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A layered mobile bandwidth allocation agreement based on bandwidth effectiveness and user requirement

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Abstract
A Mobile architecture provides a model to distribute the Bandwidths to clients. The presented work is the improvement to this distribution architecture in case of public Mobile. The improvement is here performed at both the server as well client end. The work is divided in three main stages. First stage is specific to the server, in which all the available Mobiles are divided in a hierarchal order. A high level parametric division is performed to categorize all the related Mobiles. The client search will be performed on segmented group instead of all Mobiles. The second stage is client specific, in which client requests are maintained in a queue and an effective scheduling mechanism is implemented to select the best client to be processed. The third stage is the integration stage called allotment of Bandwidth. In which a parametric check is performed relative to efficiency and accuracy to select the best Mobile Bandwidth from segmented group to the client. The presented architecture will reduce the load from both the client side as well as server side, and will perform the efficient and reliable Mobile Bandwidth allocation.

Keywords: SLA, Mobile Architecture, Scheduling, Allocation, Parametric Selection

Introduction
A Mobile based architecture is one the major distribution model to share the products or the Bandwidths in private as well as in public sector. With the development and involvement of the internet is all business architecture, there was the requirement of improvement of basic distribution models such as distributed computing, parallel computing, grid computing etc. The Mobile architecture is itself a layered architecture as shown in figure 1. In this architecture the top layer is the client that perform the Bandwidth or the product request in user friendly manner. The lowest layer of the architecture is the Mobile server. The Mobile server contains the Mobile Bandwidths. These Bandwidths are of different kind such as storage Bandwidths, product management Bandwidths, product distribution Bandwidths etc. Between these two ends, there are number of in between layers. These intermediate layers includes the process of web management, management of Mobile infrastructure etc.

As we can see in the figure, all the Bandwidths provided by the Mobile and the integration is shown is divided in three main sub layers. The Mobile Application is the actual client end that defines the client integration with Mobile. Here client specify its requirement and the Bandwidth request.

In the intermediate layer, the Mobile infrastructure is defined. The Mobile infrastructure includes the computational model, storage and the other communication resources. The computation model is the actual processing unit that will return the desired results from the system, the storage unit is the actual memory available to the Mobile to process on. The communication units defines the communication protocol, security etc while performing the data transmission.

In this present work, we have defined an effective and improved model to represent the public Mobile. The work is defined under some constraints and the assumption. The work is divided in three main stages, one for the server side, second for client side and third for the integration stage. The presented model will allow a most eligible client to get the Bandwidths efficiently and to provide the allocation of most reliable and efficient Mobile Bandwidth.

In section 2, we have defined the literature respective to the presented work. In section 3, the proposed work is defined.

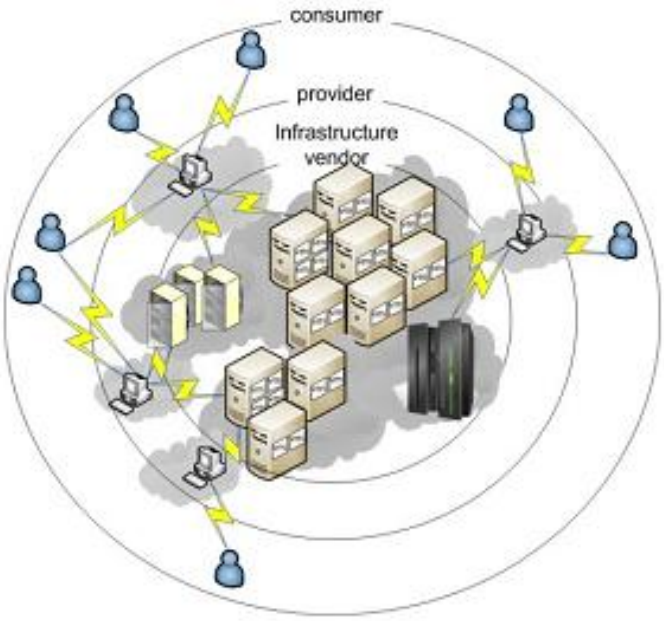

Fig 1: Mobile Architecture [6]

Literature survey

Many of the earlier research did a lot of work for the Mobile Bandwidth allocation. Same kind of work is also done in other distribution architectures such as parallel processing and grid computing. The presented work is the composition of three main stages called scheduling, effective Bandwidth selection and the effective allocation of the resource. In this section the work done by the earlier researchers is discussed.

In year 2011, G. Mc Evoy performed a work to expose and explore the different paradigms of the scheduling in case of Mobile computing under different application. The author work is based to present different architectural analysis of Mobile computing and the Mobile infrastructure. These architectures are defined under different parameters such as work load, efficiency etc. The author presented a virtual mechanism for workload consolidation in performance analysis for scheduling. The author defined classification approach to take the early decisions regarding the categorization of resources and Bandwidths and based on this classification the actual scheduling will be performed [1].

The another work in same year is performed by D. Dutta for Job Scheduling in Mobile Computing in Multi QOS environment. In this work the scheduling is been analyzed for the business Bandwidths based Mobile architecture. The author presented the optimization of cost based job scheduling using genetic approach. The work is been tested under different crossover operators likes PMX, OX, CX etc. The changes are also performed for different mutation operators like swapping and insertion operators. The work is also compared with linear programming approach [2]. In year 2012, Octavian Morariu [10] presented the same kind of work to optimize the work load balanced scheduling using the genetics approach. Danial Guimaraces do Logo performed a Mobile process scheduling by using virtual machine scheduling using the active cooling control mechanism. The work also explore the concept of concept of green computing along with virtual machine algorithm. The presented work was about to reduce the power consumption by implementing a control mechanism on work load assignment and the migration. The control mechanism presented was based on the threshold value. The work is based on the concept of energy utilization and to improve the effective scheduling for the heterogeneous data centres [3].

In year 2010, H. Kloh presented a scheduling model that can be implemented for both the grid computing as well as Mobile computing. The work is the implementation as well as analysis for the bi-criteria hybrid scheduling algorithm to optimize the quality of Bandwidth for the selection of job. The presented model was based on the prioritization criteria and ordering of the scheduling approach [4]. In year 2012 and energy effection parallel computing approach is implemented under the Mobile architecture. The work is about the reduction of energy or the power consumption. The presented model can be implemented as the Bandwidth distribution architecture or the business model for any kind of Bandwidths. In this work author proposed an Energy-Efficient Scheduling the work includes the Bandwidth level agreement for the job assignment and significant power saving for the algorithm [5, 9].

The another work is performed by Young Choon Lee for the profit driven scheduling for the request Mobile. The primary focus of the work is on the Bandwidth allocation based on pay-peruse concept. According to this pricing model the providers and the clusters are working with the requested Bandwidth volume and the conflicting objectives for both the providers as well as the customers. The work includes the Bandwidth request scheduling under the business model environment. The architecture includes the vendors, Bandwidth providers and the customers. The scheduling approach is capable to satisfy the need of both parties based on price analysis. The pricing model is the dependency based consideration for the development of profit driven scheduling algorithm [6]. In year 2012 the another work is performed by Lma Mingyi Zhang on the green scheduling to optimize the scheduling task for the heterogeneous Mobile servers. The work is about to achieve the energy effectiveness and to get the pollution stability with lower energy usage. In this presented work six different green scheduling algorithms are considers implemented in two major steps, one for the task assignment to different Mobile

servers based on the energy analysis and other for setting up the optimal spend for task assignment for each Mobile. The presented work can be implemented for both the homogenous and the heterogeneous Mobile servers. The work simulation is based on shortest task first and the energy efficiency enhancement approach [7].

In year 2011m Jiahui Jin performed a data locality based task scheduling algorithm for the Mobile computing system like Hadoop and MapReduce. These kind of systems are implemented for the business environment. The file system can be splitted for the multiple blocks that will be replicated for the multiple servers. These block architecture will be implemented to get the effectiveness for the global optimization for the data locality. The presented approach is a heuristic task scheduling mechanism that includes the initial task distribution approach [8].

Proposed work

The presented work is the improvement over the Bandwidth level architecture of Mobile. The work is about the refinement to perform an efficient and reliable resource allocation under the Mobile architecture. The presented work is shown in the form of standard Mobile architecture as shown in figure 2.

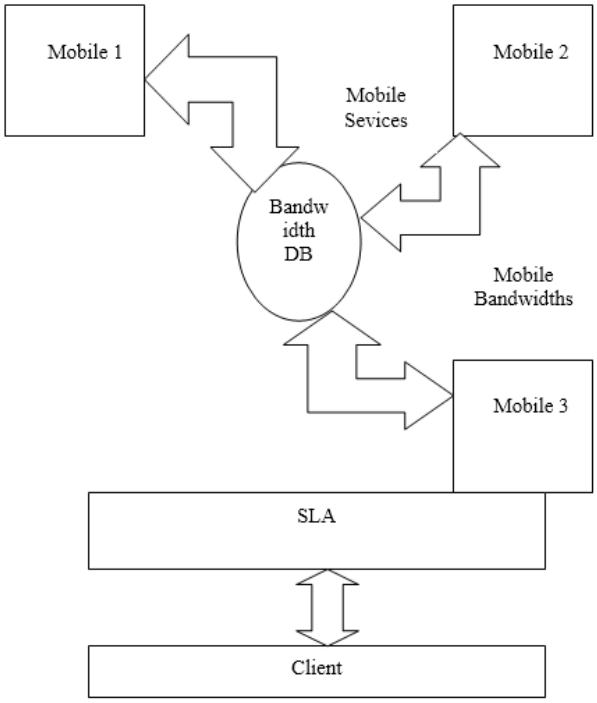

Fig 2: Proposed Mobile Architecture

As we can see in the figure, here the Mobile server is presented in the form of integrated Mobile Bandwidths. The information of these all Bandwidths are defined in Bandwidth Database defined by the Mobile. This Bandwidth DB contains the information regarding, the Mobile Bandwidth name, its basic architectural properties, security policies, access methods, cost etc. Based on these parameters the user oriented choice will be filtered later on by the SLA. The lowest form of the architecture is been represented by Client side. Multiple clients can demand for a particular Mobile Bandwidth according to the requirement. The request user request performed at a particular instance of time will be recorded in a queue called process queue. On this queue the scheduling mechanism will be performed. The scheduling will be performed based on the client request, resource requirement and the time required to perform the process. Once the processes are scheduled, these will be taken by the SLA as the middle layer. The SLA will generate a resource allocation algorithm to provide the Bandwidth access to a particular user.

The Bandwidth level agreement is the major component for the Mobile architecture. According to this architecture the criteria and conditions are defined for assignment or allocation of the Mobile Bandwidths to different consumers. In this present work we have presented the same work by using the layered approach. Figure 3 is showing the process performed by the middle layer. The layer will accept the user request and the Mobile Bandwidth description as the input arguments. Based on these all a Bandwidth allocation process will be performed by the middle layer.

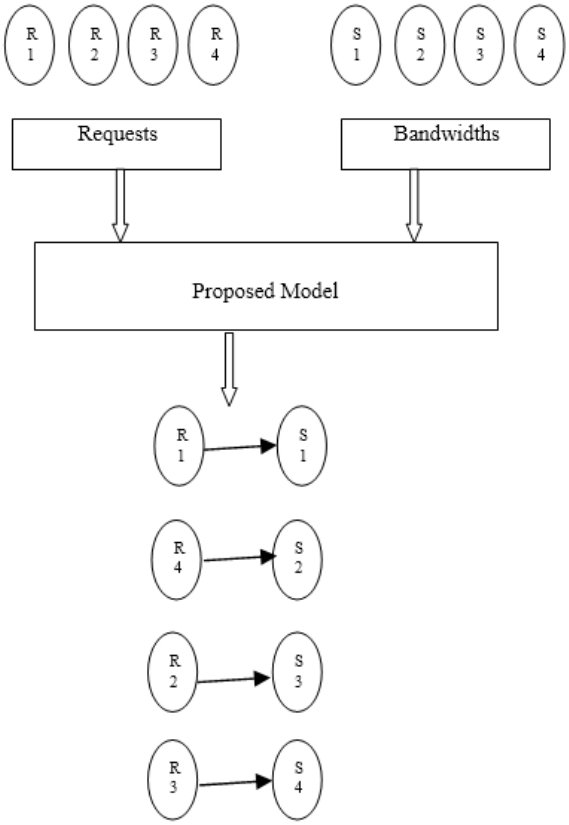

Fig 3: Bandwidth Level Agreement

The work performed in these three layers is defined as under.

Layer 1

It is the client side layer that basically accepts the client request in the form of Bandwidth requirement along with its processing time and the type of Bandwidth. As the requirement is submitted by the user, it is maintained in a queue called request queue. On this queue a scheduler will be implemented to identify the request that will be processed first. The scheduling procedure is based on the time of the process and the type of process. The scheduling algorithm is given here under

1. Define a Request Queue with capacity N
2. Generate a user request called Ri and insert it in queue from rear end.
3. p=1
4. For i=1 to length (Request Queue)

5. {
6. If(Priority(Request (i))> Priority(Request(p)))
7. {
8. if Time Taken (Request(i))<Time Taken(Request(p))
9. {
10. p=i
11. }
12. }
13. Return Request(p)

Layer 2

The Mobile server itself represents the second layer. The most the server level Mobile information is present in the Bandwidth DB. As the integration of this layer is performed, different Mobile Bandwidths are been compared under different parameters.

1. Type of Bandwidth: The comparison will be performed only between the same kinds of Mobiles. Such as the when we have to work on a mail Bandwidth, all the mailing Bandwidth Mobile will be compared. The type of Bandwidth is the basic parameter to perform the categorization.
2. Availability: It is not necessary that all Mobiles are available all the time. To check the availability of the Mobile, a dummy Mobile access will be performed. If the Mobile Bandwidth signature identify, it means the Bandwidth is activated and currently available.
3. Response Time: All the Mobiles of same type, will be compared for the efficiency. The efficiency is here defined in terms of time taken to access a Mobile Bandwidth. All the Mobiles will be arranged in descending order of the response time.

Based on these parameters most appropriate Mobiles will be elected based on the user requirement.

Layer 3

This layer is basically the interaction layer that allocates the efficient and reliable Mobile Bandwidth to the effective users. Based on the availability and the requirement, the Bandwidth allocation will be performed.

We are approaching the concept of open Mobile to integrate different Bandwidths under one unit. The basic principle of model Many Mobiles will continue to be different in a number of important ways, providing unique value for organizations. It is not our intention to define standards for every capability in the Mobile and create a single homogeneous Mobile environment. Rather, as Mobile computing matures, there are several key principles that must be followed to ensure the Mobile is open and delivers the choice, flexibility and agility organizations demand. In this proposed model, the Google Apps is considered as the public Bandwidth provider and

Conclusion

The work is about to define an integration model that will divide the complete architecture in three interconnected layers. Each layer is defined with a separate algorithmic concept to identify the most required user and the best available Bandwidth. Based on these Bandwidths the integration and the allocation of the Bandwidths to different users is performed. The presented work is the model, to provide the efficient and the reliable Bandwidth allocation mechanism among all the available public Mobile.

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