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Resource Selection based Collaborative Cloud Computing

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Abstract—The demand for scalable resources in some applications has been increasing very rapidly. Many researches are going on to create one environment connecting multiple clouds for scalable computing capabilities or for fully utilizing idle resources. By identifying and understanding the interdependencies between Resources, Preference of users and Utilization of users, Utility based User Preference Resource Selection, a Collaborative Cloud Computing platform has introduced, which focus on Cloud Resources, Cloud Service Providers SLS's, User Preferences, and utilization of the users. It can achieve enhanced efficient management of resources and user satisfaction among distributed resources in Collaborative Cloud Computing. This method provides a environment to point out its desired resources, Resources ability or capability, User's Requirements and also find the available of the resources. Then the cloud users can able to know about each Cloud Resources and all details about the Cloud abilities, so that cloud users can choose effective cloud platform. In addition, this environment is scalable to the cloud users and Cloud Resources with the Collaborative Cloud Computing.

Index Terms--- Distributed systems, cloud computing, resource management, reputation management.

INTRODUCTION

Cloud computing has been envisioned as the next generation information technology (IT) architecture for enterprises, due to its long list of unprecedented advantages in the IT history: on-demand self-service, ubiquitous network access, location independent resource pooling, rapid resource elasticity, usage-based pricing and transference of risk. As a disruptive technology with profound implications, cloud computing is transforming the very nature of how businesses use information technology. One fundamental aspect of this paradigm shifting is that data are being centralized or outsourced to the cloud. From users' perspective, including both individuals and IT enterprises, storing data remotely to the cloud in a flexible on-demand manner brings appealing benefits: relief of the burden for storage management, universal data access with location independence, and avoidance of capital expenditure on hardware, software, and personnel maintenances, etc.,

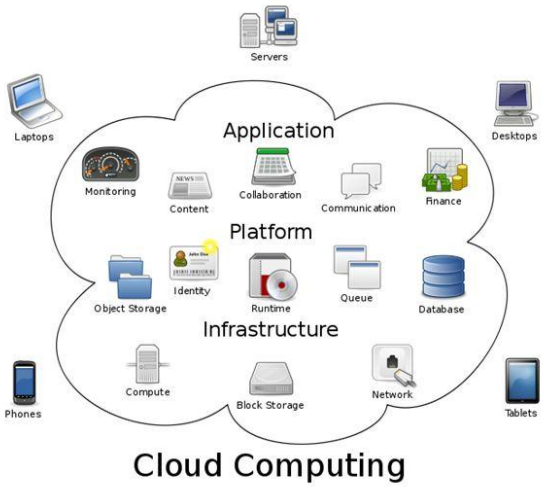

Fig 1: Architecture of Cloud Computing

COLLABORATIVE CLOUD COMPUTING

Cloud collaboration is a newly emerging way of sharing and co-authoring computer files through the use of cloud computing, whereby documents are uploaded to a central "cloud" for storage, where they can then be accessed by others. New cloud collaboration technologies have allowed users to upload, comment and collaborate on documents and even amend the document itself, evolving the document within the cloud. Businesses in the last few years have increasingly been switching to use of cloud collaboration.

Cloud collaboration brings together new advances in cloud computing and collaboration that are becoming more and more necessary in firms operating in an increasingly globalised world. Cloud computing is a marketing term for technologies that provide software, data access, and storage services that do not require end user knowledge of the physical location and configuration of the system that delivers

the services. A parallel to this concept can be drawn with the electricity grid, where end-users consume power without needing to understand the component devices or infrastructure required to utilize the technology. Collaboration refers to the ability of workers in a company to work together simultaneously on a particular task. In the past, most document collaboration would have to be completed face to face. However, collaboration has become more complex, with the need to work with people all over the world in real time on a variety of different types of documents, using different devices. While growth in the collaboration sector is still growing rapidly, it has been noted that the uptake of cloud collaboration services has reached a point where it is less to do with the ability of current technology, and more to do with the reluctance of workers to collaborate in this way. Before cloud file sharing and collaboration software, most collaboration was limited to more primitive and less effective methods such as email and FTP among others. These did not work particularly well, and so the need emerged for a simple to use, yet feature rich cloud collaboration solution.

It has also been noted that cloud collaboration has become more and more necessary for IT departments as work forces have become more mobile and now need access to important documents wherever they are, whether this is through an internet browser, or through newer technologies such as smart phones and tablet devices. Furthermore, cloud collaboration is important in a world where business has become more globalised, with offices and clients located all over the world.

The mainframe computing era enabled business growth to be untethered from the number of employees needed to process transactions manually. Recently, cloud collaboration has seen rapid evolution. In the past, cloud collaboration tools have been quite basic with very limited features. Newer packages are now much more document-centric in their approach to collaboration. More sophisticated tools allow users to "tag" specific areas of a document for comments which are delivered real time to those viewing the document. In some cases, the collaboration software can even be integrated into Microsoft Office, or allow users to set up video conferences.

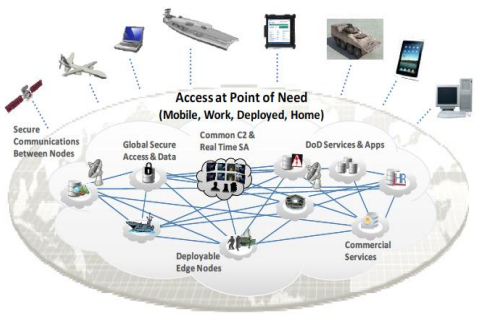

Fig 2: An Example of Collaborative Cloud Computing

Furthermore, the trend now is for firms to employ a single software tool to solve all their collaboration needs, rather than having to rely on multiple different techniques. Single cloud collaboration providers are now replacing a complicated tangle of instant messengers, email and FTP. Cloud collaboration today is promoted as a tool for collaboration internally between different departments within a firm, but also externally as a means for sharing documents with end-clients as receiving feedback. This makes cloud computing a very versatile tool for firms with many different applications in a business environment. Reduce workarounds for sharing and collaboration on large files

A 2011 report by Gartner outlines a five stage model on the maturity of firms when it comes to the uptake of cloud collaboration tools. A firm in the first stage is said to be "reactive", with only email as a collaboration platform and a culture which resists information sharing. A firm in the fifth stage is called "pervasive", and has universal access to a rich collaboration toolset and a strong collaborative culture. The article argues that most firms are in the second stage, but as cloud collaboration becomes more important, most analysts expect to see the majority of firms moving up in the model.

OBJECTIVE

The objective of the project is to assign the resources for the users based on their request. To achieve enhanced efficient management of resources and user satisfaction among distributed resources in Collaborative Cloud Computing using Utility based User Preference Resource Selection

EXISTING SYSTEM

Cloud customers are charged by the actual usage of computing resources, storage, and bandwidth .The demand for scalable resources in some applications has been increasing very rapidly. A single cloud may not be able to provide sufficient resources for an application (especially during a peak time). In addition, researchers may need to build a virtual lab environment connecting multiple clouds for beta scale supercomputing capabilities or for fully utilizing idle resources. Resource and Reputation management methods are not sufficiently efficient or effective. By providing a single reputation value for each node, the methods cannot reflect the reputation of a node in providing individual types of resources. By always selecting the highest-reputed nodes, the methods fail to exploit node reputation in resource selection to fully and fairly utilize resources in the system and to meet users' diverse QoS demands. The Existing technique performs the following steps

1. Integrated multi-faceted res/rep management
2. Multi-qos-oriented resource selection
3. Price-assisted resource/reputation control
4. Combination of three components

Integrated Multi-Faceted Res/Rep Management

Assume that resource types (e.g., CPU, bandwidth and memory) are globally defined and known by every node. The resource information (denoted byIr) includes the resource provider's IP address, resource type, available amount, resource physical location, price, etc. A general distributed method for resource location is to store resource availability information in some directory nodes, and forward the resource requests to the corresponding directory nodes. Similarly, a general distributed method for repMgt is to store reputation information of nodes in some directory nodes, and forward the reputation requests to the corresponding directory nodes. In the reputation system, nodes may dishonestly report the reputation feedback of their received service.

Multi-QoS-Oriented Resource Selection

After a directory node locates the resource providers that have the required reputation, available amount, and price, it needs to choose provider(s) for the requester. The final QoS offered by a provider is determined by a number of factors such as efficiency, trustworthiness, distance security and price.are called as QoS demands (or attributes).When choosing from a number of providers, most previous approaches rigidly consider a single QoS demand at a time. However, different tasks have different requirements. For time-critical tasks, distance should be given priority. For a large computing task, efficiency should be the main deciding factor. Further, a server's distances to different client share different. This means a server's final QoS for client does not necessarily represent its QoS for client. Also, a task or user may have multiple demands with different priorities. A challenge here is how to consider individual or combined QoS attributes, and a user's desired priorities of the attributes in provider selection.

Price-Assisted Resource/Reputation Control

In managing decentralized resources, Harmony employs are source trading model, which is recognized as an effective way to provide incentives for nodes to provide high QoS and thwart uncooperative behaviors. In the model, a node pays credits to a resource provider for offered resources, and a resource provider specifies the price of its resources. The credits could be either virtual money or real money. The price is the amount of credits to use one unit of resource for one time unit. Consequently, in order to use others' resources, a node must provide its resources to others (or pay real money).We take one resource type as an example to describe the price-assisted resource/reputation control scheme. A provider normally specifies the price of its resources according to the reputation value, load, and the desirability of the resources. Resources with higher reputations, lower loads, and higher demand (frequently requested) should have high prices. Therefore, in order to earn more income, each node is motivated to provide high QoS to maintain high reputation, while avoiding being overloaded.

Combination of Three Components

In the integrated multi-faceted resource/reputation management, a node periodically reports its specified resource prices along with its available resource amount. When a node needs a resource, it sends a request with its desired price, amount, time period, and provider's reputation. After receiving a request, a directory node searches its directory, and finds all providers that have qualified resources satisfying the requester's requirements. It then uses the multi-QoS-oriented node selection algorithm to identify the resource providers with the highest overall QoS values, and notifies the requester of the providers. The requester then asks its selected providers for resources. Based on the price-assisted resource/reputation control, the resource receiver pays a resource provider for the provided resources. Also, nodes periodically check their load and adjust their resource prices accordingly, in order to remain highly reputed and maximize their profits, while avoiding being overloaded. If a node's reputation for are source is increased, it has a higher probability of being selected as a resource provider. Then, it gains more opportunities to earn credits and can have enough credits to buy its desired resources. On the other hand, if a node's reputation for a resource is decreased, it has a lower probability of being selected as a resource provider. Then, it has fewer opportunities to earn credits and may not have enough credits to buy its desired resources. As a result, nodes are motivated to increase their reputation by providing high QoS. The time period for the neural network model training and load factor calculation should be determined with consideration of several factors, including the performance requirement, the frequency of transactions, and the overhead in the system, etc.

Disadvantages

1.By always selecting the highest-reputed nodes, the methods fail to exploit node reputation in resource selection to fully and fairly utilize resources in the system and to meet users' diverse QoS demands.

2.It takes more time to analyze the user requirements and in providing accurate resources which the user requires.

PROPOSED SYSTEM

The proposed method is a CCC platform, which integrates resource management and reputation management with the user preferences. It incorporates four key innovations:

1.Integrated multi-faceted resource/reputation management,
2. Multi-QoS-oriented resource selection,
3. Price-assisted resource/reputation control.
4. User preference identification

By identifying and understanding the interdependencies between Resources, Preference of users and Utilization of users, Utility based User Preference Resource Selection, a Collaborative Cloud Computing platform has introduced,
which focus on Cloud Resources, Cloud Service Providers SLS's, User Preferences, and utilization of the users. It can achieve enhanced efficient management of resources and user satisfaction among distributed method provides a environment to point out its desired resources, Resources ability or capability, User's Requirements and also find the available of the resources. Then the cloud users can able to know about each Cloud Resources and all details about the Cloud abilities, so that cloud users can choose effective cloud platform. And this environment is scalable to the cloud users and Cloud Resources with the Collaborative Cloud Computing.

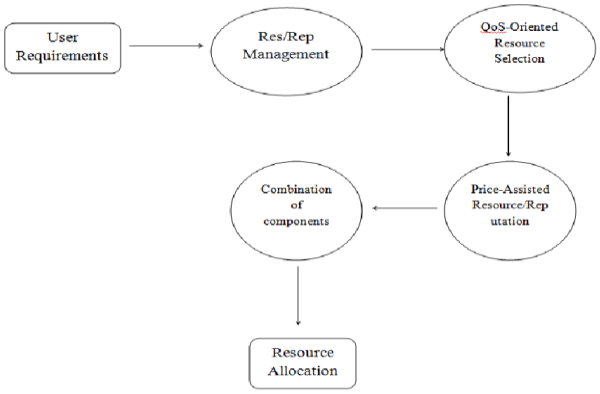

Fig 3: Data Flow Diagram

Advantages

1.This method is an automatic system in analyzing and updation of the user preferences.

2.It provides the accurate resource allocation what the user required and requested.

SYSTEM ARCHITECTURE

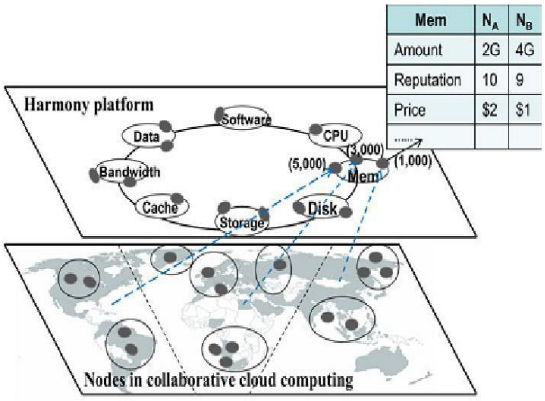

Fig 4: System Architecture

SYSTEM AND USER ANALYZE

This module is the process of Work flow Management System (WfMS), getting the services details from several Cloud Service Providers (CSP) and the user requirements. Utility Cloud model needs work flow management system, and several Cloud Service Providers (CSPs), each of which provides some services to the users. Users submit their workflows to the WfMS to be executed. The WfMS acts as a broker between users and CSPs, i.e., retrieves the required information, schedules workflow tasks on suitable services, makes advance reservations of services and finally, dispatches tasks to the CSPs to be executed. Each CSP has to register itself and its services, so that it can present and sell its services to users. Then, the WfMS directly contacts the desired CSPs to query about the free time slots of the suitable services. Using this information, the WfMS can execute a scheduling algorithm to map each task of a workflow to one of the available services. According to the generated schedule, the WfMS contacts CSPs to make advance reservations of selected services.

CONCLUSION

Harmony incorporates three innovative components to enhance their mutual interactions for efficient and trustworthy resource sharing among clouds. The integrated resource/ reputation management component efficiently and effectively collects and provides information about available resources and reputations of providers for providing the types of resources. The multi-QoS-oriented resource selection component helps requesters choose resource providers that offer the highest QoS measured by the requesters' priority consideration of multiple QoS attributes. The price-assisted resource/ reputation control component provides incentives for nodes to offer high QoS in providing resources. Also, it helps

providers keep their high reputations and avoid being overloaded while maximizing incomes.

To overcome this, presented a platform called Utility based User Preference Resource Selection. This platform involves A) System model and User Analyze B)Multi- QoS-Oriented Resource Selection C) Price-Assisted Resource/Reputation Control D)Utility based Resource Allocation. In this paper , presented a system model and user analyze. This module is the process of Work flow Management System (WfMS), getting the services details from several Cloud Service Providers (CSP) and the user requirements. Utility Cloud model needs workflow management system, and several Cloud Service Providers (CSPs), each of which provides some services to the users. Users submit their workflows to the WfMS to be executed. The WfMS acts as a broker between users and CSPs.

In the future work, By identifying and understanding the interdependencies between Resources, Preference of users and Utilization of users, Utility based User Preference Resource Selection, a Collaborative Cloud Computing platform has introduced which focus on Cloud Resources, Cloud Service Providers SLS's, User Preferences, and utilization of the users. It can achieve enhanced efficient management of resources and user satisfaction among distributed resources in Collaborative Cloud Computing. This method provides a environment to point out its desired resources, Resources ability or capability, User's Requirements and also find the available of the resources. Then the cloud users can able to know about each Cloud Resources and all details about the Cloud abilities, so that cloud users can choose effective cloud platform. And this environment is scalable to the cloud users and Cloud Resources with the Collaborative Cloud Computing.

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Rakesh Kumar ER was born in Kanyakumari District, Tamil Nadu, India in 1985. He obtained his B.Sc., M.Sc. M.E. M.Phil. Degrees in Computer Science & MBA in Human Resources in the years 2005, 2007, 2010, 2012 and 2013 respectively. He has more than 7 years of teaching experience. He has presented 5 research papers in various National and International conferences. He has also published more than 5 research papers in reputed National and International journals. He has guided several UG and PG students for their project work. His area of interest is Network Security and Wireless Sensor Networks. Currently, he is with SAMS College of Engg. & Tech, Chennai, India, as Asst. Prof and Head of the Department of Computer Science and Engineering.