SIMULATION OF QUEUEING THEORY BASED MULTI ADAPTED ROUTING FOR ENERGY CONSUMPTION IN WIRELESS NETWORK

*Dr.S. Nazreen Begum
Assistant Professor,
Dept of Statistics, Government Arts College (Autonomous),
Salem-7, Tamilnadu, India.
e-mail: nazreengacslm@gmail.com

**Dr.G.K. Vijaya
Assistant Professor,
Dept of Statistics, Government Arts College (Autonomous),
Salem-7, Tamilnadu, India.
e-mail: saivijayakannan@gmail.com

ABSTRACT

Queueing theory is the proper scheduling for waiting queue lines, or queues. In queueing theory, a model assembled so that queue lengths and waiting time can stand predicted. Queueing theory considered a scheduling for energy consumption because the results often used when grouping decisions about the nodes needed to provide a service in the network. In this manner, queueing system is associated with the examination of the reasons behind system state to vitality appear on the system. A Grouping Based Multi-Routing Adapted (GBMRA) formation protocol that aims to save the energy of nodes in the presence of the network. We are introducing the queueing theory based GBMRA for energy consumption in the network. Grouping of nodes is one of the most efficient approaches for conserving energy in wireless networks. The multi-event sources in the design of gathering protocols. This paper shows the model is to pick better execution and vitality level assets to show in the structure. The GBMRA algorithm for growing system execution and reduction put off the show on the system. The network is mimicked utilizing the network test system NS2. In this paper we have developed a model of a social affair based system using M/G/1 lining model and survey the execution of the proposed contrive seeing execution parameters, for instance, typical vitality use and mean delay. The settled span configuration set a similar hub degree, planning calculations of the wireless network in light of theory just send messages in the particular four ways of neighboring hubs with the goal that it could diminish energy cost in the parade of the wireless network.

Keywords: Grouping Based Multi-Routing Adapted method (GBMRA), Wireless Network (WN), Queueing Theory, M/G/1 lining model, Quality of Service (QoS).

I. INTRODUCTION

In a queueing guess and arranging are associated amounts so by upgrading the last one absolutely grows the past as well. Each one of the center points are permitted to push toward anyway and organize themselves self-decisively. All the connection or leave the system at whatever point. Due to the consistent change in the system topology, there is a unique move in the status of trust among different centers which adds the diverse quality to directing among the diverse network. They have to execute a proposed exhibit on the system using vitality usage model and better result execution on the structure.

An intense way assembling presents new exposures and outfits the attacker with an upgraded munitions store of ambushes inciting sudden results. It's utilized for keeping up itself and whatever is left of the sensor center parts working over the lengthiest possible time periods

Multi class queueing structures are a noteworthy class of queueing structures with various sorts of regulars which may differentiate in their arrival frameworks and organization supplies. Such lines are used to show complex designs, and along these lines have a few basic applications in media transmission, transportation and employment shop producing frameworks. There is a tremendous writing in examining their execution. It recognizable proof of the factors of the double issues with the queue overabundances that queueing delay is verifiably streamlined too. In addition, because of the calm condition of the related improvement issues, the queues' advancement isn't considered in the enhancement.

The energy utilization is mostly because of handling action in the getting mode, energy is devoured totally by the handset hardware and by preparing capacities, for example, demodulation and deciphering.

II. MATERIALS AND METHODS

The proposed framework utilizing the vitality level dealing with and information transmission stack a long way from entrance center points and engages balanced vitality usage over the remote system. In another arrangement to decrease the vitality use of centers in the midst of package transmission. We develop a queueing model of a social affair based system using M/G/1 lining model and survey the execution of the proposed contrive seeing execution

parameters, for instance, typical vitality use and mean delay. It enrolls a perfect number of gathering hub with the end goal that it diminishes the energy utilization utilizing diverse sub-gathering on the network while giving a high level of availability.
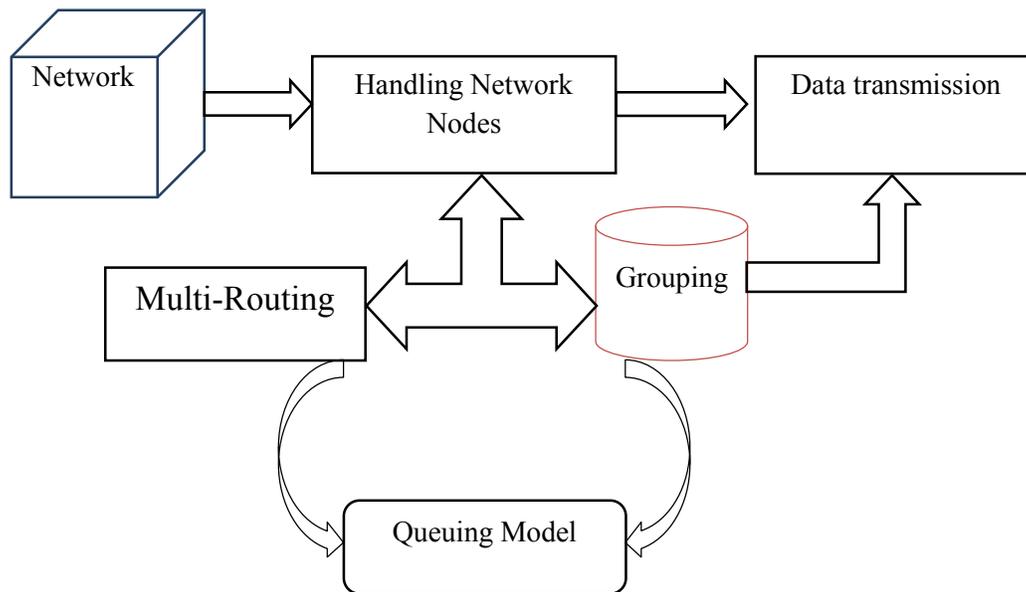
Fig. 1: Architecture of Proposed Work

In this way, the networks of queues are frameworks in which a few queues stand associated by multi-routing. At the point at the point when a routing balanced at one center, Also the center point and line for organization, or omit the system. They have been made each one of the Multi-steering arranging computations used inside for these coating disciplines gives basic reordering or dropping of system packages inside various transmit or get supports. Coating disciplines stand for the most part used as attempts to make up for various networking conditions, such as diminishing the dormancy for specific classes of network parcels, and normally utilized as a major aspect of the nature of administration measures.

Multi-Routing Based Queueing Model for Energy Consumption

Queueing model tradition using in remote systems, GBMRA creates social affair to manage uniform and furthermore the non-uniform association of center points in the remote system for storing of package in the system. It uses an application-arranged arranging count to pick distinctive vitality level center point as a way in the system. The get-together traditions revolve around the starting at now open vitality of the center points and sometimes patch up social event to do vitality changing in the remote system. The below algorithm gives scheduling queue and storing of information in Wireless Network.

Algorithm :

Step 1: start

Step 2: read Initial energy IE, Scheduling queue sq.

Step 3: receive data RD, neighbor nb.

If (area== RD)

> Put node in to queue
>
> IE=IE+area*nb.
>
> Add node id to scheduling queue sq= (Σnode id) + IE.
>
> End
>
> If (RD = IE)
>
>> Data will be stored using multi-routing.
>>
>> Then all the information will be received
>
> End

Step 4: Identify node id from scheduling queue and store it.

Step 5: stop.

Queueing Discipline for Group Scheduling

In network storage is fundamentally in light of the current state of the vitality and moreover the events occurring in the system. The center points which go about as a hand-off for one transmission may be a source center point for some other transmission.

Algorithm:

Step 1: start

Step 2: initialize scheduling IS.

Step 3: read Neighbor group NG,

S.No-Sequence no of the packet, N.id –node id, D.id-Destination id

Step 4: create path p message.

   Path= {S.no, N.Id, D.Id};

Step 5: for each group eg from network

If Ø (NGb(i)/NG

The data will be transferred in the network

End.

Step 6: Receive Incoming Packet P.

If(P. Type==eg)

{

Established another queue model for data transmission

}

Route node eg={ P.forward node}.

}

Step 7: Identify the complete link from scheduling queue

If path==complete then

   Return path.

End

Step 8: stop.

The above algorithm to avoid the effect the events occurring in the system, the arranging procedure remain dealt with are picked by truly combining the required structure parameters with particular vitality factors. Each hub information transmit in light of its accessible Queueing model.

III. SAMPLE SIMULATED RESULTS

The planned GBMRA algorithm is simulated, and the presentation of the protocol is appraised. The network throughput, regular end-to-end delay and the procedure overhead on the network traffic are studied, and the results are obtainable in this section.The network is mimicked utilizing the network test system NS2. The underlying network setup in the network test system with quantities of hubs.
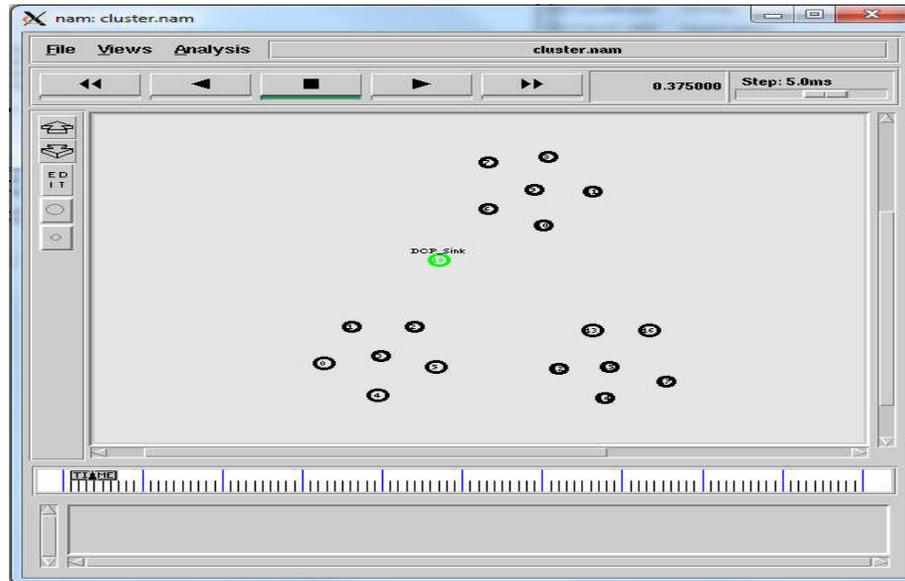

Fig. 2: Source Data Discovery

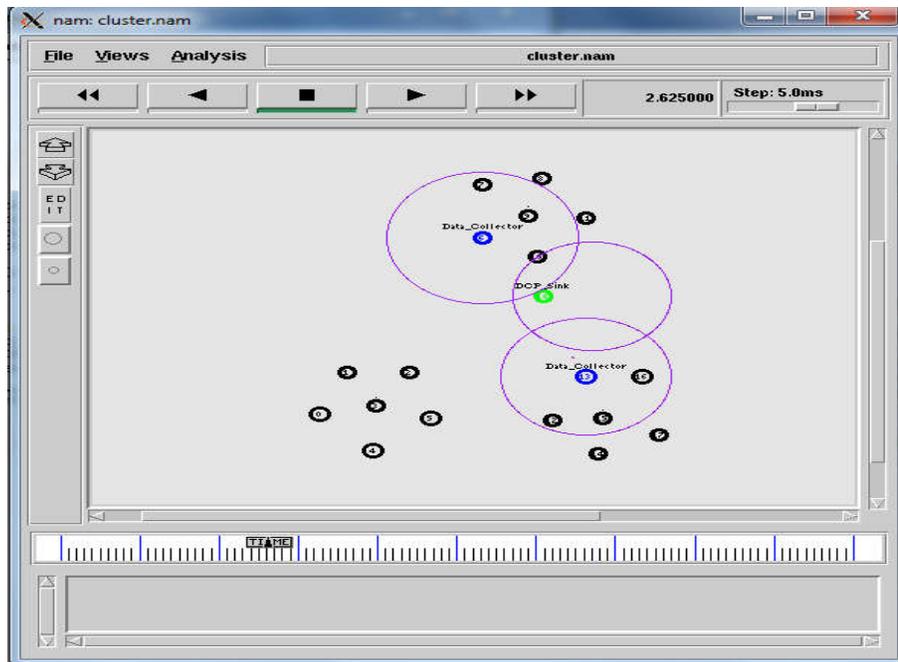Figure-2 demonstrates the source and Destination setup amid run time.

Fig. 3: Neighbors Node Through Data Transfer

In Figure 3 demonstrates the data exchange of the neighbor's hubs in network. Additionally, each neighbor hub has one of a kind address relies upon the address effortlessly recognize the hubs in network, in the wake of distinguishing the neighbor every last source to hold each neighbor's hub in network.
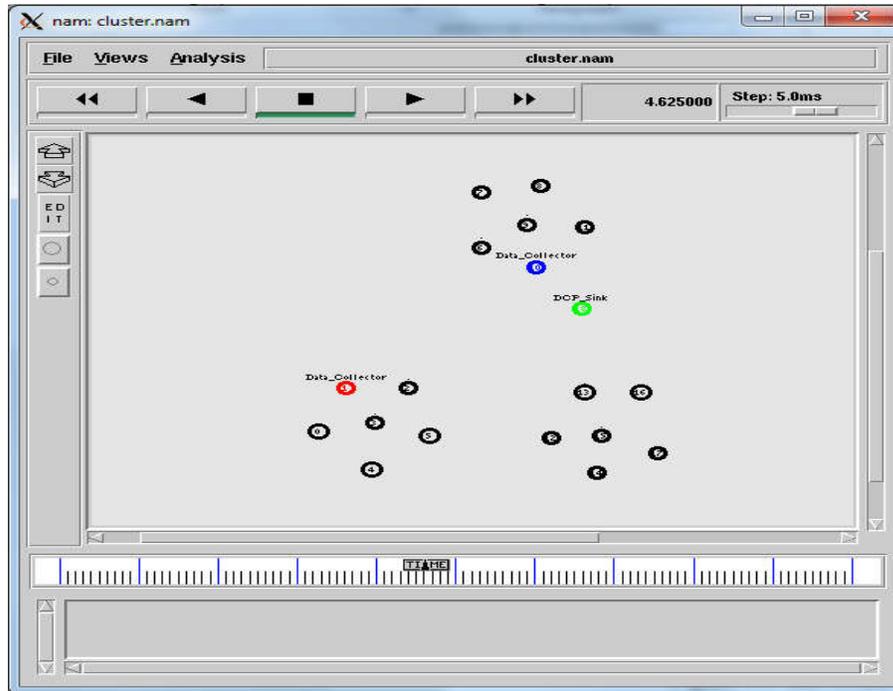
Fig. 4: Network Partition Avoidance

Figure 4 demonstrates the hub correspondence and additionally to select all the node location its correspondence area in network.

Fig. 5: Performance Report

Figure-5 demonstrates the reenactment based outcome result in network. Regularly our proposed strategy utilized 1777 parcels for move in to goal, however goal get just 1615 bundles, staying 162 parcels are dropped are harmed amid network segment. Along these lines, over all throughput proportion acquire 79% in network.

IV. CONCLUSIONS

The GBMRA method using M/G/1 queueing model was developed to find out required parameters for energy consumption in wireless network. This model proved to be good by achieving a noteworthy throughput contrasted with existing one. At that point the strategy achieves 93% of delivery ratio and delay of 89% to improve the network performance based on QoS parameters in network.

REFERENCES

1. Adams R. (2013), "Active queue management: a survey", IEEE communications surveys & tutorials, Vol. 15, No. 3, Pp. 1425-1476.

2. Asadi A. and Mancuso V. (2013), "A survey on opportunistic scheduling in wireless communications", IEEE Communications Surveys & Tutorials, Vol. 15, No. 4, Pp. 1671–1688.

3. Chiasserini C.F. and Magli E. (2002), "Energy consumption and image quality in wireless video-surveillance networks", 13th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, , Vol. 5, Pp. 2357-2361.

4. Gupta M.K., Hemachandra N. and Venkateswaran J. (2014), "On completeness and equivalence of some dynamic priority schemes", IIT Bombay, Tech. Rep.

5. Jiang F.C., Huang D.C., Yang C.T. and Leu F.Y. (2012), "Lifetime Elongation for Wireless Sensor Network Using Queue-Based Approaches", The Journal of Supercomputing, Vol. 59, No. 3, Pp. 1312-1335,.

6. Jiang Y., Tham Y.K. and Ko C.C. (2001), "An approximation for waiting time tail probabilities in multiclass systems",IEEE Communications letters, Vol. 5, No. 4, Pp. 175–177.

7. Khan S.A. and Arshad S.A. (2009), "QoS Provisioning Using Hybrid FSO-RF Based Hierarchical Model for Wireless Multimedia Sensor Networks", (IJCSIS) International Journal of Computer Science and Information Security, Vol. 4, No. 1-2.

8. Qiu T., Feng L., Xia F.,Wu G. and Zhou Y. (2011), "A Packet Buffer Evaluation Method Exploiting Queueing Theory for Wireless Sensor Networks", Computer Science and Information Systems, Vol. 8, No. 4, Pp. 1027-1049.

9. Qiu T., Wang L., Guo H., Liu X., Feng L. and Shu L. (2010), "A new modeling method for vector processor pipeline using queueing network", 5th International ICST Conference on Communications and Networking in China, Pp. 1-6.

10. Sinha S.K., Rangaraj N. and Hemachandra N. (2010), "Pricing surplus server capacity for mean waiting time sensitive customers", European Journal of Operational Research, Vol. 205, No. 1, Pp. 159-171.