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Efficient and Effective Harmonic Cloud Computing Platform for Better Resource Management with Higher QOS

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Abstract:

Cloud computing has significant efficiency and cost advantages, advancements in cloud computing provides a promising future for collaborative cloud computing.In CCC, the resources are universally scattered and distributed across the globe which belong to different organizations and the resources are used to provide services to the clients. Because of the self-governing highlights of elements in CCC, the issues of reputation and resource management must be mutually communicated to guarantee the fruitful development of CCC. These issues are jointly addressed in the past but when we address these two issues jointly, it creates twofold overhead. Hence, resource and reputation management strategies are not well designed and they are not powerful. If the client selects the highest reputation node, then the other reputation nodes are neglected and there is no full utilization of resources and it doesn't meet client Qos demands. In order to overcome this, we propose a technique called Harmony. Harmony involves three stages: comprehensive resource/reputation management, selection of multi Qos-oriented resource and price-assisted resource and reputation management.

Keywords:

Cloud Computing, Resource Management, QoS, CCC, Reputation management.

Introduction:

Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a utility (like the electricity grid) over a network.

At the foundation of cloud computing is the broader concept of converged infrastructure and shared services.Cloud computing, or in simpler shorthand just "the cloud", also focuses on maximizing the effectiveness of the shared resources. Cloud resources are usually not only shared by multiple users but are also dynamically reallocated per demand. This can work for allocating resources to users. For example, a cloud computer facility that serves European users during European business hours with a specific application (e.g., email) may reallocate the same resources to serve North American users during North America's business hours with a different application (e.g., a web server).

This approach should maximize the use of computing power thus reducing environmental damage as well since less power, air conditioning, rack space, etc. are required for a variety of functions. With cloud computing, multiple users can access a single server to retrieve and update their data without purchasing licenses for different applications.Cloud storage is a model of data storage where the digital data is stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running.

People and organizations buy or lease storage capacity from the providers to store user, organization, or application data.

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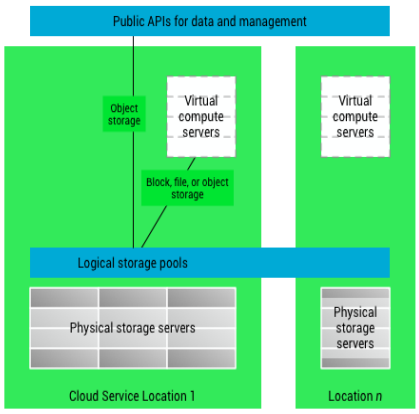
Cloud storage services may be accessed through a co-located cloud computer service, a web service application programming interface (API) or by applications that utilize the API, such as cloud desktop storage, a cloud storage gateway or Web-based content management systems.Cloud storage is based on highly virtualized infrastructure and is like broader cloud computing in terms of accessible interfaces, near-instant elasticity and scalability, multi-tenancy, and metered resources.

Cloud storage services can be utilized from an off-premises service or deployed on-premises.Cloud storage typically refers to a hosted object storage service, but the term has broadened to include other types of data storage that are now available as a service, like block storage.Object storage services like Amazon S3 and Microsoft Azure Storage, object storage software like Openstack Swift, object storage systems like EMC Atmos and Hitachi Content Platform, and distributed storage research projects like OceanStore[5] and VISION Cloud [6] are all examples of storage that can be hosted and deployed with cloud storage characteristics.

Cloud storage is:

Made up of many distributed resources, but still acts as one - often referred to as federated storage clouds Highly fault tolerant through redundancy and distribution of data Highly durable through the creation of versioned copies Typically eventually consistent with regard to data replicas

High level cloud storage architecture



EXISTING SYSTEM:

Advancements in cloud computing [5][6] are leading to a promising future for collaborative cloud computing (CCC), where globally-scattered distributed cloud resources belonging to different organizations or individuals (i.e., entities) are collectively used in a cooperative manner to provide services. Due to the autonomous features of entities in CCC, the issues of resource management [15][17][20] and reputation management [7][11] must be jointly addressed in order to ensure the successful deployment of CCC. However, these two issues have typically been addressed separately in previous research efforts, and simply combining the two systems generates double overhead. Also, previous resource and reputation management [7][11] 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 user's diverse QoS demands.

DISADVANTAGES OF EXISTING SYSTEM:

- Where globally-scattered distributed cloud resources belonging to different organizations or individuals (i.e., entities) are collectively used in a cooperative manner to provide services.
- Due to the autonomous features of entities in CCC, the issues of resource management and reputation management must be jointly addressed in order to ensure the successful deployment of CCC

PROPOSED SYSTEM:

This document proposes a CCC platform, called Harmony [14], which integrates resource management and reputation management in a harmonious manner. Harmony [14] incorporates three key innovations: integrated multi-faceted resource/reputation manage ment, multi-QoS-oriented resource selection, and price-assisted resource/reputation control. The trace data collected from an online trading platform implies the importance of multi-faceted reputation and the drawbacks of highest-reputed node selection.

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Simulations and trace-driven experiments on the real world PlanetLab test bed [13] show that Harmony outperforms existing resource management and reputation management systems in terms of QoS, efficiency and effectiveness.

ADVANTAGES OF PROPOSED SYSTEM:

- Harmony incorporates three key innovations: integrated multi-faceted resource/reputation management, multi-QoS-oriented resource selection, and price-assisted resource/reputation control.

- The trace data collected from an online trading platform implies the importance of multi faceted reputation and the drawbacks of highest-reputed node selection.

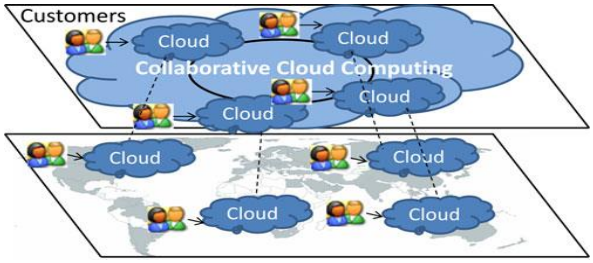

Fig . Collaborative cloud computing

The characteristics of cloud computing include on-demand self service, broad network access, resource pooling, rapid elasticity and measured service. On-demand self service means that customers (usually organizations) can request and manage their own computing resources. Broad network access allows services to be offered over the Internet or private networks.

Pooled resources means that customers draw from a pool of computing resources, usually in remote data centers. Services can be scaled larger or smaller; and use of a service is measured and customers are billed accordingly.

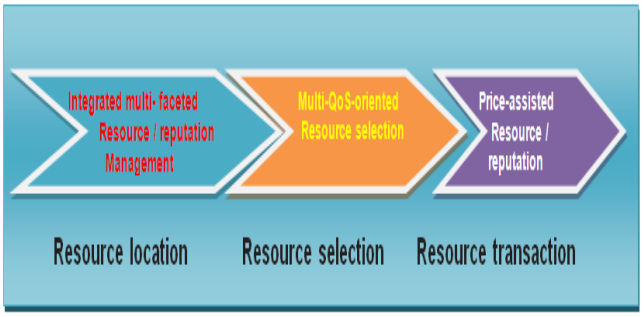

Fig.Harmony components in resource market stages.

SYSTEM ARCHITECTURE:

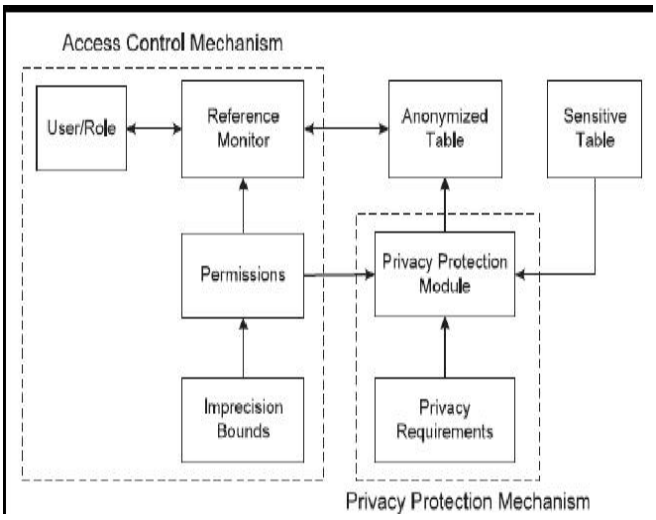

Fig . Privacy protection mechanism

MODULES:

- **Integrated multi-faceted resource/reputation management:**

  Harmony offers multi-faceted reputation evaluation across multiple resources by indexing the resource information and the reputation of each type of resource to the same directory node. In this way, it enables nodes to simultaneously access the information and reputation of available individual resource.

- **Multi-QoS-oriented resource selection:**

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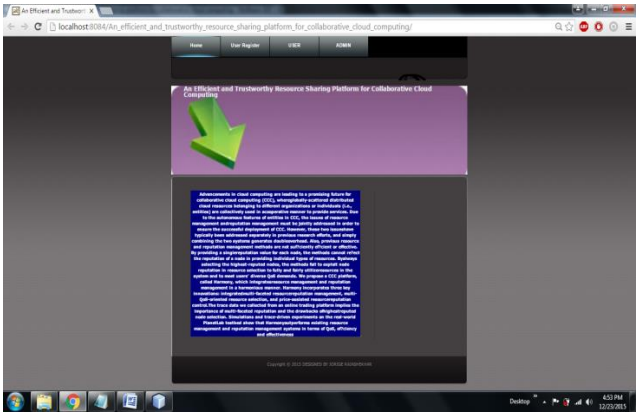
Previous resource management approaches that assume a single QoS demand of users, harmony enables a client to perform resource selection with joint consideration of diverse QoS requirements, such as reputation, efficiency, distance, and price with different priorities.

- **Price-assisted resource/reputation control:**

In a resource transaction, a resource requester pays a resource provider for its resource. The transaction are conducted in a distributed manner in harmony .Harmony employs a trading model for resource transactions in resource sharing and leverages the resource price to control each node's resource and reputation. It enables each node to adaptively adjust its resource price to maximize its profit and maintain a high reputation while avoiding being overloaded, in order to fully and fairly utilize resource in the system.

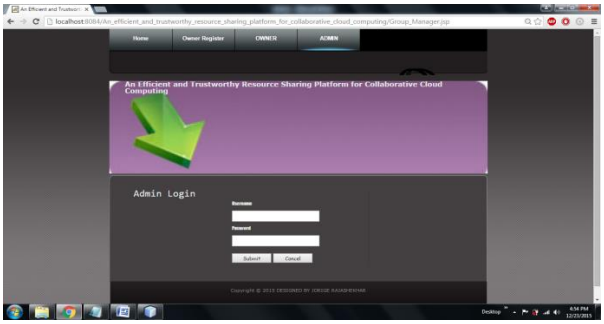
SCREEN SHOTS

HOME PAGE:



REGISTRATION PAGE:

ADMIN LOGIN PAGE:



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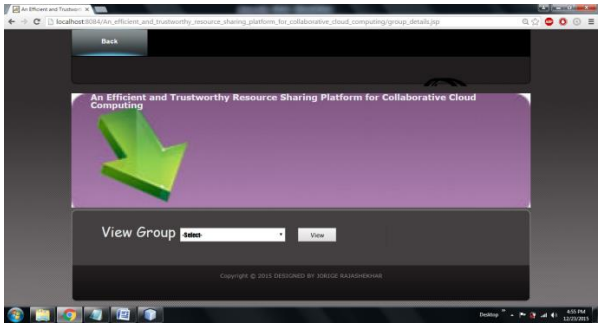

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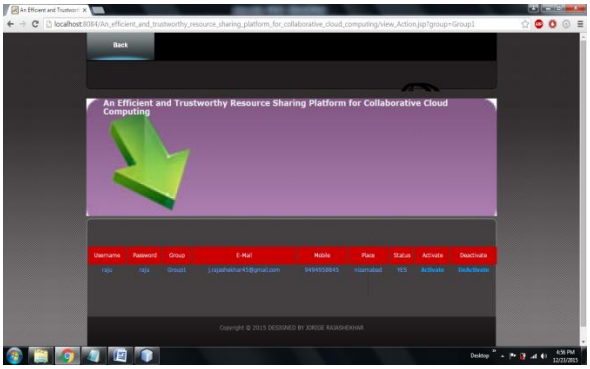

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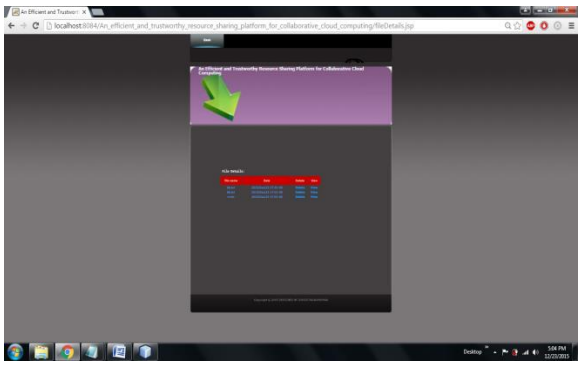

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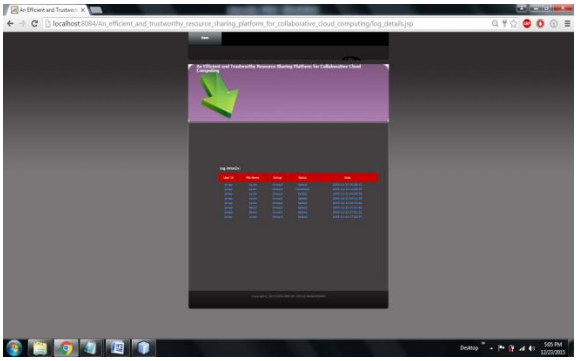

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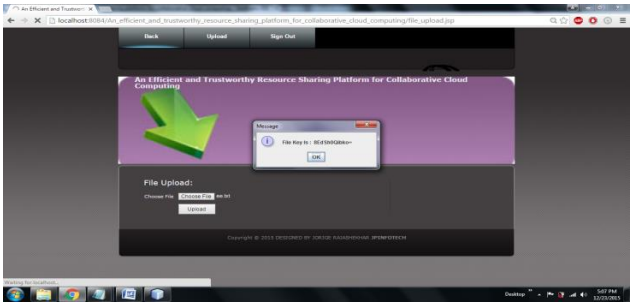

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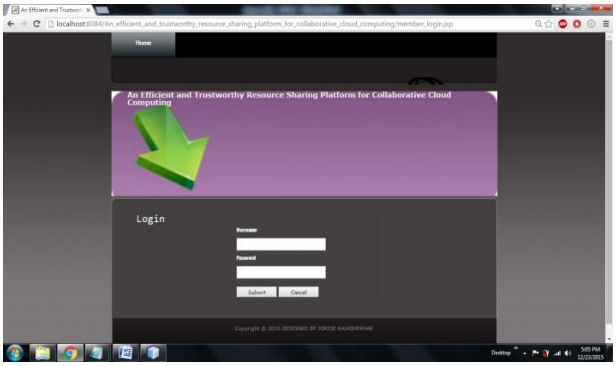

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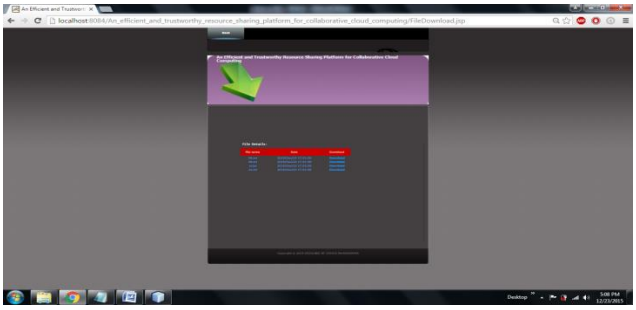

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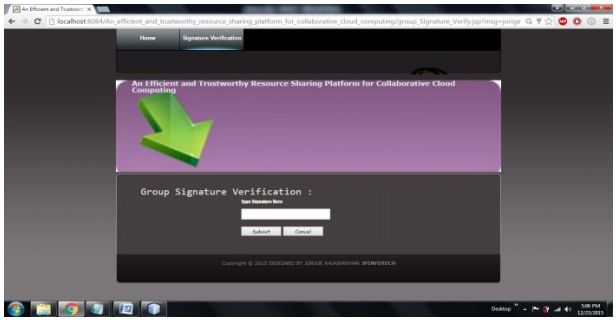

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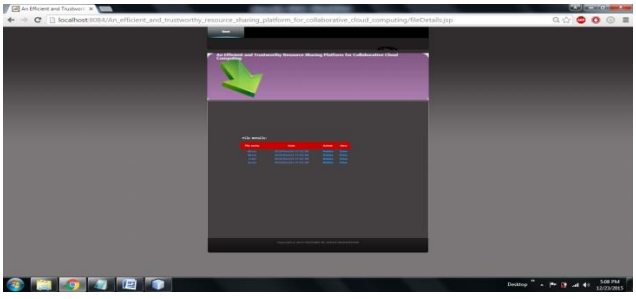

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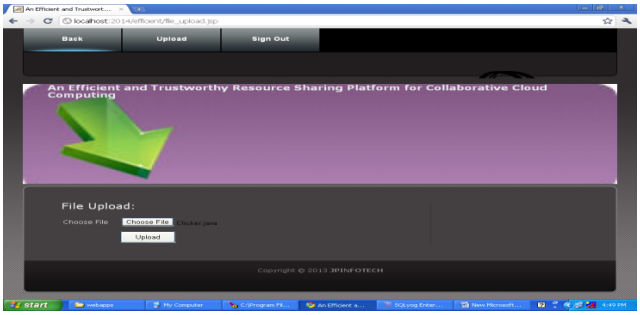

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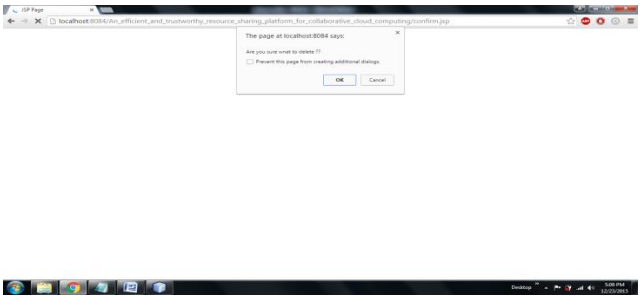

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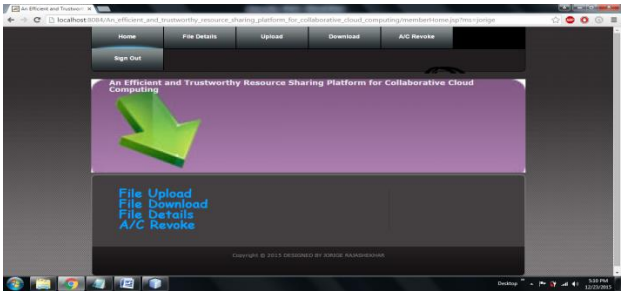

CONCLUSION:

In this paper, we propose an integrated resource/repute tion management platform, called Harmony, for collaborative cloud computing. Recognizing the interdependencies between resource management and reputation management, Harmony incorporates three innovative components to enhance their mutual interactions for efficient and trustworthy resource sharing among clouds. The integrated resource/repute tion 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. The components collaborate to enhance the efficiency and reliability of sharing globally-scattered distributed resources in CCC. Simulations and trace-driven experiments on Planet Lab verify the effectiveness of the different Harmony components and the superior performance of Harmony in comparison to previous resource and reputation management systems.

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