ENTS 656 Project 2017

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Solution to Q1.

Ratio of dropped calls to completed calls is: 8200/85=94.25

It is noticed that the number of dropped calls is more than the number of completely successful calls. The main reason for the calls to be dropped is because the SINR value as does not satisfy the threshold of 6 dB

There are no calls dropped due to channel block because there is no point in the simulation where all 56 channels are getting used at the same time.

Output in one of the many simulations done

Number of call attempts excluding retry 10811
Number of call attempts including retry 15660
Number of blocked calls due to traffic capacity 0
Number of blocked calls due to signal strength 2601
Number of dropped calls 8027
Number of successfully completed calls 100
Number of calls in progress at a given time 3
Number of failed calls 10628
Current cell radius in meters 9832.20365900981

Solution to Q2.

Now, administering admission control.

Ideally, if a cell is already operating near capacity and the addition of more users would lower performance for users already connected to the cell, the cell may wish to deny access to the new users located near the cell boundary since they can presumably find another cell to serve them. Your project will look at the effect of applying an admission control algorithm to a simple simulation of the downlink for a CDMA cell. Under CDMA, there is a direct connection between the number of users on the cell and the amount of interference experienced by each user. This will make it easier to model the interference effects of additional users.

Admission control is particularly important for CDMA systems. Since the interference is closely related to the number of users, it is possible for a system to admit users thereby raising the interference level and thus cause other users to be dropped. The dropped users will usually come from the edges of the cell so the cell will appear to shrink. Of course, once some users are dropped, the interference will go down and the cell will admit more users, thus causing it to expand again. This shrink-expand-shrink-expand cycle is called “cell-breathing”. It is disruptive to users (especially at the edges of the cell) and is one of the reasons admission control procedures are needed.

Cd=20

Ci=15

Ratio of dropped calls to completed calls is: 8228/104=79.11

Change in blocked calls: The number of blocked calls due to signal strength has reduced from 7983 to 2412. The number of blocked calls has reduced on administering channel control.

Effect on cell radius: It is observed that the cell radius has reduced from of 9000m to about 7000m over time as the simulation progresses. The cell radius has visibly reduced. Hence, the radius of the farthest active user is lesser.

Solution to Q3.

Number of users changed to 10000

No admission control. i.e Cd=57 and Ci=0

Now, blocks due to channel capacity should increase.

The blocks due to channel capacity remains at 0

Now with Cd=20, Ci=15

Blocks due to channel capacity is 0

HONOR PLEDGE: I pledge on my honor that I have not given or received any unauthorized assistance on this assignment.

Signature:_____Pavithra Ezhilarasan_____