International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347 - 6435 (Online)), Volume 2, Special Issue 3, February 2014)
International Conference on Trends in Mechanical, Aeronautical, Computer, Civil, Electrical and Electronics Engineering
(ICMACE14)

An Efficient Information Retrieval Approach for Collaborative Cloud Computing

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***Abstract*—The collaborative cloud computing(CCC) which is collaborativelysupported by various organization (Google, IBM, AMAZON, MICROSOFT) offers a promising future for information retrieval.Human beings tend to keep things simple by moving the complex aspects to computing. As a consequence, we prefer to go to one or a limited number of sources for all our information needs. In contemporary scenario where information is replicated, modified (value added), and scattered geographically; retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort. This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information. This also, reduces single point of failure and eliminates bottlenecks in the path of information flow, Reduces the Time delay and it provide remarkable ability to overcome from traffic conjection complicated patterns. It makes Efficient information reterival approach for collaborative cloud computing.**

***IndexTerms:*-Clloaborative Cloud Computing(CCC) , Neural Network.**

I. INTRODUCTION

The collaborative cloud computing (CCC) which is collaboratively supported by various organizations(Goolge, IBM, AMAZON, MICROSOFT) offers a promising future for information retrieval.

The Existing system consist single cloud which contain multiple organization. When a client demand the Resources to the single cloud by providing multiple Request or queries like more than 10,000 to single cloud It become overloaded and Traffic conjuction is occurred ,Time Delay will happens, its fully based on (CPU,BAND WIDTH,MEMORY). And No security.

To overcome we used multiple cloud 's from different organization using their Individual cloud's and scrattered with Autonomus cloud's connected through different area in world wide.So client can demand the resources to particular organization which they needed.So traffic avoided but not much efficiently.

So collaborative clouds where introduced, when a client gives Request to the particular cloud the node carried out the request and it will search my demanded resources to their server and provide me response .If it's not it will carry my request to another cloud and provide me response so trust happen's between two clouds.Its based on (MOU) Memo Random of understanding.In this only highly reputed cloud will get overloaded to avoid that I propose Neural Network.

Training the the node by feeding information to carry my request to particular organization instead of searching all rest cloud's. It provide remarkable ability to overcome from traffic conjection complicated patterns is avoided by using techniques multi-QoS with cost,Efficiency ,Disticance attribute is used.

II Related Work

A Virtual Organization (VO) **[1]** will be a promising approach to integrate services and users across multiple autonomous clouds. However, how to build a secure virtual organization to achieve the collaboration goals is a critical problem.

A hierarchy of P2P **[9]** reputation systems is suggested to protect clouds and data centers at the site level and to safeguard the data objects at the file-accesslevel. Different security countermeasures are suggested to protect cloud service models: IaaS, PaaS, and SaaS, **[4]** currently implemented by Amazon, IBM,**[2]** and Google, respectively.

Optimal cloud resource provisioning **[6]** (OCRP) algorithm is proposed by formulating a stochastic programming model. The OCRP algorithm can provision computing resources for being used in multiple provisioning stages as well as a long-term plan, e.g., four stages in a quarter plan and twelve stages in a yearly plan. The demand and price **[7]**uncertainty is considered in OCRP. In this paper, different approaches to obtain the solution of the OCRP algorithm **[6]** are considered including deterministic equivalent formulation, sample-average approximation.

Our CPU memory-based policy **[10]** using either high performance or high throughput approach and using the remote execution strategy performs the best for both CPU-bound and memory-bound jobs

We propose a CCC platform, called Harmony **[2,4]**, which integrates resource management and reputation management in a harmonious manner. Harmony incorporates three key innovations: integrated multi-faceted resource/reputation management, multi-QoS-oriented resource selection, and price-assisted resource/reputation contro**[7]**.

Advancements in cloud computing are leading to a promising future for collaborative cloud computing (CCC) **[2]**, where globally-scattered distributed cloudCloud resource have provision, configuration, utilization and decommission across a distributed set of physical resources in clouds has been studied in recent years, building individual cloud systems in CCC will generate overloaded and Traffic conjuction is occurred ,Time Delay will happens. Moreover, its fully based on (CPU,BAND WIDTH,MEMORY) which makes much not effective in the large-scale environment of CCC.

To overcome we used multiple cloud 's from different organization using their Individual cloud's and scrattered with Autonomus cloud's connected through different area in world wide and offers a promising future for information retrieval.Human beings tend to keep things simple by moving the complex aspects to computing. As a consequence, we prefer to go to one or a limited number of sources for all our information needs.

The cloud resource providing by assigning each node one reputation value for providing all of its resources. So it wont be much efficient for retrieving information from cloud.

Issues of Related work

1. Due to the issues of single cloud , multi cloud is not efficient trustworthy and Time delay occur.
2. Single-QoS-demand assumption.

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III. BACKGROUND

Introducing a CCC platform with integrated Informationreterival from cloud. It can achieve enhanced and joint resources management across distributed resources in CCC. Retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort.

This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information. By training the network to start this process the initial weights are chosen randomly. The common type of artificial neural network consists of three groups, or layers, of units: a layer of "input" units is connected to a layer of "hidden" units, which is connected to a layer of "output" units.Which makes recently draws attention upon Internet users and information providers

This also, reduces single point of failure and eliminates bottlenecks in the path of information flow, Reduces the Time delay and it provide remarkable ability to overcome from traffic conjection complicated patterns. It makes Efficient information reterival approach for collaborative cloud computing.

Advantages of Background

1. Multi-QoS-oriented resource selection algorithm
2. Increase efficient information retrieval system.
3. Avoid Traffic Conjunction
4. Reduce Time Delay.

IV. NEURAL NETWORKS LEARNING APPROACH

Artificial neural network (ANN) is a machine learning approach that models human brain and consists of a number of artificial neurons.Neuron in ANNs tend to have fewer connections than biological neurons.Each neuron in ANN receives a number of inputs. An activation function is applied to these inputs which results in activation level of neuron (output value of the neuron).Knowledge about the learning task is given in the form of examples .An Artificial Neural Network is specified by:

An architecture a set of neurons and links connecting neurons. Each link has a weight,

A learning algorithm used for training the NN by modifying the weights in order to model a particular learning task correctly on the training examples.The aim is to obtain a NN that is trained and generalizes well.It should behaves correctly on new instances of the learning task.The neuron is the basic information processing unit of a NN. It consists of:

1. A set of links, describing the neuron inputs, with weights $W_1, W_2, \ldots, W_m$
2. An adder function (linear combiner) for computing the weighted sum of the inputs:(real numbers).

$$u = \sum_{j=1}^{m} w_j x_j$$

3. Activation function for limiting the amplitude of the neuron output. Here 'b' denotes bias.

$$y = \varphi(u + b)$$

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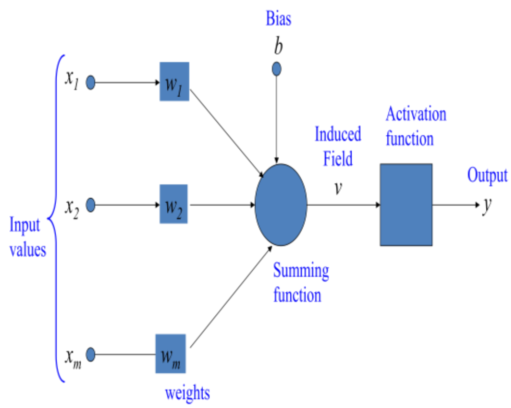

Fig :4 The Neuron Diagram

Training Notation

- θ = Threshold of TLU
- **X** = Input Vector
- **W** = Weight Vector
- s = **X** · **W**
  ie: if s $\geq\theta$, op = 1
  if s $<\theta$, op = 0
- d = desired output of TLU
- f = output of TLU with current **X** and **W**

4.1 Training ANNs: Backpropagation

Main Idea: distribute the error function across the hidden layers, corresponding to their effect on the output Works on feed-forward networks Use sigmoid units to train, and then we can replace with threshold functions. Repeat Choose training pair and copy it to input layer Cycle that pattern through the net Calculate error derivative between output activation and target output Back propagate the summed product of the weights and errors in the output layer to calculate the error on the hidden units Update weights according to the error on that unit Until error is low or the net settles.

We want to assign

1. W_i^j = weights of i-th sigmoid in j-thlayer

2. X^{j-1} = inputs to our TLU (outputs from previous layer)

3.c_i^j = learning rate constant of i-thsigmoid in j-th layer

4.δ_i^j = sensitivity of the network output to changes in the input of our TLU.

4.2 Feedforward neural network

It is an artificial neural network where connections between the units do not form a directed cycle. This is different from recurrent neural networks.

The feedforward neural network was the first and simplest type of artificial neural network devised. In this network, the information moves in only one direction, forward, from the input nodes, through the hidden nodes in the network.

Single-layer perceptron

The simplest kind of neural network is a single-layer perceptron network, which consists of a Single layer of output nodes; the inputs are fed directly to the outputs via a series of weights.

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In this way it can be considered the simplest kind of feed-forward network. The sum of the products of the weights and the inputs is calculated in each node, and if the value is above some threshold (typically 0) the neuron fires and takes the activated value (typically 1); otherwise it takes the deactivated value (typically -1).

Neurons with this kind of activation function are also called artificial neurons or linear threshold units. In the literature the term perceptron often refers to networks consisting of just one of these units. threshold value lies between the two. Most perceptrons have outputs of 1 or -1 with a threshold of 0 and there is some evidencethat such networks can be trained more quickly than networks created from nodes with different activation and deactivation values.

V. MULTI LAYERPERCEPTRON

This class of networks consists of multiple layers of computational units, usually interconnected in a feed-forward way. Each neuron in one layer has directed connections to the neurons of the subsequent layer. In many applications the units of these networks apply a sigmoid function as an activation function.

$$y = \frac{1}{1+e^{-x}}$$

A common choice is the so-called logistic function.

V. Cloud services

The various clouds are created. These clouds are individual to each other i.e. one cloud is not dependent other and then provide the services to the users

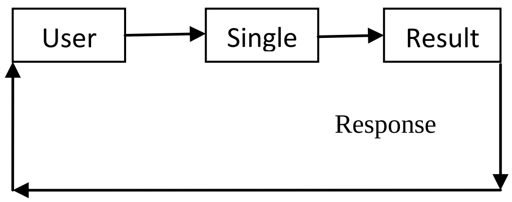


FIGURE 5 CLOUD SERVICES

5.1 Collaborative cloud services

Create the multiple clouds and make it as a collaborative. Then perform the tasks.

Multiple Clouds

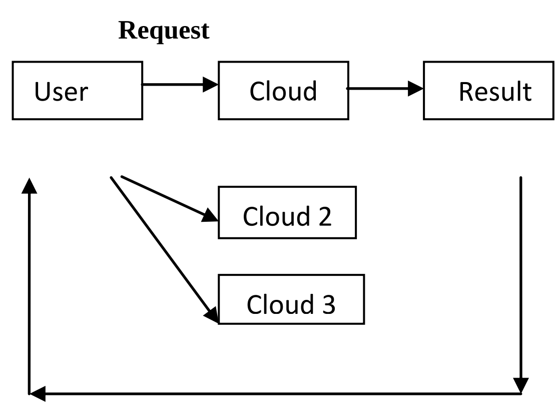
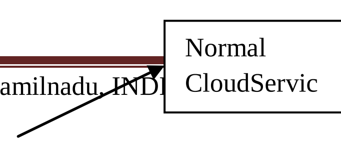


FIGURE 5.1 COLLABORATIVE CLOUD SERVICES

5.2 Cloud service consumption

In this Fig 5.2 we are consume the cloud resources. And observe the difference between the normal clouds and the collaborative clouds.By the user utilizing the services.



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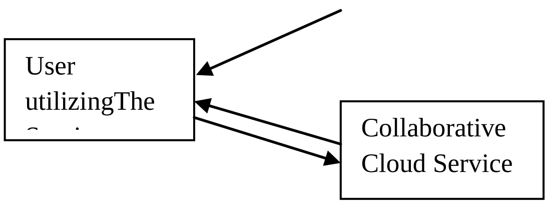
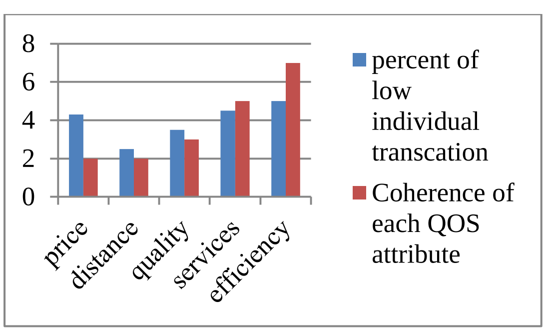


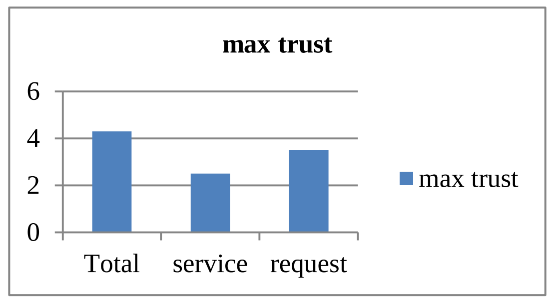
FIGURE 5.2 CLOUD SERVICES CONSUMPTION

Motivation of Multi-QOS

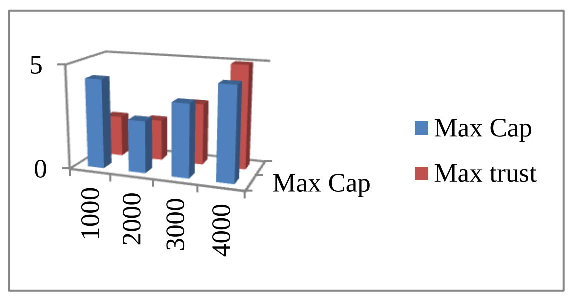
Motivation of Multi-QoS-oriented Resource Selectionand Price-assisted ControlSimply combining informationwill lead to a fewproblems. The inputs of the neural networkmodel include theQoS attributes in each transaction (i.e., price, distance, service,quality and efficiency) and the seller's overall reputation. Theoutput of the model is the seller's overall QoS. Because the realtrace does not have users' consideration priorities, we assumethat the six QoS attributes have equal priorities.The predicted overall QoS and the real overall QoS for100 resource requests, both of which almost overlap. Theirroot mean square error equals 0.95, a very small value. The resultsshow the effectiveness and accuracy of the neural networkmodel in predicting the QoS in individual resource selection.



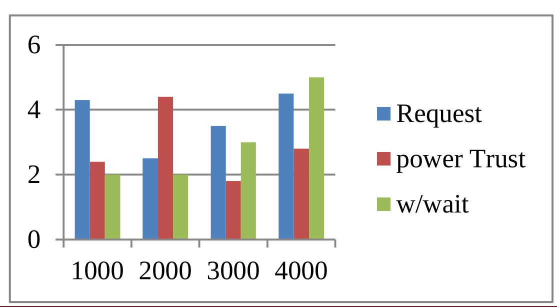
QOS Attribute



Failure in Services



Node Utilization



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Resource Sharing

VI. TRUSTWORTHY RESOURCE SHARING

We first tested different methods when all requests are singleresourcerequests. In order to see the effect of information retrieval alone,which is measured by the ratio of successfully resolvedresource requests over total requests.PowerTrust always selects the highestoverall-reputed provider. As verified by the trace, a node witha high overall reputation may provide low QoS for anotherresource due to either unwillingness or overloaded status.

A multi-resource request is successfully resolvedonly after all three resources are successfully discovered. This is because if one of the three resource suppliershas a low individual reputation, the final request failureis lowsignificantly for multiple-resource requestsbecause it can ensure the success rate of each of the three
selected suppliers by considering multi-faceted reputations fordifferent resources.

VII. CONCLUSIONS

In this paper, we propose an integrated information retrieval management for collaborative cloudcomputing (CCC).

Human beings tend to keep things simple by moving the complex aspects to computing by this innovative components to enhance theirmutual interactions for efficient and trustworthy resource sharingamong clouds.

Themulti-QoS-oriented resource selectioncomponent helps requesterschoose resource providers that offer the highest QoS measuredby the requesters' priority consideration of multipleQoS attributes.Retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort. This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information.reduces single point of failure and eliminates bottlenecks in the path of information flow, Reduces the Time delay and it provide remarkable ability to overcome from traffic conjection complicated patternsThe components collaborate to enhance the efficiencyand reliability of sharing globally-scattered distributedresources in CCC.

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