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Congestion Capacity New Routing Assorted Networks Using Routing Protocol

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Abstract: Extending the operational duration is a major field of interest in Wireless Sensor Networks (WSNs). The lifetime is deify task challenges new design an energy efficient traffic engineering to minimizes the dissipation energy and retains the expected quality of routing protocols. Power-efficient Energy-Aware routing protocol for wireless sensor networks is proposed the energy by efficiently selecting the energy efficient path in the routing process. Proposed the limitations of current approaches, propose a new MAC layer protocol called Convergent MAC (CMAC) that supports low latency and high throughput as well. This paper has evaluated the performance of Energy efficient routing protocol (ERA) under numerous scenarios. Each algorithm that is used for packet routing in quality of service (QoS) based applications should be able to establish a tradeoffs between end to end delay parameter and energy consumption. The largest minimum residual energy of the path is higher and number of hop count is lower. Experimental results show the benefits of neighbor cooperation and heterogeneity new performance of proposed protocol over existing state-of-the-art routing protocols.

Index Terms: Wireless Sensor Networks; energy efficient, Packet Delivery Ratio, Energy Consumption, end-to-end delay, Network lifetime, energy.

1. INTRODUCTION

Wireless Sensor Network (WSN) comprises a large number of sensor nodes which used to measure and monitor the field such as health monitoring, battlefield surveillance, sensing of light, sound traffic monitoring, industrial control, vibration, humidity, temperature [1]. The base station collects data from all the nodes, and analyzes this data to draw conclusions about the activity in the area of interest [2]. [3]. The fundamental facets of a node certainly are a sensor unit, an ADC (Analog to Digital Converter), a CPU (Central processing unit), a power unit and also a communication unit. Sensor nodes are micro-electromechanical systems (MEMS) that create calculable a reaction to a modification of some physical condition like temperature and pressure [4]. Each sensor node posesses certain element of exposure for the purpose it could and properly report the precise quantity so it should be observing. Some reasons for power consumption in sensors [5]. The areas of applications of WSNs vary from civil, healthcare and environmental to military [6]. We propose a new concept of tripling the sensor nodes into Child Sensor Nodes (CSN) which has further improved the CH selection technique stability and lifetime of network [7]. Transmission of imaging data requires is within acceptable range is performance metrics is referred to as quality of service (QoS) of the communication network [8]. The operation of MANETs does not depend on preexisting infrastructure or base stations.

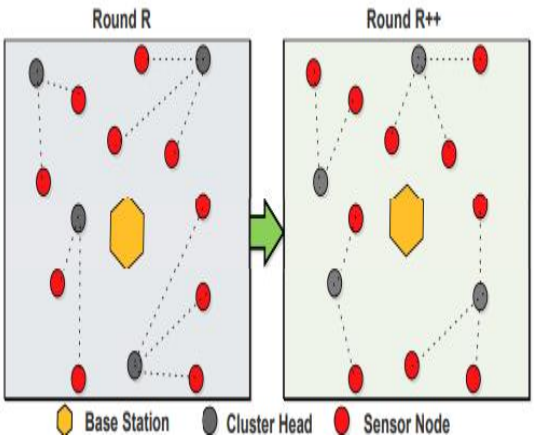

Fig. 1. Sample of Distributed Network Nodes

2. RELATED WORK

Extensive research on routing protocols has been proposed based on structure and hierarchy of the WSNs. Low Energy Adaptive Clustering Hierarchy is a pioneer clustering routing protocol, many routing protocols were proposed based on it [9]. In most cases location information is needed in order to calculate the distance between two particular nodes so that energy consumption can be estimated [10].Coverage. Routing techniques are the most important issue for networks where resources are limited of the first hierarchical routing approaches for sensor networks [11]. A much

secured data aggregation method for WSN has been proposed which ensures that information of most live nodes inside the network has been accessible inside the sink node with the minimum redundancy [12]. One of the early proposed routing protocols that provide some QoS is the Sequential Assignment Routing (SA R) protocol [13]. SAR protocol is a multi-path routing protocol that makes routing decisions based on three factors: energy resources.

3. SYSTEM MODELS

Routing in the Wireless sensor network is depicted there are many routes available from source to sink is proposed routing protocol will select the path which has minimum hop count and the highest residual energy [14]. Unlike other unicast MAC layer protocols, CMAC initially uses any casts to transmit packets to a potential forwarder that wakes up first. A fresh Effective Data Aggregation Protocol (DAP) has been proposed to cut back the vitality consumption in WSNs, which prolong the network lifetime [15]. We assume that each sensor node is able to compute its distance to sink, its residual energy and its available buffer size as well as record the link performance between itself and its neighbors node in terms of signal-to noise ratio (SNR) and distance to sink [16].

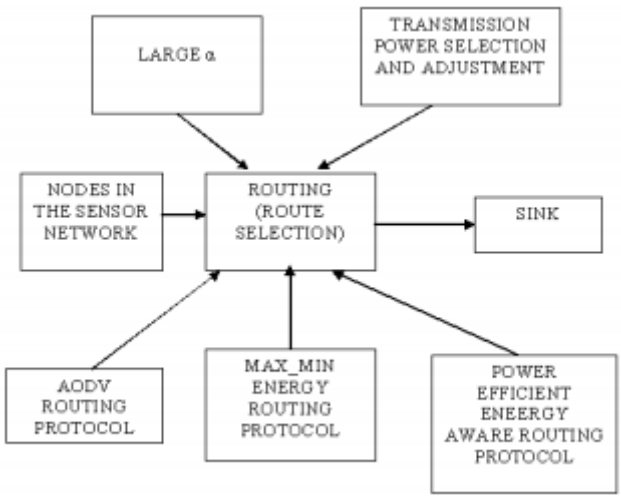

Figure 2: Architecture of WSNs Pouting

4. PROPOSED PROTOCOL

Proposed routing protocol develops cluster-formation and then precedes tripling connectivity among selected the proposed model allows general network model settings and shows enough flexibility of execution within any random deployment of sensor nodes [17]. Parent Sensor Nodes (PSNs) and later on these PSNs develop unique collaborations among neighbor PSNs to form tripling bonding among every three closer PSNs [18]. The proposed method use additive and divisible data aggregation function at cluster head (CH) as in network processing to diminish energy consumption [19].

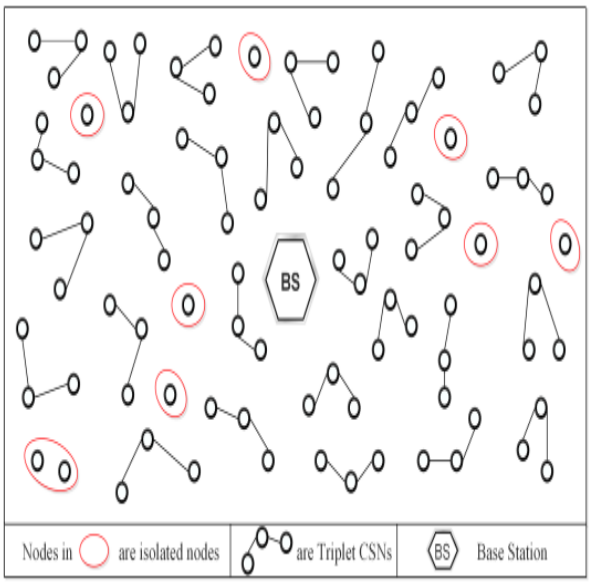

Fig. 3. Network Topology of protocol

5. METHODOLOGY

Proposed routing protocol is completely distributed and nodes help themselves to become CHs. Selection process require iterations to run which should be long enough to receive message from the nodes in the range of cluster [20]. To understand the operations of the proposed system to considers three different routing protocols for operational comparison.

1. CMAC Proposed: A MAC layer protocol called Convergent MAC (CMAC) that supports low latency and high throughput as well as low duty cycle operation. Aggressive RTS equipped with double channel check for channel assessment, any cast to quickly discover forwarder, and convergent packet forwarding to reduce the any cast overhead [21].

2. CMAC Overview When there is no traffic in the network, CMAC uses unsynchronized wake-up scheduling with a pre-defined idle duty cycle. In this wake-up scheduling scheme, the duration between successive wake-ups is fixed according to the duty cycle and active period to make the following mechanisms work at expected performance we evenly randomize the wake-up time of each node for the first times it goes back to sleep after receiving a packet [22].

The event there's data packet loss at any higher amount of tree, the outcome is going to be lost not restricted to single level except for whole related sub tree as well. This strategy is suitable for designing optimal aggregation techniques.

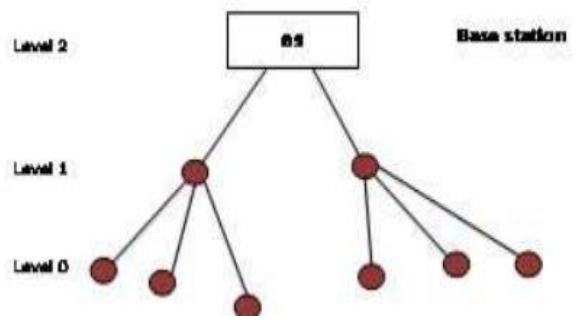

Figure 4 Tree-based Data aggregation in WSNs

3. Traffic Allocation and Data Transmission

Two different queues are used; one instant priority queue for real-time traffic and the other queue follow the first in first out basis for non-real-time traffic. The source node knows the degree of the importance of each data packet it is sending which can be translated into predefined priority levels [23]. Correction codes are calculated as a function dun ant the information bits to provide re information. We use an XOR-based coding algorithm like the one presented in [23]. This algorithm does not require high computation power or high storage space.

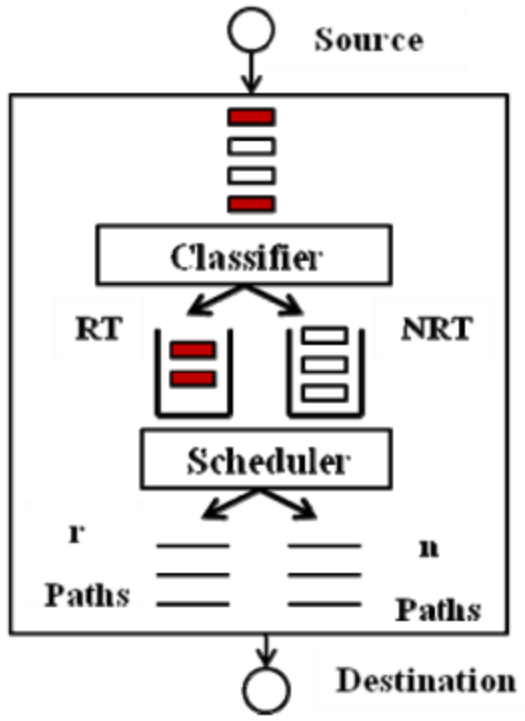

Figure 5. Queuing model

6. EXPERIMENTS AND RESULTS

They proved that the algorithm achieves constant message and linear time complexity. They also tested the proposed algorithm extensively. The experimental results reveal that the algorithm outperforms other existing algorithms with regards to network lifetime, energy consumption and other parameters. The Average end to end delay is an important metric in evaluating QoS based routing protocols. it is clear that QEMH successfully differentiates network service by giving high real-time traffic absolute preferential treatment over low priority traffic. A C-MAC is introduced it may be a feasible approach to prolong the network lifetime, yet maintaining the network connectivity. It uses the formula to select the optimum route. The formula is based on the hop count and the Minimum Residual Energy.

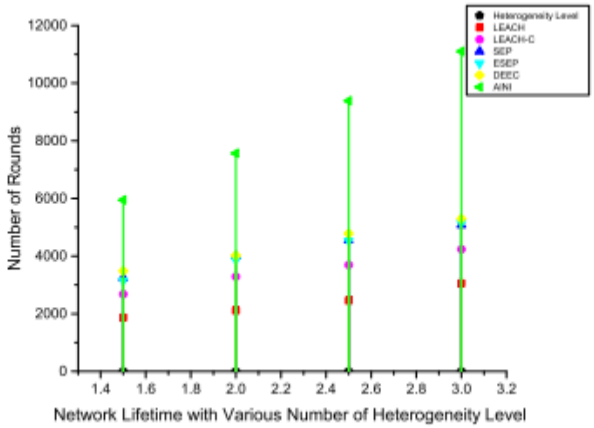

Fig. 6. Impact of Different Heterogeneity Level

7. CONCLUSIONS AND FUTURE WORK

New technique Neigh Cooperation Heterogeneity-Aware Traffic Engineering for WSNs and proposed a new clustering routing protocol called Adaptive Inter-networking Improved routing protocol (AINI) to improve the stability, network lifetime. Transmission power of the node is adjusted according to neighbor's range of the node. We propose a new MAC layer protocol called Convergent MAC (CMAC) that supports low latency and high throughput as well as low duty cycle operation. Further analysis is routing requirements of each environment are different, further research is necessary for handling these kinds of situations security such as secured routing for packet transmission can be implemented and improve quality of service by adding Qos parameters.

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