Priority based resource allocation in cellular network

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ABSTARCT
In a cellular network resources are to be allocated to the MS based on their co-channel and signal strength in a coverage area of network.. There are some limited rresources avilable to the user within the services to be used within a time period. In this paper we proposed a priority based reserved resources allocation method that are used in celluler network to provide a way of using the resources in the network.

Keyword: MS,CDMA, Resource allocation,priority

I. INTRODUCTION

Due to the growth of the internet user in the world there is hug demand of multimedia messages. Every user use the best services at higer speed. So the service provider provide the best services at low cost and the service provider also improve there network performance using the latest technology and day by day update of application and to use best equipmet for communication. But the problem generates is that how efficent the resources are used in a cellular network t the user for best services and how to gain the performance at both end. Resource allocation are alsobased on the cost of services in a network. Resource allocation algorithm is based on the multi-signaling on single channel at the user side, means multiple signal on a single channel for different services at a single device like MS, laptop, PC, etc. In other word there is a single channel for multiple services or multi-services at multiple sub carrier like in OFDM. A priority based allocation of reserved resources is that in which we need the large number of buffer space at MSC and BSC. It gives the priority to those user who need large amount of data for high bit rate or maximum download rate. So we use the concept of hand off in cellular network. Soft handoff provided improved service quality, controlled interference of mobile stations, reduced service interrupt probability, etc. than hard handoff. In CDMA cellular system, assigned frequency zone is divided into several frequency channels, and each frequency channel is used by several subscribers at the same time by assigning different code to each subscriber. If handoff occurs between different frequency channels in CDMA system, soft handoff is not possible and hard handoff occurs as in TDMA or FDMA system. Therefore, in CDMA cellular system in which multiple frequency channels are used, probability of soft handoff at the time of handoff may vary according to the method of allocating reserved resources to each frequency channel. The base station requested handoff attempt can be processed in three ways as described below: Firstly, assign a code of same frequency channel being used by the request call. Secondly, if there is no usable code in the same frequency channel being used by handoff, but if there is a usable code in another frequency channel, then hard handoff is provided between frequencies; and Thirdly, there is no usable resource in the base station, then handoff failure occurs. To provide soft handoff, only first case should be possible. We assume that Frequency Channel 1 (~ 1) is served in 6 neighbor cells and Frequency Channel 2(F 2) is served in 3 neighbor cells. Accordingly, the avail rate of handoff attempted ~1 to that of attempted to F 2 is will be 2 : 1, and further, if the rate of allocated resource for

handoff of F1 and F 2 frequency channels is applied to this rate, the rate of soft handoff of the entire base station will increase. But if we talk about the GSM there is no need of code . but from moving to one station to another station there is need of handover to continue during the data/call session from one cell to another cell.

II. RELATED WORK

The optimal resource allocation strategy achieving the capacity of multi-user fading channel has been found by information theoretical research[1]. BS implements the subcarrier allocation algorithm based on user classification, then each user implements power allocation and bit loading distributedly. The sub carrier allocation algorithm is designed as a two-step heuristic algorithm to avoid unacceptable computational complexity of NP problemThe first step of the algorithm is taken for users of class A to select the subcarrier until the required rates meet the needs of all users. This step is expected to save the bandwidth cost. The second step allocates subcarriers in a proportional fair way to users of class B according to their weights, which are given to BS beforehand by every user according to their service requirements. This step is expected to maximize the data rates for users in class B[2]. Kastro et. al. proposed the RUP() based framework model for resource allocation in cellular network based on marketing prefrences. In this frame work subscriber has a CRM(customer relationship model) value defined by the MNO's marketing division. The CRM value of a subscriber is taken in the range of [0,100]. The value could depend on many factors such as customer's service usage rate, job position, duration of subscription or any other factors identified by the service provider. Telecommunications industry is highly competitive and hence the customer churn rates are quite high [3,4].

III. PROPOSED WORK

in the cellular network the priority is depend on the cost, services, and signaling(channel), in a network the user use the best services on high data rate if there are available of channel and resources. Even a communication channel also a resources in celllualer netwrok. For high speed data access the channel need more bandwidth, because the demand of user of access the resources in a mobility. Resources are to be organised in a such manner that the user request full fill in a limited time. So this type of problem is ocuer in the communication**,** a priority based allocation of resources method used for time saving in network even the resources are allocated iin a organised way so that the user satisfaction of demanded resourceses are full fill.

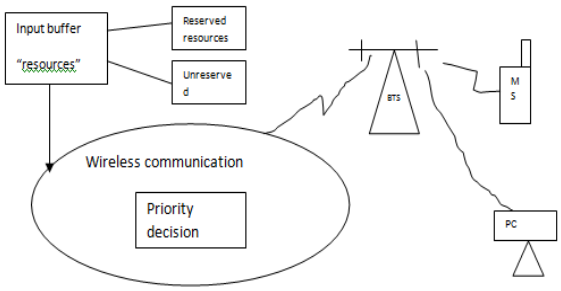


Fig.3.1 Allocation of resources based on priority decision maker.

In this fig.3.1 when a user demands for resources such as web, video, voice etc than MSC provide a free channel to the user and on that channel the resources are provided. In between the request and reply the priority decision maker set the priority of user according to the factors. These factors are based on cost, services, cell, and no. of users in a cell. a QoS point,

ISP(internet service provider) will better be able to manage different kinds of data stream based on priority and service plan.

Priority decision maker is an program that to handle the allocation of resources on demand or on the request to the server by the client/user. There are many algorithm are like, priority queue, dynamic priority, fixed priority, round robin etc. A network never puts user's demands aside. But set the priority of demands in a set of queue. A set of queue are link together in a manner that the user request of resureces could not be negleted. A priority to be set base on the factors like:- cost, no. of user per cell,channel and services. These factors helps in QoS in a cellular network. In 3rd generation, the huge demand of QoS also demand, the better or upgraded technology with new and advance featuers. " priority to be set base on the cost of services", a priority based resources allocation help in improving the Qos even the better usage of network bandwidth. The priority to bet set at 2 level.

Priority is set at two level:

1. BSC level 2. MSC level

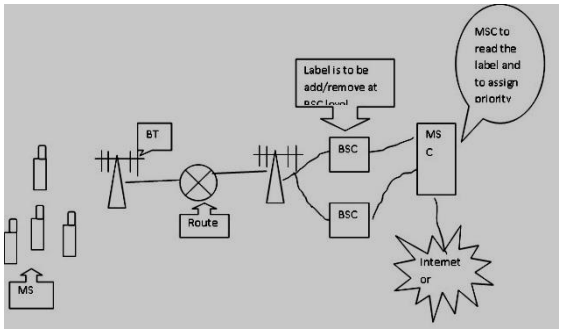
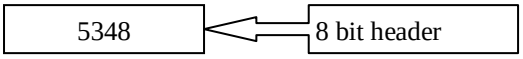


fig. 3.2 priority at BSC/MSC level

BSC level:- a BSC moniter the incomming and outgoing link or call at high bandwidth rate. At BSC a label(header) of 8 bit to be attached on the incoming call.and to remove header by BSC when call is disconnect. A 8 bit header contain random number.



MSC level :- at MSC level, the system to check or moniter the incoming call from the BSC and to check that the channel contain header or not . if call from BSC not conatin the label means it's a normal call for low data rate and low cost services call. If the call contain the label then it assign it a priority and send it to priotiy queue where dynamic priority sheduling takes place. dynamic prioity scheduling is a type of scheduling algorithm in which the priorities are calculated during the execution of the system. The goal of dynamic priority scheduling is to adapt to dynamically changing progress and form an optimal configuration in self-sustained manner. the MSC link that call to free channel at reciver side if channel are avilable. If channel are not free other side, so it wait for some second . if channel free it allocate the link other wise disconnect the call. Another view is that the prioity and allocation of resources are based also on cell wheter the coverage area is avilable or not. The benefit of lable is it make the fast execution of link or call and the security point of view that if channel use maximum bandwith its calll is to be recored and moniter. This label services is temoral or unique permanent, it is depend on the servie provider. during the handof mechanishm same process are run, but if channel are not free than the call is disconnected.

CONCLUSION

in the cellular network the resource allocation is to be assign based on normal allocation and priority. both concept are usefull in the netwok. in network, some service provider used differnt approch for priority and on shame channel or bandwidth the data to be asssign on high data rate. this priority based allocation of resources is used in 3G and beyond network, where large data to access at high data rate. in video calling services these approch are best.

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