**Innovative Schemes for Resource Allocation in the**

**Cloud for Media Streaming Applications**

**Abstract:**

Media streaming applications have recently attracted a large number of users in the Internet. With the advent of these bandwidth-intensive applications, it is economically inefficient to provide streaming distribution with guaranteed QoS relying only on central resources at a media content provider. Cloud computing offers an elastic infrastructure that media content providers (e.g., Video on Demand (VoD) providers) can use to obtain streaming resources that match the demand. Media content providers are charged for the amount of resources allocated (reserved) in the cloud. Most of the existing cloud providers employ a pricing model for the reserved resources that is based on non-linear time-discount tariffs (e.g., Amazon CloudFront and Amazon EC2). Such a pricing scheme offers discount rates depending non-linearly on the period of time during which the resources are reserved in the cloud. In this case, an open problem is to decide on both the right amount of resources reserved in the cloud, and their reservation time such that the financial cost on the media content provider is minimized.We propose a simple - easy to implement - algorithm for resource reservation that maximally exploits discounted rates offered in the tariffs, while ensuring that sufficient resources are reserved in the cloud. Based on the prediction of demand for streaming capacity, our algorithm is carefully designed to reduce the risk of making wrong resource allocation decisions. The results of our numerical evaluations and simulations show that the proposed algorithm significantly reduces the monetary cost of resource allocations in the cloud as compared to other conventional schemes.

**Existing system:**

Most of the existing cloud providers employ a pricing model for the reserved resources that is based on non-linear time-discount tariffs (e.g., Amazon CloudFront and Amazon EC2). Such a pricing scheme offers discount rates depending non-linearly on the period of time during which the resources are reserved in the cloud. In this case, an open problem is to decide on both the right amount of resources reserved in the cloud, and their reservation time such that the financial cost on the media content provider is minimized.

**Proposed System:**

We propose a simple - easy to implement - algorithm for resource reservation that maximally exploits discounted rates offered in the tariffs, while ensuring that sufficient resources are reserved in the cloud. Based on the prediction of demand for streaming capacity, our algorithm is carefully designed to reduce the risk of making wrong resource allocation decisions. The results of our numerical evaluations and simulations show that the proposed algorithm significantly reduces the monetary cost of resource allocations in the cloud as compared to other conventional schemes.

Prediction-Based Resource Allocation algorithm (PBRA) that minimizes the monetary cost of resource reservation in the cloud by maximally exploiting discounted rates offered in the tariffs, while ensuring that sufficient resources are reserved in the cloud with some level of confidence in probabilistic sense.

**DisAdvantages:**

A prediction method has been proposed with respect to upcoming CPU utilization pattern demands based on neural networking and linear regression that is of interest in e-commerce applications. proposed a prediction method based on Radial Basis Function (RBF) networks to predict the user access demand request for web type of services in web-based applications.

**Algorithms:**

**1. Determining optimum resource allocations in the cloud**

**2 .PBRA algorithm**

**Implementation Modules:**

**1.Media Streaming Data Module:**

**2.Resource Provisioning**

**3.PBRA algorithm design**

**4.Working Modules**

**Media Streaming Data Module:**

Streaming media is multimedia that is constantly received by and presented to an end-user while being delivered by a provider. The verb "to stream" refers to the process of delivering media in this manner; the term refers to the delivery method of the medium, rather than the medium itself, and is an alternative to downloading. A client media player can begin to play the data (such as a movie) before the entire file has been transmitted. Distinguishing delivery method from the media distributed applies specifically to telecommunications networks, as most of the delivery systems are either inherently streaming. Streaming media is transmitted by a server application and received and displayed in real-time by a client application called a media player. A media player can be either an integral part of a browser, a plug-in, a separate program, or a dedicated device, such as an iPod. Frequently, video files come with embedded players. YouTube videos, for example, run in embedded Flash players.

**Resource Provisioning:**

Resource provisioning plan that is offered by cloud providers is referred to as on-demand plan. This plan allows the media content provider to purchase resources upon needed. The pricing model that cloud providers employ for the on-demand plan is the pay-per-use. Another type of streaming resource provisioning plans that is offered by many cloud providers is based on resource reservation. With the reservation plan, the media content provider allocates (reserves) resources in advance and pricing is charged before the resources are utilized (upon receiving the request by the cloud provider, i.e., prepaid resources). The reserved streaming resources are basically the bandwidth (streaming data-rate) at which the cloud provider guarantees to deliver to clients of the media content provider (content viewers) according to the required QoS. In general, the prices (tariffs) of the reservation plan are cheaper than those of the on-demand plan (i.e., time discount rates are only offered to the reserved (prepaid) resources).

**Pricing Schemes:**

We consider a pricing model for resource reservation in the cloud that is based on non-linear time-discount tariffs. In such a pricing scheme, the cloud service provider offers higher discount rates to the resources reserved in the cloud for longer times. Such a pricing scheme enables a cloud service provider to better utilize its abundantly available resources because it encourages consumers to reserve resources in the cloud for longer times. This pricing scheme is currently being used by many cloud providers. See for example the pricing of Virtual Machines (VM) in the reservation phase defined by Amazon EC2 in February 2010. In this case, an open problem is to decide on both the optimum amount of resources reserved in the cloud (i.e., the prepaid allocated resources), and the optimum period of time during which those resources are reserved such that the monetary cost on the media content provider is minimized.

**PBRA algorithm design:**

This paper is a practical - easy to implement - Prediction-Based Resource Allocation algorithm (PBRA) that minimizes the monetary cost of resource reservation in the cloud by maximally exploiting discounted rates offered in the tariffs, while ensuring that sufficient resources are reserved in the cloud with some level of confidence in probabilistic sense. We first describe the system model. We formulate the problem based on the prediction of future demand for streaming capacity . We then describe the design of our proposed algorithm for solving the problem . The results of our numerical evaluations and simulations show that the proposed algorithms significantly reduce the monetary cost of resource allocations in the cloud as compared to other conventional schemes.

**Demand model:**

Demand forecasting module, which predicts the demand of streaming capacity for every video channel during future period of time. \_ Cloud broker, which is responsible on behalf of the media content provider for both allocating the appropriate amount of resources in the cloud, and reserving the time over which the required resources are allocated. Given the demand prediction, the broker implements our proposed algorithm to make decision on resource allocations in the cloud. Both the demand forecasting module and the cloud broker are located in the media content provider site. \_ Cloud provider, which provides the streaming resources and delivers streaming traffic directly to media viewers.

**Configuration**:-

# H/W System Configuration:-

# System - Pentium –IV 2.4 GHz

Speed - 1.1 Ghz

RAM - 256MB(min)

Hard Disk - 40 GB

Key Board - Standard Windows Keyboard

Mouse - Logitech

Monitor - 15 VGA Color.

# S/W System Configuration:-

* Operating System :Windows/XP/7.
* Application Server : Tomcat5.0/6.X
* Front End : HTML, Java, Jsp
* IDE :Eclipse
* Scripts : JavaScript.
* Server side Script : Java Server Pages.
* Database : Mysql 5.0
* Database Connectivity : JDBC.