



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

Priority Based Congestion Control Clustering Protocol Using Load Balancing in WSN

Kamini¹, Prabhjit Singh²

M.Tech Student, Dept. of Computer Science, Global Institute of Management and Emerging Technology, PTU
Jalandhar, Punjab, India¹

Asst. Professor, Dept. of Computer Science, Global Institute of Management and Emerging Technology, PTU
Jalandhar, Punjab, India²

ABSTRACT:-The pattern of WSN is expanding step by step. It is the development of most recent innovation. With the new advancements, there is single word which appeared called IOT (web of things). It is well said that WSN is an empowering innovation for IOT. IOT is the consequence of a mix of different advances so IOT is more intricate than WSN. Still, there are different issues in WSN which make the issue in the arrangement of IOT. One of these issues is power utilization which is the significant issue. Aside from the issue, organize lifetime, hubs organization, scope are likewise the enormous issues. Clustering is the best procedure to determine the issue. In Clustering procedure, the system is isolated into little gatherings which we call groups and this strategy is especially valuable in the decrease of battery diminishment and upgrade the system lifetime. In this paper, we have examined the execution assessment of different directing conventions. The proposed work deals with grid based priority scheduling along cluster and produced better results. Recreation result demonstrates the assessment of the execution of different Cluster based steering conventions.

I. INTRODUCTION

Today's reality needs a few advances to satisfy their standard work. WSN is that innovation which satisfies the standard work of the general public. Remote sensor organize faculties the physical world whether it is temperature, weight, stickiness and some other condition exercises. WSN is utilized as a part of a situation where the wires or link are unrealistic to reach. It is anything but difficult to introduce contrasted and alternate links arrange. Presently, these day's WSN are utilizing basically for the information exchange reason. Sensor hubs in the remote system exchange the information parcels from source to goal. Remote sensor organize incorporates sensors hubs and a base station (sink) and there are such a large number of sensors which make a system. All the sensor hubs in a system speak with each other and exchange the information bundle from source hub to the sink. Sensor hubs can discuss straightforwardly with the base station. Sensor hubs devour a considerable measure of vitality while information exchange. Then again, sensor hubs additionally expend vitality subsequent to exchanging the information parcels. Because of this utilization, the lifetime of the system additionally gets lessened. This is the significant issue of the sensor arrange. There are more issues of the system yet vitality utilization and enhance the lifetime of the system. Taking these issues in worry, there is one strategy which is especially valuable to determine these issues called grouping. Clustering, the procedure in which vast system district is isolated into littler one. With this system, sensor hubs don't require coordinate correspondence with the base station. In each group, there is a Cluster head which gathers the information from all the system hubs and afterward transmits that information to the base station. The group head is chosen on the premise of most extreme vitality of the hub. The hub which has most elevated vitality is chosen for group head. Fundamentally just Cluster head is in charge of the correspondence in the system. Cluster head needs more vitality for the information accumulation and transmitting the information. So after transmission of the information, its vitality lessens and the hub which has second most elevated vitality is chosen for Cluster head. There is such a variety of Clustering conventions which decreases the vitality utilization as well as improve the system lifetime. These conventions are LEACH, HEED, DEEC, EDEEC, SEP and so on. These conventions are Cluster based convention and a considerable measure of work have been finished



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

with these conventions. Drain is the principal convention which came into the presence in the Clustering convention. DEEC is likewise a group based convention in which Cluster head is chosen in view of the leftover vitality of the sensor hubs and the normal vitality of the system. EDEEC is the improved form of the DEEC convention and requires a heterogeneous system. Drain is the homogeneous system. In this paper, we have done a correlation between different grouping convention and furthermore assess their execution in different parameters.

This paper has widely assessed the execution of group based steering conventions which can likewise valuable later on arrangement of IOT.

This paper is sorted out as takes after. Segment 2 given the related work which has been done on Cluster based steering conventions. Area 3 given the goals of Clustering technique. The execution parameters are depicted in area 4. Area 5 demonstrates the reproduction consequences of the Cluster based steering conventions. The paper is at long last closed in area 6.

II. RELATED WORK

DavoodIzadi et al in [1] proposed an option grouping plan in WSN. Here the creator tells that in grouping component there is dependably a need of Cluster head. Notwithstanding, there is a probability that the group head fizzles at any condition. So Cluster head can't get the information parcels, in that situation information would be lost. To determine this issue, the creator introduced an option grouping where a BCH(reinforcement Cluster head) constantly display without Cluster head. In this paper, creator purposed a self-configurable clustering(SCCH) to identify Cluster head disappointment and supplant a BCH in the place of fizzled group head.

EbinDeni Raj et al in [2] proposed a method called EDRLEACH (vitality separate connection low vitality versatile Cluster pecking order) which is made with the assistance of separation based group head, a vitality productive calculation for group head choice, expended vitality by group head and connection of Cluster head and non-Cluster head hubs. These components are considered in EDRLEACH. In this paper creator tells couple of constraints of LEACH, think about the hub thickness and separation between Cluster head hub, a vitality productive recipe used to get the fiery hub in a Clustering Clusters that lively hub will be a group head hub in a current round in light of the fact that the vivacious hub is expected to exchange the bundles to base station and furthermore examined the devoured vitality by the group head so that in a next round the maximum enthusiastic round would be a group go to exchange the information parcel.

SimrandeepKaur et al in [3] research the RLE information pressure calculation which is lossless in nature. Lossless in the feeling of content pressure method where there is a word reference based pressure is going on. In the word reference, a 5-bit code is created for each character of Text rather than 7 bit ASCII code. For this strategy, the capacity and exchange spaces use less a contrast and or without compacted information. The content information can without much of a stretch pack and that compacted information is exchanged on the system with the assistance of hub to hub and finally, it achieves the base station and after that decompression calculation is performed. In this paper, RLE the pressure rate is 30.3% and the diminishment of a physical space to 60.25%.

AnkitTripathi et al in [4] they are demonstrating the overview on information blend. Remote gadget systems comprise of sensor hubs. These systems have a considerable measure of utilization in home checking, fiasco administration, security, and military and so on remote gadget hubs have constrained preparing abilities and are little in size and in addition low battery control. This breaking point of low battery control makes the gadget organize inclined to disappointment. Information gathering is an exceptionally essential technique in remote gadget systems. Information collection helps in the utilization of vitality utilization by expelling repetition. This work concentrates on different techniques utilized with the end goal of information total and its different vitality productive employments.

G Nivetha et al in [5] express the vitality advancement systems in WSN. In this paper, the creators overview the distinctive grouping conventions which are utilizing for enhancement in WSN. A portion of the well known steering strategies which are examined by the



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

creator in this paper, these are LEACH (low vitality versatile Clustering order), PEGASIS (control effective assembling in sensor data), HEEP (Hybrid vitality proficient convention) and PEACH (Power productive and versatile grouping pecking order). In this exploration, the paper creator introduces a review on vitality productive Clustering directing convention and examination that the PEACH has no overhead on group head choice. PEACH fundamentally enhances the lifetime and vitality utilization of the remote sensor arrange contrasted and other grouping conventions.

Jamal N.Al-Karaki et al [6] state directing strategies in remote sensor organize: A review in WSN. In this paper, the creator reviews the distinctive directing systems of the system. For example, network based, sensor total and progressive power routine based and so forth. In this paper, the creator calls attention to different steering methods which work in a sort of PC systems.

Saini and K. Sharma in [7] proposed a vitality effective group set out technique toward heterogeneous remote sensor systems, called TDEEC (Threshold Distributed Energy Efficient Clustering) convention. In TDEEC convention, the estimation of the edge has balanced by the creators as indicated by which a hub chooses to be a group head or not which depends on the proportion of the remaining vitality of the sensor hubs and the normal vitality of that round in regard to the ideal number of Cluster heads. Reproduction comes about demonstrate that TDEEC performs superior to anything SEP and DEEC in a heterogeneous situation for remote sensor organize.

ParulSaini et al in [8] proposed EDEEC (upgraded dispersed vitality proficient grouping plan for heterogeneous WSN). For three sorts of hubs, they proposed EDEEC in delaying the lifetime and steadiness of the system. Consequently this convention expands the heterogeneity and vitality level of the system. They have done the examination amongst EDEEC and SEP. Recreation comes about demonstrate that EDEEC has more prominent steadiness and can send more compelling messages and can perform superior to SEP.

2. Performance criteria Used

The execution criteria which is utilized to assess the execution of grouping conventions are a deferral, the quantity of dead hubs, lifetime or throughput.

- 3.1 A number of dead hubs: It is the quantity of dead hubs which gets dead in the wake of voyaging a few rounds.
- 3.2 Lifetime/throughput: It is the aggregate number of rounds for which system is dynamic and delivering yield.
- 3.3 Packet to base station: It is the quantity of parcels which is gotten at the base station.
- 3.4 Energy devoured: It is characterized as the hubs in the system expended vitality per round.

III. SIMULATION ANALYSIS

Simulation is directed in MATLAB. The reproduction results are acquired up to cycle 5000. Number of dead hubs is assessed at interim of 5 in rounds. Vitality expended is assessed on a normal and keeping up settled territory of 100*100. Parcels are exchanged towards group head and after that Cluster head exchange the information towards base station. The Parameters of assessment are recorded as under.

Parameters	Values
Area	100*100
Rounds	5000
Cluster Head	Having maximum energy
Techniques	EDEEC,DEEC,LEACH,SEP
Packet Drop(initially)	0
Energy consumed(initially)	0

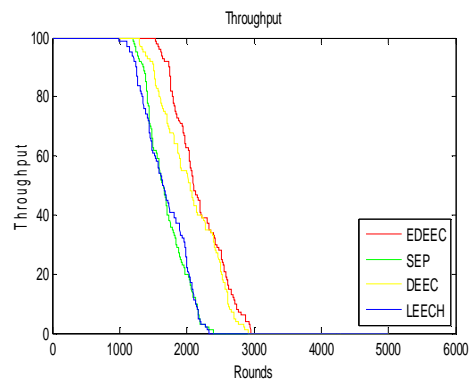
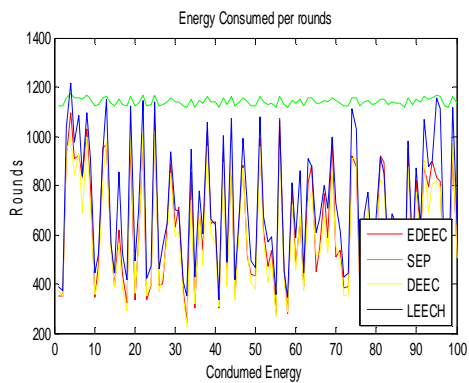
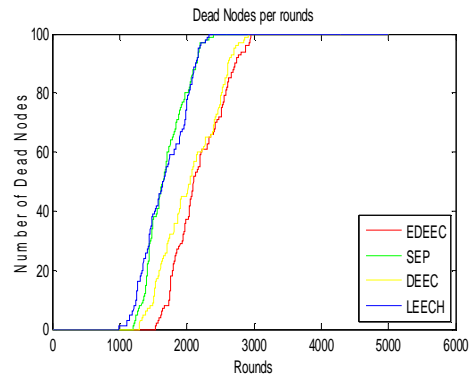
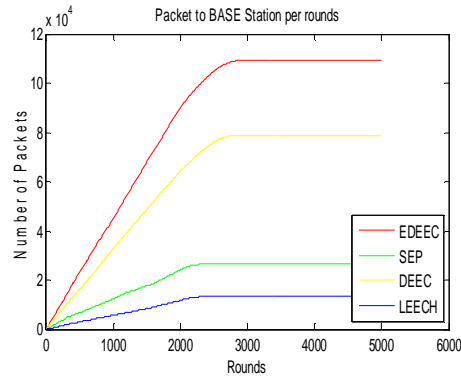
Table1:Parameters for Evaluation

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirccce.com

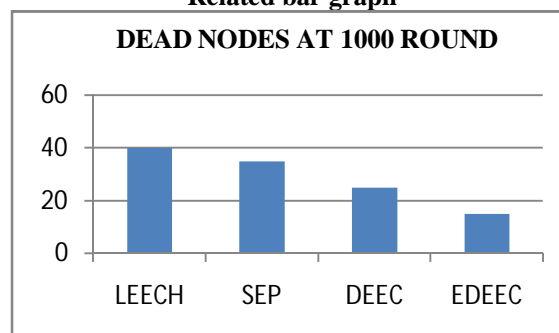
Vol. 5, Issue 5, May 2017



DEAD NODES

TECHNIQUE	ROUNDS	DEAD NODES
LEACH	1000	100
SEP	1000	95
DEEC	1000	80
EDEEC	1000	50

Related bar graph





International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

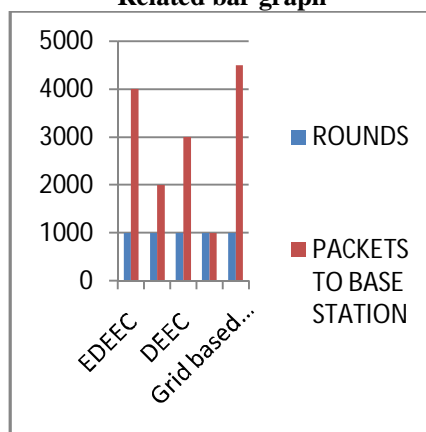
Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

PACKETS TO BASE STATION

TECHNIQUE	ROUNDS	PACKETS TO BASE STATION
EDEEC	1000	4000
SEP	1000	2000
DEEC	1000	3000
LEACH	1000	1000
Grid based Priority Scheduling across cluster	1000	4500

Related bar graph



ENERGY CONSUMPTION

TECHNIQUE	ROUNDS	ENERGY CONSUMPTION(AVG)Joule
LEACH	1000	95
SEP	1000	85
DEEC	1000	78
EDEEC	1000	65
Grid based Priority Scheduling across cluster	1000	57

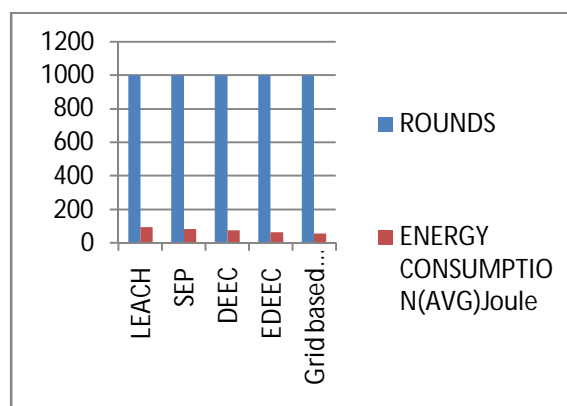
International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

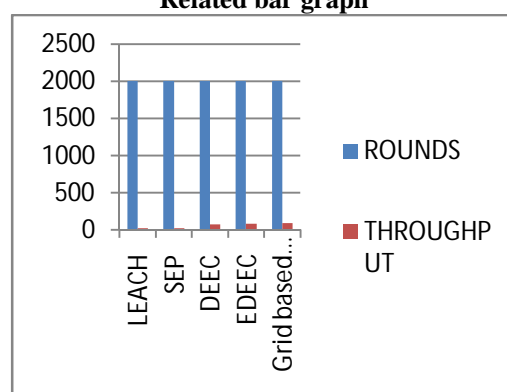
Related bar graph



THROUGHPUT

TECHNIQUE	ROUNDS	THROUGHPUT
LEACH	2000	20
SEP	2000	21
DEEC	2000	65
EDEEC	2000	76
Grid based Priority Scheduling across cluster	2000	85

Related bar graph



Comes about show better execution of EDEEC in practically every perspective. The execution of LEECH is gotten to be minimum and can be enhanced utilizing separation diminishment systems. Number of dead hubs, vitality utilization , throughput and bundles to base stations are considered parameters. The DEEC convention can likewise be improved by utilizing thick system of hubs to lessen vitality utilization and in this manner upgrade throughput.

V. CONCLUSION AND FUTURE WORK

In the conclusion we can state that as we have the done the examination between different group based directing conventions of the sensors hub and we got the outcomes. We have done the correlation between EDEEC, DEEC, SEP and LEACH. EDEEC is the upgraded evrsion of DEEC and it has preferable outcomes over the other group based



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

steering conventions. After EDEEC, DEEC group based convention has preferable outcome over LEACH and SEP. After DEEC, SEP performs well whether it is throughput, bundles exchange, dead hubs or vitality devoured. It demonstrates that LEACH execution is not well when we contrasted LEACH and the others conventions. In any case, our worry is on DEEC. Later on, we will enhance DEEC and will build its soundness.

REFERENCES

- [1] DavoodIzadi, JemalAbawajay, and Sara Ghanavati, "alternative clustering scheme in WSN", IEEE Sensors Journal, vol.15,no. 7, JULY 2015.
- [2] EbinDeni Raj, "An efficient cluster head selection Algorithm for WSN-EDRLEACH", In IOSRJCE, vol. 2, pp. 39-44, 2012.
- [3] SimrandeepKaur, V.SulochnaVerma, "Design and Implementation of RLE Data compression", In IJIST, vol. 2, no. 4, 2012.
- [4] AnkitTripathi, Sanjeev Gupta, BhartiChourasiya, "Survey on Data Aggregation Techniques in WSN", International Journal of Advanced Research in Computer and Communication Engineering, vol. 3, issue 7, JULY 2014.
- [5]G.Nivetha, "Energy Optimization Routing Techniques in WSN", In IJARCSSE, vol. 2, issue 7, JULY 2012.
- [6] Jamal N. Al-Karaki Ahmed E. Kamal, "Routing Techniques in Wireless Sensor Networks: A Survey", Journal of IEEE Wireless Communications, vol.11, pp. 6-28, 2004.
- [7] Li Qing, Qingxin Zhu, Mingwen Wang, "Design of a distributed energy-efficient clustering algorithm for heterogeneous wireless sensor networks", Elsevier Computer Communications, vol. 29, pp. 2230-2237, 2006.
- [8] ParulSaini, Ajay.K.Sharma, "E-DEEC- Enhanced Distributed Energy Efficient Clustering Scheme for heterogeneous WSN", Proceeding of the 1st International Conference on Parallel, Distributed and Grid Computing, 2010.
- [9] Q. Nadeem, M. B. Rasheed, N. Javaid, Z. A. Khan, Y. Maqsood, A. Din "M-GEAR: Gateway-Based Energy-Aware Multi-Hop Routing Protocol for WSNs", Proceeding of the IEEE 8th International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA'13), Compiègne, France, July 26 2013.
- [10] Q. Nadeem, N. Javaid, S. N. Mohammad, M. Y. Khan, S. Sarfraz, M. Gull "SIMPLE: Stable Increased-throughput Multi-hop Protocol for Link Efficiency in Wireless Body Area Networks", Proceedings of the IEEE 8th International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA'13), Compiègne, France, July 26 2013.
- [11] VassilisTsaoussidis, Papadimitriou and Panagiotis, "SSVP: A Congestion Control scheme for real-time video streaming", Computer networks 51, vol. 15, pp. 4377-4395, 2007.
- [12] Andrew van der Byl, Robert Neilson, Richard H. Wilkinson, "An Evaluation of compression Technique for WSN", In IEEE AFRICON, pp.23-25, SEP 2009.
- [13] S.Jancy, Dr. C. Jaya Kumar, "Packet Level Data Compression Techniques For WSN", Journal of Theoretical and Applied Information Technology, vol. 75, MAY 2015.
- [14] Tao, Jinjing, "ECBRP: An Efficient cluster based Routing protocol", In Springer vol. 61, pp. 283-302, issue 7, NOV 2011.
- [15] Shahina Sheikh, Ms. HemlataDakhore, "Data Compression Techniques", In IJCSIT vol. 6(1), pp. 818-821, 2015.