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# Clogging Control Using PDNC In WSN (PDNC method for Clogging control )

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**Abstract**

WSN is employed in IOT for enabling different monitoring services in case of natural calamities. For instance, WSN is used in earthquakes and volcanoes eruption. The Quality of Service (QoS) of applications containing WSN requires to be tested for effectiveness and robustness. However, the WSN's inadequate resources can lead to serious QoS issues in IoT. The network congestion in WSN can lead to reduction in the expected QoS. Hence, it is needed to make use of given resources efficiently. The energy utilization of the snode can be reduced by dropping the amount of packet again transmission caused due to network clogging. In the current paper, a distinct packet removing method is used which is known as Packet dumping based Node Clustering (Pdnc). The nodes are clustered into groups and one of them is chosen as the cluster head. The packet is discarded at the each node for reducing the number of packets leading to clogging. Model of this system is done by making use of NS-2 or java which shows that overall performance of the system is leading to lesser congestion.

***Key Words*:**WSN,CC, Clogging.

# 1 Introduction

Wsn relates to sensors in differentiated environments. It gives a chance for remote administration of network. In addition, it also provides administration of operations from remote location when the participation of humans is not possible. The main focus is to get information about the happening of some events within the applications. WSN makes use of many-to-one approach in which the nodes cooperate with one another to transfer the detected data to the receiving node. Every sensor node in WSN has issues related to lesser resources and producing large amount of data.

***A .Clogging control***
Clogging control implies making use of the methodologies for controlling or stopping congestion. There are two approaches to this. One is open loop congestion control in which the congestion control mechanism is applied before congestion occurs. The second is closed loop congestion control which removes congestion after congestion occurs.

***B.Results of Congestion***
Performance drops, when the delay gets higher. Packets are discarded because there is not enough memory in the system to store the packets until they can be reconstructed. Packet discards occur if there is a very large burst of concurrent messages on the port span or tap that is being monitored. Packet Capture can generally handle 2,000 messages (connections) or more per second indefinitely. If the traffic increases to 10,000 messages per second for a sustained burst, there might be some discarded packets due to memory constraints. The messages described here may or may not be filtered out later by L7 or for other reasons. Packet capture must keep the packets in memory until it decides whether the packets are relevant or not. This is why 10,000 messages per second do not translate to 10,000 messages processed in the UI.

# 2 REVIEW OF LITERATURE

Nurul Hamimi Bt H., Naimah Bt Y., Azmi Bin Awang Md I [1]. Congestion control refers to the techniques used to control or

prevent clogging. In this state network gos to slow .In this document we suggest a priority clogging control based on heterogeneous traffic in wireless network of multiple paths. The proposal protocol allocates bandwidth proportional to many applications running at the same time in sensor nodes. Each path of the sensor node is right data as well as data generated by another and nodes. The primary node of each sensor node assigns bandwidth according to priority of source traffic and priority of heterogeneous data transit traffic applications in the secondary nodes. Congestion is detected based on the service and congestion ratio notification is implied.

Vyas, G.S., Deshpande, V.S. [3]. In our congestion of the proposed mechanisms, it is reduced by the use of the 4 knots near the sink and after they are overloaded to control increasing the PDR again and is reduced. Then we can increase the number of knots near the 4th sink to improve network performance and even then if we can increase the number of washbasins will add more overhead and is waste of resources.

N. Yaakob, M. Atiquzzaman and I. Khalil [4]. The study proposes a new technique to mitigate congestion by deliberately discarding some of the less important packages give enough space to pass the most important. The proposed policy of refusal is integrated with a multi objective optimization (MOO) that can optimize multiple targets simultaneously.

Marques and M. Ricardo [5]. This document proposes a wizard application RPL extension that allows you to increase the WSN life span by limiting routing and forwarding functions the network mainly to the nodes that run the same application. Because nodes can join a network at an unpredictable time, must be synchronized with respect to their application work cycles. Therefore, knots should wake up and sleep a synchronized form. This document also proposes these synchronization mechanisms.

Two compensation algorithms are proposed in this work for WSN with packet defect. The partial and impartial the compensation algorithms are added with consensus DKF algorithm to design new filters that are effective to fix the general problem of loss of bundled tracking in WSNs.

Hussain, F.B., Seckin, G., Cebi, Y. [7]. In this article we present a new one congestion control scheme based on the delivery of

hop-by-hop packages time and buffer size. The new congestion control scheme is located in the level and uses a TDMA-like mechanism to optimize adjust the speed of event reports.
K. Kaushal, T. Kaur and J. Kaur . TCP and UDP, Standard Transport Layer Protocols, are not suitable for WSN for many reasons as; TCP has low performance and, on the other hand, UDP is unreliable. There are three types of existing transport level protocols; protocols that only provide reliability, protocols providing only congestion control, and protocols that provide congestion reliability and control. Two types are presented in this paper Network clogging is one of the major concern every WSN network. It is generally caused by lesser dealing out power and limited resources of nodes. This can also happen due to large amount of information getting sent from nodes to snode. One of the important result of data packets getting lost is that some of the important data may also be lost. This leads to loss of nodes energy. Hence clogging in Wsn must be avoided at each and every one cost. Clogging at Wsn is generally results from the presence of many information packet that exceed restricted bandwidth critical to Wsn. The packets which are got by the node are forwarded to sink node with some extra data sent by the node itself for doubling the amount of data to be organized. The information which is overloaded makes the fairness of traffic a reality because of the high amount of data which needs to be transmitted with lesser resources provided.

*A. Selection Based Packet Discarding (SPD)*
SPD gives importance of input queue which generally allows First In First Out (FIFO) scheduling to transmit packets based on first comes first served basis. In this case, the problem arises that more energy gets sent together in one go. The irrelevant packets are referred to as not in proper format, older and no longer required. one more packet removing mechanism is called as TAil drop (TAD) [6]. TAD is used for removing the cells in packet when the cell is dropped from switch buffer. It removes the following cell except the terminal cell of the packet. Another means proposed is the Early Packet Discarding (EPD). In this the idea is that when the queues length attains its level, the total incoming packets get rejected. Random early detection (RED) [12] addresses the

arbitrary issue by preanticipating average buffer size and queue length as the clogging indicator. A similar method is also proposed weighted random early discard (WRED) [12]. It behaves like RED but has different levels of traffic handling of high precedence packet. WRED removes packet which has lower precedence. On the occasion of traffic getting clogged, the WRED starts to identify and remove the packets having less priority. Every sensor node has very less resources except for producing large amount of data. The packet sixe should be more than 60 bytes and having TTL are removed.

# 3 PROPOSED SYSTEM

In proposed system, one of the techniques for congestion control is Selective Packet Discarding, which is used for removed unwanted packets from communication. In proposed system we are using RCP protocol for congestion control in wireless networking. RCP-CA controls traffic three different ways: a) to qualify Control. Establish a target flow-rate, such as CPR; b) Acceleration control. Limits acceleration (increase in flow-rate); and c) feedback control. The primarily objective is to reduce the amount of packet loss during the transmission. The aim henceforth is to decrease the count of retransmissions to reduce the cost, power and the resultant response time. Advantages of planned System Controlling congestion from wireless sensor networking using RCP protocol. Increasing energy efficient for removing congestion control as shown in fig 1

Algorithm

*A.Shortest Path Algorithm*
Steps:

1. Function dijkstra(Ga, Sa)
2. Dst [Sa] $\leftarrow$ 0
3. past [Sa] $\leftarrow$ Null

4. For each vertex Ga in v
5. If v NOT Sa
6. Dst [va] ← infinite
7. past [v] ← null
8. Add v to Qa - if we decide the Qa as a Prt Qu, extract min will be easy.
9. as Qa IS not zero
10. Ua ← Ext min from Qa
11. For every unvisited neighbor va of Ua
12. tempDst ← dst[Ua] + edwt(Ua, va)
13. If tempDst < dist[va]
14. Dst [va] ← tempDst
15. Previous [va] ← Ua
16. Return dst [ ], past [ ]

The outer loop runs for $|v|$ times the inner loop runs for $|v-1|$ times for a complete graph as each vertex has $|v-1|$ edges. For each iteration of the inner loop we do an extract Min and a reduce Key operation for the vertex.

*B. Packet Discarding:*
If in the system memory space is not enough for reconstruct that packets to store the packets then the packets will be discarded. In that system each node can discard the packets. Every node sends the packet to another node. The main goal of packet discarding is that reduce the numb of pack sent to cluster head. pack are not needed on the size of packet and Ttl (Time to live).
Input: pack, size and Ttl of packet
Output: Packet discards successfully if they are in that Situation otherwise transfer successfully.

Steps:

1. If siz $<$ 60 bytes then
2. Pckt = Accpt! ;
3. else
4. Pckt = drp! ;
5. If Ttl $>$ 0 then
6. Pckt = Accpt! ;
7. Else
8. Pckt = drp! ;

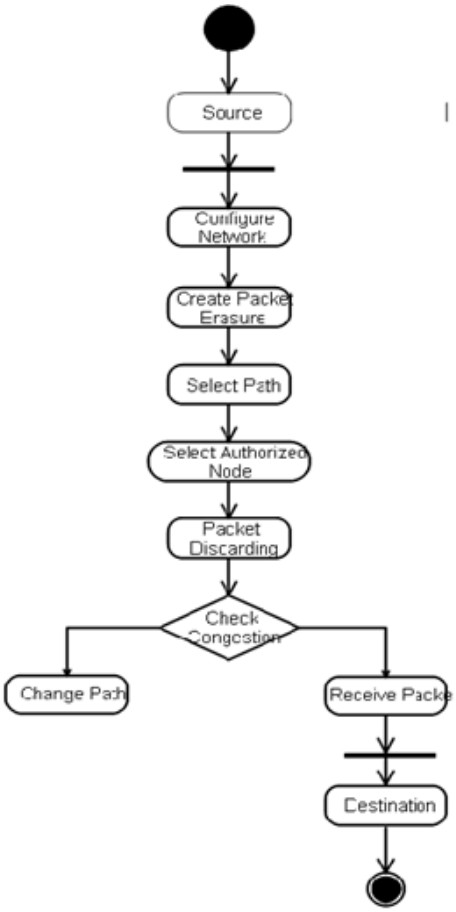


Fig 1: Workflow diagram

# 4 CONCLUSION

Clogging in WSN happens at what time when the movement of extra packets surpasses accessible limit of the system. The bigger the quantity of information dispatched, the higher the possibility of clogging. The resultant blockage can be seen by the debasement of general value, support postponement and increment in the utilization of vitality in the hubs. PDNC knows such problems related to WSN. The hubs get partitioned as

groups by considering the end goal to diminish movement loads. Hub bunching can decrease the quantity of parcel misfortune and in addition the vitality utilization. PDNC does manage the network clogging of WSN.

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