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DIRECT ASSIGNMENT AND MINIMUM FALLING PROBABILITY THEME FOR RELINQUISHING CALLS IN MOBILE WIRELESS CELLULAR NETWORKS

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ABSTRACT

Due to the rise of users' demand for wireless cellular connectivity, service provider is finding problem in allocation of resources for mobile nodes. In order to accommodate more range of users, the cell size in mobile wireless cellular networks is being reduced. Because of that information measure in every cell has become restricted. Due to decrease of cell size, more range of handovers takes place. If bandwidth allocation to these relinquishing calls isn't done properly then dropping chance of relinquishing calls are accrued. Also if spare information measure is not offered to new calls, then blocking chance for freshly generated calls can be accrued. Dropping of handover calls is less fascinating than block of latest calls. Many schemes have been projected to resolve the matter in resource allocation. Presently available solutions ar not enough to produce and maintain QOS (Quality of Service) for relinquishing calls. In this paper we propose TDMA based mostly dynamic channel allocation at the side of information measure window in significant load conditions. We evaluated the performance for dropping chance for relinquishing calls in busy traffic conditions. We applied information measure window, where the information measure window changes its size according to dynamic network traffic conditions. With this solution higher priority relinquishing decision (multimedia call) can get requested information measure, lower priority relinquishing decision (Data call) can get minimum information measure and chance of dropping of handover calls is reduced to minimum. More range of users can be ready to get connected to network and repair supplier may generate additional revenue.

I. INTRODUCTION

This section will transient regarding work done antecedently by researchers. Demand for wireless connectivity is accrued in mobile wireless cellular networks and service suppliers got to accommodate additional range of users among the restricted offered information measure. Allocated information measure has to be used properly. Wastage of bandwidth leads to reduction in revenue generation for service supplier. Bandwidth allocation, efficient resource utilization and management in the cell ar the foremost involved problems and lots of researchers projected solutions during this regard. In [1] the channel segregation dynamic channel allocation (CS-DCA) algorithm was applied to multi hop Direct sequence code division multiple access (DSCDMA) and DCA failure rate was evaluated. Update search distributed dynamic channel allocation {based|based mostly|primarily based mostly} on combined search based and update based is projected in [2]. Cross layer resource allocation model is presented in [4], where authors applied cross layer management algorithmic rule and analyzed resource allocation. Channel assignment to radio interfaces in multi radio, multi channel wireless mesh networks is discussed in [5]. Traffic demand model and channel assignment model are projected in [9], in which channel demand by cells and channel assignment ways ar specific. Novel localized channel sharing scheme is projected in [10] to improve system capability and QOS in wireless cellular networks. In this scheme, channels are shared between adjacent cells, the fixed range of adjacent cells classified along ar known as meta cells. Channel reuse and block chance is reduced in [11]. Bandwidth sharing for real time and non - real time football play calls projected in [12], where information measure is reserved in additional than one cell that isn't necessary if the mobile node's future location is expected properly. In [13] authors allocated the restricted channel information measure to satisfy growing channel demand. Frequency allocation at each base station follows the offered load that is shown in [14]. Time split method of channel allocation [15] provides higher information measure management resolution and correct utilization of resources [16] generates additional revenue and may connect additional range of users. Bandwidth reservation victimization GPS system [17] can avoid spare reservations at several neighboring base stations and avoid wastage of resources. Genetic approach of channel allocation for handover calls [19] is one of the solutions supported previous history of calls. This paper is organized as follows. Section 2 talks regarding totally different channel allocation schemes in wireless networks, section 3 describes the ancient channel allocation method. Section 4 talks in

brief regarding TDMA IS – 136 commonplace. Section 5 presents our projected resolution followed with mathematical model in section half-dozen. Section 7 shows analytical analysis and simulation results. This paper ends with our conclusions in section 8. This paper is the extended version of our previous work published, where channel allocation is done supported range of relinquishing calls received, applying basic analytical method. In this paper dropping probability of relinquishing calls is evaluated applying extended mathematical resolution and each the solutions ar supported an equivalent interval division technique and TDMA IS – 136 commonplace.

II. CHANNEL ALLOCATION SCHEMES

In wireless networks Channel Assignment methods ar principally divided into 3 classes. 1. Fixed Channel Assignment (FCA), 2. Dynamic Channel Assignment (DCA) and 3. Hybrid Channel Assignment (HCA) and explained briefly as follows.

2.1 fastened Channel Assignment (FCA)

In this method fastened range of channels ar allotted for good to all or any the cells, (whether all the channels will be used or not) in step with some use pattern counting on the required signal quality. In this method information measure are obtaining wasted if all the allotted channels don't seem to be used and if the channels don't seem to be freely offered then information measure won't be allotted. Various sub ways ar being added as well as barrowing the channels from neighboring cells in order to scale back the dropping chance of relinquishing and block chance of regionally generated calls. FCA schemes are terribly easy but they do not adapt to dynamic network traffic conditions and distribution. In order to beat these deficiencies Dynamic Channel Assignment (DCA) method has been introduced.

2.2 Dynamic Channel Assignment

(DCA) In DCA all channels ar keep in a central pool and assigned to cells whenever new calls arrive, by following the CIR criterion. After the decision is completed channel can come back back to central pool. DCA scheme provides flexibility and traffic ability. Dynamic channel allocation (DCA) technique can offer higher Quality of Service (QOS) than FCA method, because channels ar assigned solely upon demand and capability demand of the mobile node in cell. With this DCA method, bandwidth in the network are used properly. DCA scheme is less economical than FCA theme beneath high load traffic conditions. To overcome this drawback Hybrid Channel Assignment (H C A) techniques ar applied by combining FCA and DCA schemes.

2.3 Hybrid Channel Assignment (HCA)

The HCA, method is the combined techniques of FCA and DCA. In this scheme, total numbers of channels are divided into 2 sets. One is fixed and different one is dynamic. Fixed set contains range of nominal channels assigned to cells as assigned in FCA theme. Dynamic set of channels are shared by all users in the system.

III. CHANNEL ALLOCATION PROCESS

This section will transient the common channel allocation method. In general, mobile node (Mn) first initiates the decision to the bottom station within the cell through communication channel. Base station will look for the provision of requested information measure. If enough bandwidth is offered, that will be allotted as traffic channel. If free channels are not offered, then mobile node will be blocked. When mobile node (Mn) migrated to new cell, base station in this new cell will portion channels as per information measure demand of the user and channels in previous base station are disconnected. If no channel is available or no channel is allotted throughout the waiting time then relinquishing decision are born.

IV. TDMA IS – 136 STANDARD

Since we applied TDMA IS – 136 technology in this paper, to explain well is out of scope of this paper, but it is in brief mention here, some important aspects of TDMA IS – 136 commonplace. Wireless cellular systems ran under capability limit throughout 1990, due to the demand for wireless cellular network need was accrued. Survival and growth of service provider is to accommodate additional range of customers among the restricted radio-frequency spectrum has become a bigger issue and concern. There are 2 capability problems were mentioned. One is voice {channel capability|data rate} and another one is control channel capacity. Voice {channel capability|data rate} was accrued by dividing the radio channel into time slots and management channel capacity was increased by adding Digital management Channel (DCCH). This standard permits versatile use of radio spectrum that helps the service supplier in accommodating additional range of calls.

IS – 136 system and another one is Half rate IS – 136 system. In the following figure 3, it is shown that, full rate TDMA channel is divided among three customers (mobile nodes), where every mobile node transmits knowledge at each third time slot. Where as in 0.5 rate TDMA, channel capacity is doubled by dedicating only 1 slot per frame per client, demonstrated in following figure four, [8]. Newer IS – 136 version and IS – 136HS standards defined to facilitate increased knowledge rates.

V. PROPOSED RESOLUTION

This paper is the extended version of our previous work published, where channel allocation is done for relinquishing calls and during this paper dropping chance of relinquishing calls is bestowed. In our proposed resolution, we thought of 2 sorts of relinquishing calls. One is Class – I decision that is higher priority relinquishing decision (video or multimedia system call). Second one is Class – II decision that is lower priority relinquishing decision (usually knowledge call). In our solution information measure allocation or channel allocation means that time slot allocation to the relinquishing calls. Each channel in the cell is split into six time slots (IS- 136 TDMA System). If Class – I calls ar there, first 5 time slots ar used to accommodate category – I relinquishing calls. Sixth interval is temporary time slot. Sixth time slot is employed to accommodate the category – II handover calls and excess category – I calls briefly. As soon as the free time slots ar offered in any of 1st 5 time slots, the Class – I calls are transferred from sixth interval to free interval. When ever relinquishing calls arrive at the cell, base station in the cell will determine {the range|the amount|the quantity} of sophistication – I calls and number of sophistication – II calls. First 5 time slots can be assigned to 5 category – I calls. Remaining category – I calls can share the sixth time slot at the side of Class – II calls. It means sixth time slot are divided into sub time slots and assigned to remaining calls. If number of category – I calls ar but 5, then remaining time slots after category – I allocation can be divided into sub time slots and assigned to remaining calls. In this paper we thought of 2 varieties of outgoing calls, one is decision completion decision and second one is depart call that is migrated to neighboring cell. Two sorts of incoming calls ar thought of, one is handover decision and another one is regionally generated decision, which is initiated with in the cell. Our focus in this paper is to allocate and manage the information measure to relinquishing calls [15]. Bandwidth window is used during this paper and changes it's size in step with dynamic network traffic conditions. In the following figure 5, it is demonstrated that, bandwidth window accrued till four, it means four category – I calls occupied four time slots and time slots 5 and six ar assigned to category – II calls. Bandwidth window can facilitate the base station system and relinquishing calls to require applicable action. Dropping probability for relinquishing calls is evaluated and analysed in next sections.

VII. ANALYTICAL EVALUATION

Performance is evaluated for single channel in cell. Single channel is divided into six equal duration time slots. Channels are allotted for category – I calls, from first 5 time slots and remaining time slots ar allotted to category – II calls. If category – I calls ar additional than 5 then 5 category – I calls can take 1st 5 time slots and remaining category – I calls be a part of with Class – II calls. Simulation results in figure 7 have shown that range of sophistication – I Calls and sophistication – II calls step by step accrued with time, but dropping chance is maintained between zero.02 and 0.2.

Because sub channels ar created in sixth channel in order to accommodate most range of relinquishing calls with minimum zero.1 unit sub time slot. Excess category – I calls that ar accommodated on with Class – II calls with minimum slot length throughout 1st interval of your time are given preference to induce full interval in next interval of your time. It is found that, even though total calls ar accrued to quite fifty, still dropping probability is at the acceptance level. It is demonstrated in figure eight, that the number of relinquishing calls, dropped is terribly less in range throughout peak time. When category – I calls ar reducing and category – II calls ar increasing in range, dropping probability is terribly minimum, because additional range of channels ar created to accommodate category – II calls and it is in figure nine. During peak time, traffic in network is increasing with time and new channels with minimum duration time slots ar conjointly created consequently that is shown in simulations in figure ten.

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