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POWER SAVING MECHANISM FOR THE NEXT GENERATION TELECOMMUNICATION NETWORK

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Abstract

The explosive popularity of smart phones and tablets has ignited a surging traffic load demand for radio access and has been incurring massive energy consumption. Currently, over most of the power loss happens in the radio access arranges particularly the base stations the reason of this is for the most part because of that the present BS arrangement is on the premise of high activity load varieties. In this paper, we develop the research over BS exchanging operations, which ought to correspond with movement load varieties. Rather than relying upon the dynamic activity load which are still entirely difficult to definitely gauge, we firstly figure the movement varieties process. Also, we outline BS changing operation plan to minimize the vitality utilization of RANs.

Key word: RANs, BS switching Operation, Traffic load variations, Energy consumption.

I. Introduction

A radio access system (RAN) is a piece of a portable telecom framework. It executes a radio access innovation thoughtfully, it lives between a gadgets, for example, a cellTelephone, a PC, or any remotely controlled machine and gives association its center system (CN). Contingent upon the standard, cellular telephones and different remote associated gadgets are varying known as client hardware (UE), terminal gear, versatile station (MS), and so on., RAN usefulness is normally given by a silicon chip dwelling in both the center system and in addition the clientgear (UE), terminal hardware, versatile station (MS), and so forth., RAN usefulness is ordinarily given by a silicon chip living in both the center system and in addition the clientequipmentThe explosive development of data and correspondence innovation industry has developed as one of the significant wellsprings of world vitality utilization. Therefore, this paper

concerns about the BS (base station) energy saving issue, for most energy consumption of the communication network comes from the BSs and the core network

II. Proposed System:

Our work proposes a reinforcement learning framework for energy saving in RANs. An RAN usually consists of multiple BSs while the traffic loads of BSs are usually fluctuating, thus often BSs under-utilization. We propose the BS switching operation is conducted based on one learned strategy and the energy saving in the whole system tends to be optimized in the long run. By this proposed system, the system might come into the same state in two different tasks, whereas the traffic loads in the source task (e.g., Period 1) might be usually higher than that in the target one (e.g., Period 2). Hence, instead of staying on the chosen action in source task, the controller in target task can make a more aggressive choice to turn more BSs into sleeping mode, thus saving more energy consumption.

Algorithm:

MSC Function:

- MSC sends Initial message to all BS
- If MSC receive packet
- Packet is report
- Refresh the BS list
- For each $B_s \in B_{list}$
- If BS user <= min TH
- Set BS can sleep
- Add the no of users into problematic users
- If BS user>=max TH
- Set as normal coverage BS
- If BS user Average user
- Set BS as increasable coverage
- For each sleep BS
- Get neighbor BS list

- For each neighbor BS
- If BS is increasable coverage & energy saver
- Change the BS sleep status 1->0
- Change the BS inc status min coverage –>Max coverage
- Send status message

BS function:

- If BS recv pkt
- Pkt is Init message
- Set the status 0-> 1
- Start the beacon timer with time $T_{b_i} = 0$; beacon generation
- Pkt is Active message
- If MN ∈Alist
- Update expire time

  Else

  Create new entry for MN

  a. Pkt is con_req

  b. If MN ϵ Clist

  c. Ignore the info

  Else

  - Add new entry for MN
  - Start data transmission
  - Send the report to MSC
  - Pkt is status message

Change status $s_{old} \rightarrow S_{new}$

MN function

1) If MN in active

a. Send the active message

2) If MN need to download data

3) If B list ≠ ∅

a. Set b = ∅

b. For each $b_s \in B_{list}$

i. If BS = best

Set b = BS

ii. Send con_req to b

4) If MN recv pkt

a. Beacon

i. If BS ∈ Blist

- Update the expire time

Else

- Add the new entry for BS in Blist

b. Data

- Accept the data & keep in downloading mode(no need to send

Requirments: Hardware:Single PC with (20 Gb Hard disc space, 2gb RAM)

Software:Linux OS (Ubuntu 10.04) and NS2.34

Languages:TCL (Front end type project only).

Result: We have tested our project in ns2 and we got two type of results one is animation (NAM) and another one is X graph. The fig. 1 shows that Network model with coverage area. And fig.2MN activated and MSC sends initial message. Fig. 3 shows BS starting the beacon message. Fig. 4 shows user need the data. Fig. 5 shows reporting to MSC. Fig. 6 shows the changed status.

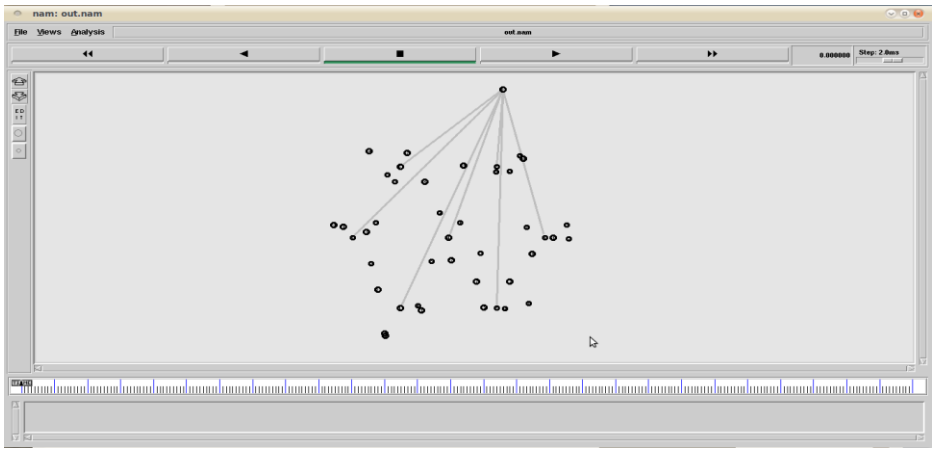

Fig.1: Network model.

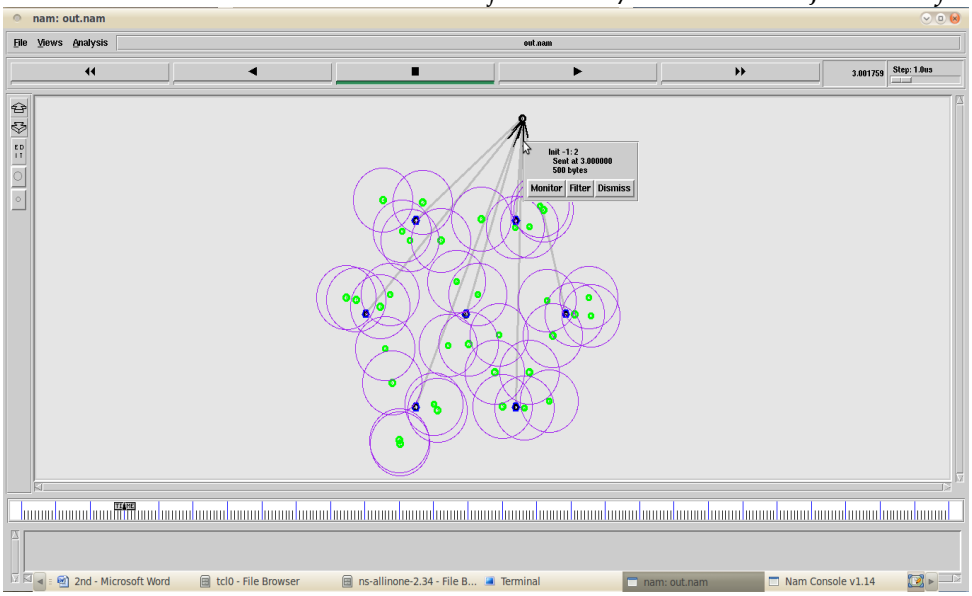

Fig.2: MN activated and MSC sends initial message.

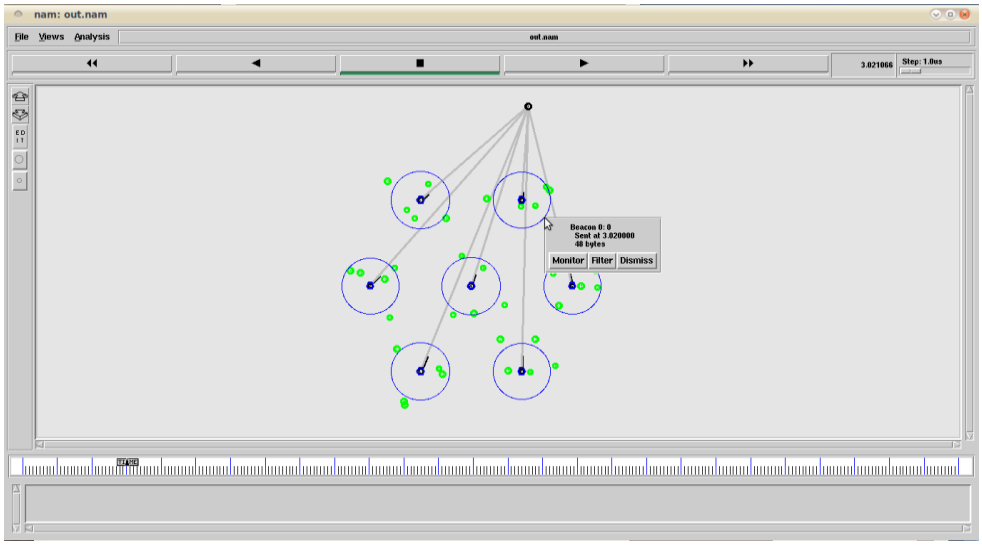

Fig.3: BS starts the beacon message.

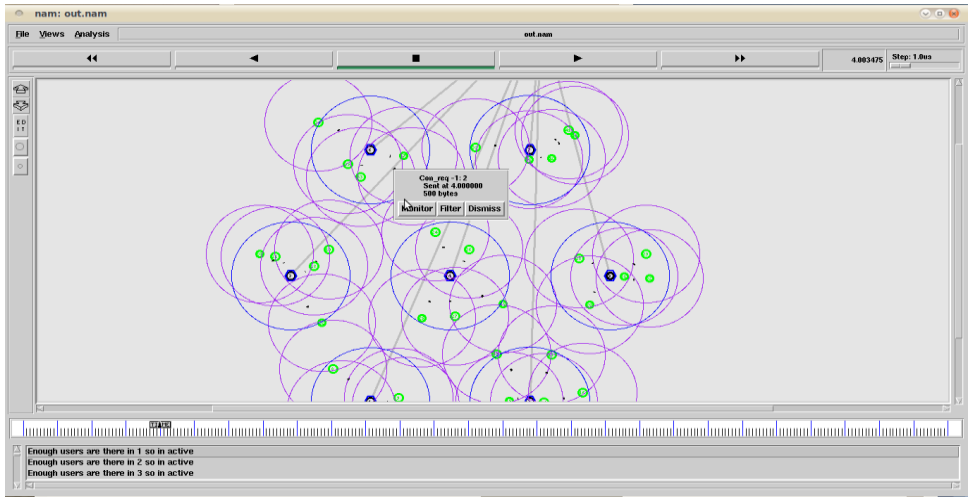

Fig.4: User need the data.

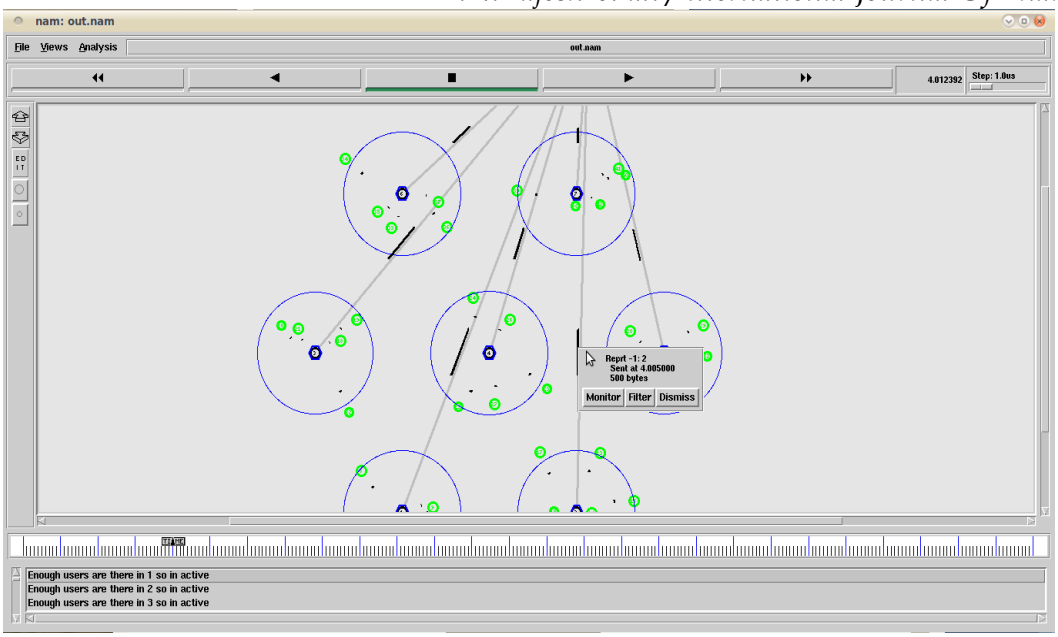

Fig. 5: reporting to MSC.

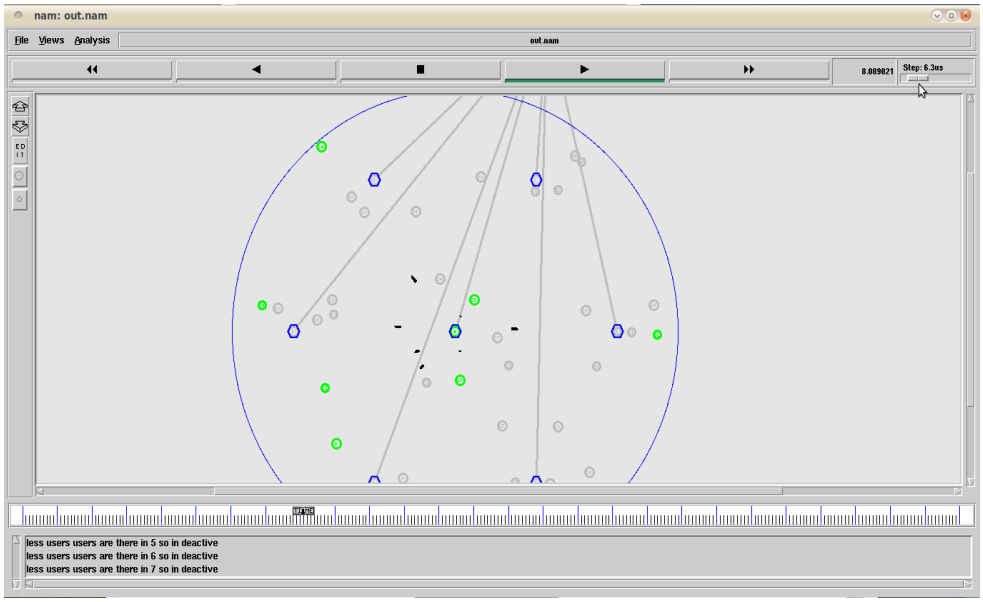

Fig. 6: changed status.

Conclusion:

In this paper, we have developed a learning framework for BS energy saving. We specifically defined the BS exchanging operations under differing movement loads as a Markov division procedure. Besides, we adopt the actor-critic method, a reinforcement learning algorithm, to give the BS changing answer for diminishing the general vitality utilization. Afterwards, to fully exploit the temporal relevancy in traffic loads, we propose a transfer actor-critic algorithm to improve the strategies by exploiting taken in learning from chronicled periods.Our proposed algorithm provably converges given certain confinements that emerge amid the learning process, and the extensive simulation results manifest the adequacy

and strength of our vitality sparing plans under different functional configurations. The work performed has some limitations. The technique developed is theoretical in nature and has to be implemented on ground. Although the technique is shown to perform well at a particular speed and it has to be tested to verify performance. The speed limit in this case can be adjusted according to what the error constraints are. In future the base station, micro or macro coverage area can be still be increased according to flexibility which can support more number of nodes.

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