

Resource Sharing and Allocation in Cloud Via Social Networks

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Abstract

Social network plays a major role in communication and interaction of the people. Nowadays, cloud computing is the emerging technology in the field of Information Technology. The allocation and sharing of resources can be possible in an innovative way, by combining the social networks processes and cloud computing concepts. In the social network cloud, based on the friend's relationship strength the resources can be provided from one friend to another. Based on the clustering techniques the similar type of friends will be grouped and the resources will be allocated. The resource providers recommend the virtualized containers on their devices itself. For efficient allocation of resources the effective allocation algorithms are used. Based on the type of relationship they had, the relationship based access control mechanisms are provided.

Keywords: social network cloud; social network; access control mechanism; clustering techniques; cloud computing

1. Introduction

Cloud computing makes the today's world easier and reduces the overhead of consuming resources from the resource providers. Nowadays, the cloud computing required the services for infrastructure, platform and software. The organization like Amazon EC2, Microsoft Azure, and Google App Engine provide the cloud services efficiently. But, these resource providers do not satisfy the issue of trust and accountability. These two issues cover privacy, security, transparency etc., [1]. In this paper, concerning the trust and issue of sharing the resources efficiently with friends, a social network cloud incorporated with access control mechanisms and clustering techniques has introduced.

A Social Network cloud [1][2] is nothing but allocating and sharing the resources of cloud within the social network members. While sharing the resources from their personal devices they can share their resources within their friend circles that have the stronger relationship. The users are grouped by the use of clustering techniques like K-means clustering. Using this approach the social network users can download the resources via facebook application.

For predicting the the relationship between the friends the recent technology called big data can be used based on the friends database which contains the attributes like chats and messages, items shared on the social network[10]. Based on the log analysis of social network the prediction of social network relationship may be possible[11].

2. Related Work

With the increasing use of social network platforms, migration of social network structures for different types of designs is becoming more common. Examples: community and scientific portals like Polar-GRID, ASPEN, and social science gateway. The use of cloud platforms is also the emerging task in today's IT world. Amazon EC2 provides the great success in provisioning the infrastructure services and Microsoft azure have a success in provisioning the platform services. By combining the concept of cloud computing and social network platform the resulting has a good future. There are some models to share insurance policies amongst social peers; and where social networks emerged via collaboration models .

The social volunteer computing is an extension of traditional volunteer computing technology, where the consumers of particular resources have the underlying social network relationships with the resource providers. This particular approach is similar to a social network cloud, but this is not considering the actual sharing of cloud resources, as there is no such notion for bilateral exchange.

There are several publications on economic models for a social network cloud that is developed in a independent manner. Most of the works mainly focuses to share the resources of cloud in social network only. Because using big data we can analyze the relationship between the friends if the relationship is strong they could prefer them for sharing the resources of cloud. For the analysis of this kind of data the hadoop platform is used. Based on these suggestions the resources based on storage and processing can be shared efficiently.

3. SOCIAL NETWORK CLOUD

3.1 Usages

A social network cloud could be a variety of community connected cloud, because the resources employed by the users area unit purchased, provided and consumed by members of a selected social community like facebook [3]. Through this application cloud infrastructure and platform

shoppers are often ready to execute their programs on virtualized resources that expose access firmly to contributed resources from the resource suppliers, i.e., CPU time, memory and disk/storage. The thought of a social network cloud are often applied to any form of virtualization setting. once it involves traditional use within the social network it provides millions of benefits

3.2. Challenges

There are many challenges in the creation of social network cloud which needs some concern while developing the work. Grouping the members based on the similarities is one of the main challenges because the technique which we use should be more accurate when compare to the other techniques. Access control mechanisms should mention properly within the applications Technical facility is employed to change finish users to supply Resources to and overwhelming the resources from, each other. A social network cloud has to notice the Network Address Translations (NAT) and accommodate best effort notions of quality of service. Social network structures area unit accustomed facilitate the sharing of computing resources among a social network. To utilize social community structures for resource sharing, members should at the start allow access to their social network, and will trust the platform with their information [4].

Providing resource allocations to friend considered to be the non-trusted for many reasons. First, the relationships of social network are not a single relationship. The different types of relationship included in the social network are family members, close friends, just friends, colleagues, etc. Second, totally different users can have different levels of trust to differing types of relationship contexts. Third, many of us can have differing types of qualities (e.g., dependableness, trait, availability) and differing types of competencies, for instance users might assume that friends with natural philosophy backgrounds area unit “best” or additional “competent” with relevance offer planning sensors[5][6].

4 SYSTEM ARCHITECTURE

Fig.1. shows the system architecture of the proposed work.

4.1 Social Cloud Platform

The platform should satisfy some functionality like user management and resource allocation etc. A middleware is employed to supply the essential resource materials, resource virtualization and sandboxing mechanisms for provisioning and overwhelming resources. It ought to additionally outline some protocols required for users and resources to enter and exit the system.

A “social locating house” contains several modules like preferences module for preferences selection, clustering module for grouping the similar users, allocation module for resource allocation, access control module for controlling the access over different users [7].

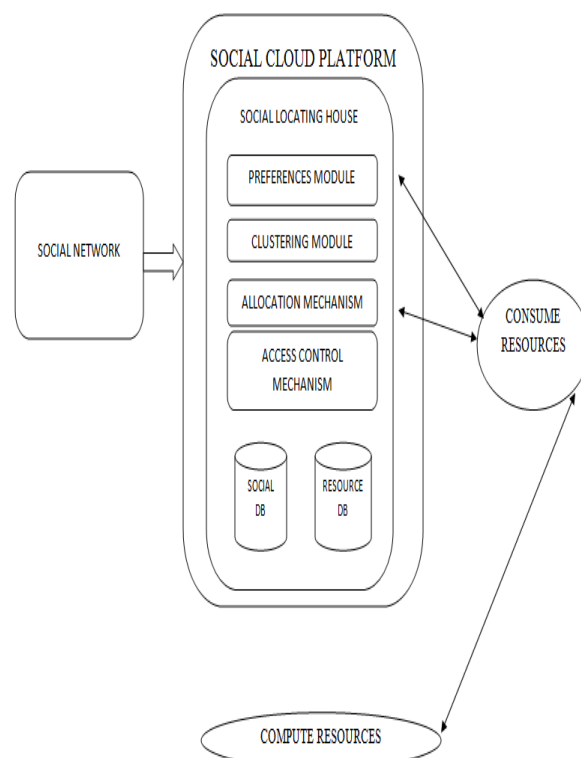


Fig.1. Architecture of the proposed work

a. Preference module

The simple numerical preference setting interface used to enable the members to define their needed preferences to a particular friend to both a consumer and a provider [7]. If the value is higher than the preference will be high to the particular user or for the particular friend. If we find some negative values then it shows the unwillingness of the user to interact with particular friend. If the user assigns the same values to multiple friends means indication of equal relationship with friends. The preferences are stored in the application database for calculating the overall preference model and for allocating the involved user.

4.2 Clustering Module

A clustering module clusters the similar users based on their available data for provisioning the resources efficiently. The resource will share efficiently when it is grouped. The clustering algorithm is incorporated into the clustering module which is located inside the social cloud platform. The Hierarchical clustering algorithm and friends of friend’s algorithm is used for grouping the similar friends. The Access control module will contain some access control protocols for restricting the use of available resources. The available resource refers to the resources present in the cloud server providers. The Access control if very much needed when the public cloud is used.

Here this concept is based on the clustering technique which groups the users of similar type or characteristic. For this purpose we proposed the new algorithm which is the modification of existing traditional algorithms like k-means.

4.3 Allocation Mechanism

Seattle relies on the principle of random allocation of resources. to cut back the search house it implements a pseudo random mechanism. The port of entry is functioning with algorithmic program of allocation algorithmic program. this is often wont to confirm acceptable allocations of resources via members sharing preferences across their social network. it’ll allot the resources supported the connection strength. The allocation of resources are going to be handled by this module. Virtual machines area unit sandboxed environments which give each performance improvement and security. for instance the VM can stop the applications from mak-

ing malicious actions and it limits the usage of system resources like CPU and memory to a specific levels.

5 Access Control Mechanism

The popularity of social networks makes the safety of the user's private information is a necessary but scientifically challenging issue. The relationship-based access control mechanisms have been taken to solve this problem. However, with the changing developments of social networks, the new access control requirements have been identified for the current schemes. In this paper, we focus on public information in social networks. We proposed the new algorithm called controlling algorithm performing access control in the social network cloud towards the user perspective. The access control mechanism incorporated in the access control module for restricting the access to the particular resources.

6 Databases

The databases are used to store the social network related data and the user preferences related data to be used in social locating house.

6.1 Social Network

This is nothing but the social network application like facebook which is used to provide the access to necessary aspects of the user and for authentication [6]. Preferences module is used to provide the necessary functionality to capture and to represent the requirement of the sharing preferences. The data about the user will be efficiently used and the preferences are collected from this technical observer like facebook.

Node Managers can act because the entry restricters for resources and the area unit implemented on each contributed resource [9]. The node manager will check that the users have the correct rights to proceed with the original Virtual machine running on the host system. Once the node manager is kept within the hosting machine it will notify the placement of the particular machine to a worldwide observance service. The unique key for the resource is created and signed at the locating house [8]. The node managers area unit considerably helpful once it involves offer the services within the real time world. The financial organization matches the need of the user to the provision of the cloud suppliers.

In order to access members personal profile data and relationships to the chums, the social locating house needs access to a specific user's social network profile. For that, the social networking application for the locating place that needs access to get the user profile data, friends who they need and the list of friends who explicit registered users. The social network application is combined with the location placed through social authentication plugin that is designed with a social network application. The system permits users to combine their metropolis account with their social network account.

7. Experimental Result

The implementation of a social cloud is built upon with an open source peer-to-peer (P2P) computing platform called Seattle. Seattle is a lightweight virtualization technology implemented middleware, which makes the users to enable application execution on required resources. The locating model which is extended to enable social allocation via preference matching algorithms. These algorithms have been taken from the literature and the new algorithm for clustering and access control has been proposed in our own concepts.

Seattle is associate degree open supply analysis platform that is meant to make a distributed network over reckon resources given by its users. It options a light-weight virtualization layer that runs on a provider's machine and allows alternative members to run

their applications across completely different in operation systems. Seattle's core elements square measure node managers, social network integration, preference assignment, social resource allocation, and access management.

The total runtime of this allocation algorithmic program has a lot of impact on its application on a social network cloud. The preference-based matching is usually NP-hard, algorithmic program runtime is a vital style thought. during this a part of the analysis, we have a tendency to investigate however the runtime of the algorithmic program is plagued by the extent of completeness of the preference, and whether or not preferences square measure strict or not, i.e., whether or not indifferences square measure allowable. The results of the allocation algorithmic program reveals that once the matter area will increase the run time of the algorithmic program also will increase.

Fig. 2 and Fig. 3 represent the clustered group of users in a social network platform.

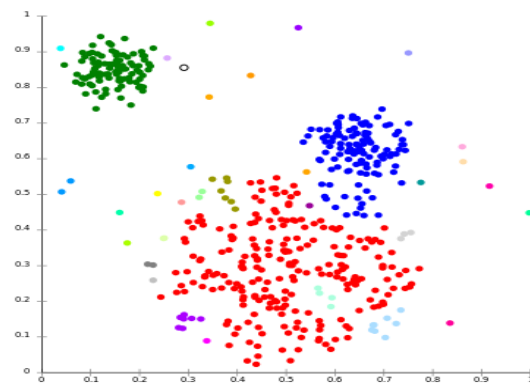


Fig.2. Clustered group of users

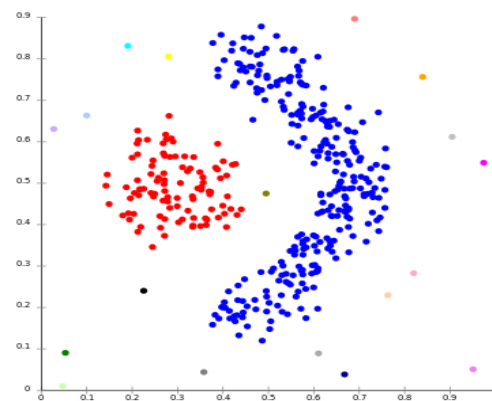


Fig.3. Clustered group of users with noise

8. CONCLUSION AND FUTURE WORK

In this paper, the social network cloud: a platform which enables the sharing of infrastructure resources and software resources between friends through digitally encoded social relationships. Using this, users are able to execute their programs on virtualized resources provided by their friends through their own devices like personal computers, smart phones etc. Here, the preferences of the users will be shared to their friends through the common virtual channel. The allocation of resources has been done by the resource providers itself. The similar users are grouped based on the clustering techniques. The access control mechanism to have the restricted access also incorporated in this work.

In future work, this work will include the additional ways for users to give their required preferences, as well as the processes to find them automatically from their own social network applications like facebook and instagram. Also the future work incorporates other type of services offered by the cloud. This works continues to investigate about the resources usages by the members of the social network.

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