- 50 GB internal hard disk
- Computer/laptop of dual core process(minimum)
- 2 GB of RAM
- Data space at servers
- Visual studio 2010 or upper
- SQL server management studio 05 or upper
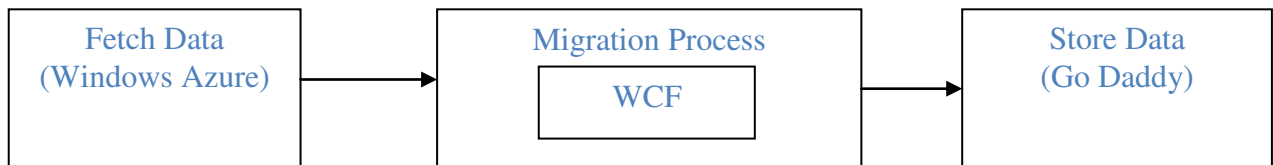- Windows-OS (vista or seven or eight)

B. *System Architecture :*

Fig1. System Architecture

- *Fetch Data***:** Fetch database's data from Window Azure.
- *Migration Process:* Migrating the data from Window Azure to the Go Daddy server using WCF.
- *Store Data:* Store the Fetched data into Go Daddy server.

IV. SIMULATION RESULTS

Windows azure server is an online development and storage portal termed as cloud server of MICROSOFT where the data is to be migrated.
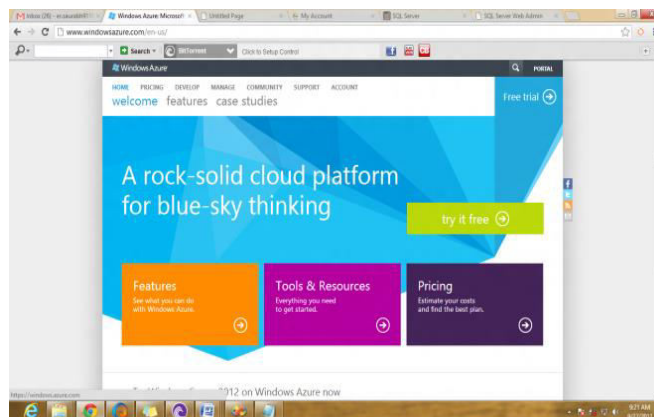

Fig3. Window Azure Cloud

The below window shows the architecture of the go daddy server where the migrated data is received.
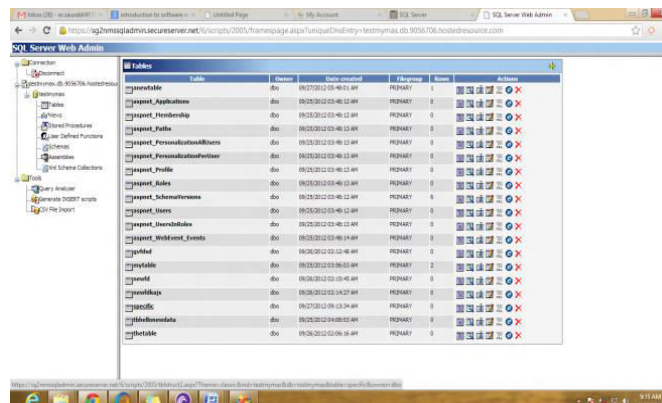

Fig2. Architecture of go daddy Server

V. CONCLUSION

The Cloud storage consist of many application's data that are implemented by different technologies like asp.net, java etc. So need a portable service to migrate the data between two cloud storages. WCF framework used to build the next generation of secure, reliable and interoperable services. In this paper, we consider the data migration problem which may be solved by the WCF whose results may leads to minimize the data migration time and also to neglect the use of hardware that used during migration process.

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BIOGRAPHY

Parvinder Kaur has received her B.Tech in Information Technology from Adesh College of Engineering. And Technology, Faridkot in 2012. She is pursuing M.Tech in Information Technology from Chandigarh Engineering College, Landran. Her research interest includes Cloud Storage, Web, Data Mining etc.