ISSN: 2321-7782 (Online)
Volume 3, Issue 4, April 2015
International Journal of Advance Research in Computer Science and Management Studies
Research Article / Survey Paper / Case Study
Available online at: www.ijarcsms.com

Grid Cloud Computing and Data Warehousing

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Abstract: Innovations are necessary to ride the inevitable tide of change. Most of enterprises are striving to reduce their computing cost through the means of virtualization. This demand of reducing the computing cost has led to the innovation of Cloud Computing. Cloud Computing offers better computing through improved utilization and reduced administration and infrastructure costs. Cloud Computing is the sum of Software as a Service (SaaS) and Utility Computing. Cloud Computing is still at its infant stage and a very new technology for the enterprises. Therefore, most of the enterprises are not very confident to adopt it. This research paper tackles this issue for enterprises in terms of cost and security. In this paper I discuss the benefits and drawbacks an enterprise can have while they adopt Cloud Computing in terms of Cost and Security. In the end, concluding that Cloud Computing is better for medium and small sized enterprises as compared to large enterprises in terms of both cost and data security.

Key words: Cloud Computing; SaaS; IaaS; PaaS; Elasticity; Cost; Security;

I. INTRODUCTION

The grid cloud computing is the new idea of developing the different distributed resources in cloud computing into a single service oriented architecture. This interface provide the great flexibility to the end user and reduce the total cost of ownership on demand services and many things [1,2,3,8].

A key differentiating element of a successful information technology (IT) is its ability to become a true, valuable, and economical contributor to cyber infrastructure [4]. “Cloud” computing embraces cyber infrastructure, and builds upon decades of research in virtualization, distributed computing, “grid computing”, utility computing, and, more recently, networking, web and software services. It implies a service oriented architecture, reduced information technology overhead for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other things [5].

II. GRID CLOUD COMPUTING INFRASTRUCTURE

Grid cloud computing infrastructure makes applications dramatically easier to develop and deploy, thus expanding the feasible scope of applications possible within budget and organizational constraints, and shifting the scientist’s and engineer’s effort away from information technology development and concentrating it on scientific and engineering research[4,2,6].

Grid cloud computing infrastructurealso increases efficiency, quality, and reliability by capturing commonalities among application needs, and facilitates the efficient sharing of equipment and services.”[5]

Today, almost any business or major activity uses, or relies in some form, on IT and IT services. These services need to be enabling and appliance-like, and there must be an economy of-scale for the total-cost-of-ownership to be better than it would be without cyber infrastructure[6,5].

Technology needs to improve end-user productivity and reduce technology-driven overhead. For example, unless IT is the primary business of an organization, less than 20% of its efforts not directly connected to its primary business should have to do with IT overhead, even though 80% of its business might be conducted using electronic means[7,8].

III. Literature Review

Cloud Computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services. The services themselves have long been referred to as Software as a Service (SaaS). The datacenter hardware and software is what we will call a Cloud. When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a Public Cloud; the service being sold is Utility Computing. We use the term Private Cloud to refer to internal datacenters of a business or other organization, not made available to the general public. Thus, Grid Cloud Computing is the sum of SaaS and Utility Computing, but does not include Private Clouds. People can be users or providers of SaaS, or users or providers of Utility Computing.[11]

The recent development of Cloud Computing provides compelling value proposition for organizations to outsource their Information and Communications Technology(ICT) infrastructure. However, there are growing concerns over the control ceded to large Cloud vendors ,especially the lack of information privacy . Also, the data centers required for Cloud Computing are growing exponentially, creating an ever-increasing carbon footprint and therefore raising environmental concerns [9]

Grid Cloud computing is a type of computing that relies on *sharing computing resources* and the memory space rather than having local servers or personal devices to handle applications. In grid cloud computing, the word grid cloud is used as a metaphor for *"the Internet,"* so the phrase grid *cloud computing* means "a type of Internet-based computing," where different cloud services such as storage and applications services are delivered to an organization's computers and devices through the Internet by using the single application interface .[9]

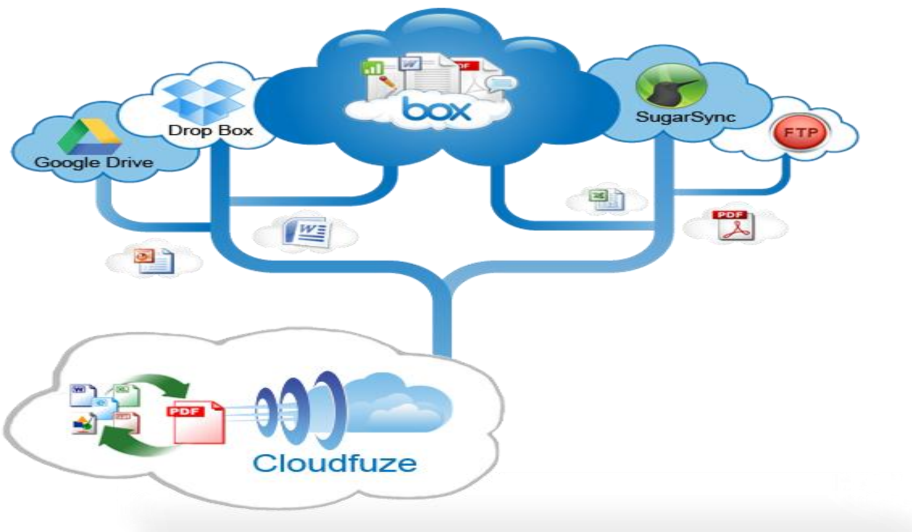

Figure 1 : Structure of Multi cloud Functionalities

Data warehouse is about loading of data from heterogeneous sources like operational system, mainframes, files, etc. which is queried by business users to make analytical decisions. the data from various sources is extracted, transformed and loaded in warehouse. This process is called as ETL(extract ,transform ,load). In ETL process, loading becomes inefficient as the data volume grows thereby increasing the loading window for data warehouse loading.[10]

a) Grid cloud computing & data warehousing

"Cloud" computing – a relatively recent term, builds on decades of research in virtualization, distributed computing, utility computing, and more recently networking, web and software services. It implies a service oriented architecture, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, on-demand services and many other things. This paper discusses the concept of "grid cloud computing", some of the issues it tries to address, related research topics, and a "cloud" implementation available today. Keywords: "grid cloud computing", virtualization, utility computing, end-to-end quality of service

IV. Problem Examined

In performance-testing the Eucalyptus framework, the goal was to answer two questions.

» First, how effectively can Grid cloud computing applications access storage resources provided by either local disks or EBS?

» Second, how effectively can grid cloud computing applications access network resources?

Given the research that has been invested in I/O virtualization in recent years, and the ease-of-installation that was promised by Eucalyptus, the hope was that applications would perform efficiently out-of-the-box.

V. Towards Solution

A. Scenario 1

The first scenario relies on exporting and importing service configurations on clouds. Suppose that a given company already have a virtual on-production infrastructure deployed in a Cloud Provider CP1 (egg mail). However, such company (as a customer) experienced server performance degradation, which affected the business case negatively. Thus, it was decided to move the entire virtual infrastructure to a new Cloud Provider CP2. With the use of standards for inter-cloud virtual machine exchange, it is possible to export the current virtual infrastructure configuration in a standardized manner, which will permit to import it into a different cloud without refactoring what was consolidated before. This example is based on the IaaS principles, but it can be applied also to SaaS (Software as a Service) where a company can export/import cloud server configurations for thousands of users with the help of single application interface.

VI. Conclusion

Despite of various initiatives related to interoperability and neither standards in the area of cloud computing, there is still no widely acceptance on a common cloud definition nor standards. This characteristic is considered normal when discussing aspects of a technology in its infancy [16]. However, a fundamental step towards a wide acceptance is the necessity. Customers and cloud providers should to map use cases (scenarios) where the lack of standards turns the process critical. Therefore, such use cases should be quantified in terms of costs envisaging how much resources both customers and cloud providers may save. Moreover, the distinction of core and proprietary functionalities seems to be the key for the adoption of cloud standards. Not only customers will benefit from this distinction, but also cloud providers which would have the possibility to provide basic standards and provide proprietary solutions on the top of core functionalities/resources

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