iPath and Cloudlet Base Load Balancing in Wireless Sensor Network

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Abstract – A wireless sensor network (WSN) is a wireless network containing of spatially distributed independent devices using sensors to monitor physical or environmental conditions. It is an entrance that provides wireless connectivity back to the wired world and distributed nodes. The drawback mostly cover in WSN is to overcome the attack and also the Load Balancing mechanism. Thus it should be concern and overcome in the proposed scheme. Here the most of the application was fully adjusted and formulated by the proposed algorithm. The mechanisms are technology that used in this project was DBA algorithm (Division Based). Here each node is formatted in the cluster formation with separate access point in each cluster which is denoted as Cloudlet. The methodology used in this project is to avoid the time delay and increase the total amount of energy in the system. The division based multiple access algorithm utilize all the possible node to transmits the data. The proposed model is efficient and increase the security of the system through which it can be determined. The overall energy wastage was reduced by 85%. Then the time delay and packet loss was considerably reduced.

Index Terms – Wireless Sensor Networks, DBA, Cluster, ipath.

1. INTRODUCTION

A wireless sensor network (WSN) is a wireless network containing of spatially distributed independent devices using sensors to monitor physical or environmental conditions. It is an entrance that provides wireless connectivity back to the wired world and distributed nodes**.** Wireless sensor network is a simple and efficient mechanism through which it can be maintained to transmit the information from source to terminus. The foremost use of the WSN is to perform the security that the data packet travels to each hop. Hop can be easily misbehaved through the energy wastage. Thus WSN process is the complexity network to transmit the data from one source to another. Wireless sensor network mostly construct with the help of set of nodes through which it can be used for further modification through which it can be determined. And the process for performing the data is based upon simple and efficient scheme for functions through which it can be determined.

A cloudlet is a mobility-enhanced small-scale Storing data that is placed on the corner of Internet. The important use of the cloudlet is supporting Wealth-intensive and supplying prevailing work out wealth to portable devices. It is the latest model that cloud work out structure. It represents the internal layer of a 3-layer ranking: Portable device - cloudlet - cloud. A Cloudlet can be Indicate as Records Control. It is also known as Cloud or Portable Micro-Cloud

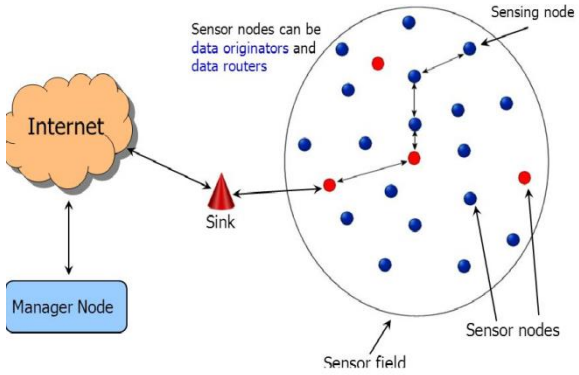

Figure: 1 Wireless Sensor Network

In the above Figure 1 the user will send the message to the manage node and it will send the packet to the Internet then it will send the information to the sink then it will arrange the path and it will find the correct node and then the message will reach the destination point in the Wireless Sensor Node.

The security measurement taken in this project is to save the energy in each node. The main use of the energy saving is based upon the time measurement. And also the Access point can be built with the help of the parameters that is taken place. The data loss can be avoided by the novel algorithm. Here the algorithm that used to enhance the security was division based algorithm. The DBA is used to divide the nodes into certain format that should be based upon the energy saving approach. This approach is fully focused on the clustering and sharing based approach. Thus the energy is still stable to communicate

more energy in the network. The data loss was also considerably reduced by applying DBA Algorithm.

2. RELATED WORK

This Model is mainly based on Cluster for Communication using VANET nodes. The Formation of Cluster, Cluster head election and Cluster head switching is introduced in this model. The proposed model is used to Form a Cluster Based Simple Highway Mobility. [1]

This mechanism is to resolve the public auditing problem. The method is to execute the OLSR. Packet loss transmission will be described her. HLA based OLSR protocol is compared with existing AODV and other protocol. [3]

WSN is a limited storage capacity. The nodes are spread in manner and autonomous devices. The senor node can interconnect the data directly or indirectly. The packets should be routed from source to destination within the limited control loading. The routing path and the network topology change frequently. [4]

Mobile ad hoc networks show a vigorous part in ubiquitous networking remaining to their flexibility maintenance infrastructure-based the design. Routing protocols designed for wired networks are not suitable for other network. Ad-hoc On-demand Distance Vector (AODV) and Terminus arranged Distance Vector at routing network size is large and node mobility is high [5].

DTRACK, a system that separates the tracking of path. The two tracking are path change detection and path remapping. It is easy to find the path destination [20].

3. PRELIMINARIES

The project is used to transmit the data without any energy wastage. Thus the project is built with the help of cloudlet format. Here cloudlet is nothing but managing sensor with cluster is new to be accommodate the data. Thus packet solving is maintained in the similar manner. The main use of the proposed model is to help the node to be transmitted. The scope of the project is to reduce the time delay and increase the performance of the metrics through which it can be performed by a new technology. Here the overall performance is made with simple and efficient performance. The mechanism used in this proposed work is the cloud let model. Cloudlet is an efficient model design in which the data can be easily transmitted based upon the information through which we model. The group of nodes that used to form together and fix an access point at each cluster. This formation is used to avoid the unwanted wastage of energy and also the collision attack used in this proposed work is the cloud let model. Cloudlet is an efficient model design in which the data can be easily transmitted based upon the information through which we model. The group of nodes that used to form together and fix an access point at each cluster. This formation is used to avoid the unwanted wastage of energy and also the collision attack.

3.1 Existing Model

The Existing work is based upon the routing path of each packet, many measurement and conduct effective management and protocol optimizations for deployed WSNs consisting of a great number of unattended sensor nodes. Path data is also main for a network executive to efficiently achieve a sensor network. A network executive can simply find the nodes with a lot of packets forwarded. The deploying nodes to that area and modifying the routing layer protocols.

Per-packet path information is important to display the fine-grained per-link metrics. For example, most existing delay and loss quantity styles accept the transmitting topology is given as *a* priori. The time-varying transmitting topology can be successfully obtained by per-packet routing path, suggestively refining the data.

A novel path is to rearrange the transmitting the path to the sink. key comment: It is extremely to a packet from transmitting node and one from the parent and another from the next node.

Paths can be conditional. iPath requirements a short path can be used for gathering a long path. iPath includes a lightweight hash function. Every data packet have a hash value. The basic idea is to exploit high path relationship to iteratively infer long paths from short ones. ipath starts with a known set of paths and performs path implication iteratively. It includes a fast bootstrapping algorithm to reconstruct a known set of paths.

3.2 System Model

System design is the process of defining the elements of a system such as the architecture, modules and components, the different interfaces of those components and the data that goes through that system. It meant to satisfy needs and requirements of a business or organization through the engineering of a coherent and well-running system used in this proposed work is the cloud let model. Cloudlet is an efficient model design in which the data can be easily transmitted based upon the information through which we model. The group of nodes that used to form together and fix an access point at each cluster. This formation is used to avoid the unwanted wastage of energy and also the collision attack.

Furthermore, per-packet path information is essential to monitor the fine-grained per-link metrics. For example, most existing delay and loss measurement approaches assume that the routing topology is given as *a* priori. The time-varying routing topology can be effectively obtained by per-packet routing path, significantly improving the values of existing WSN delay and loss tomography approaches.

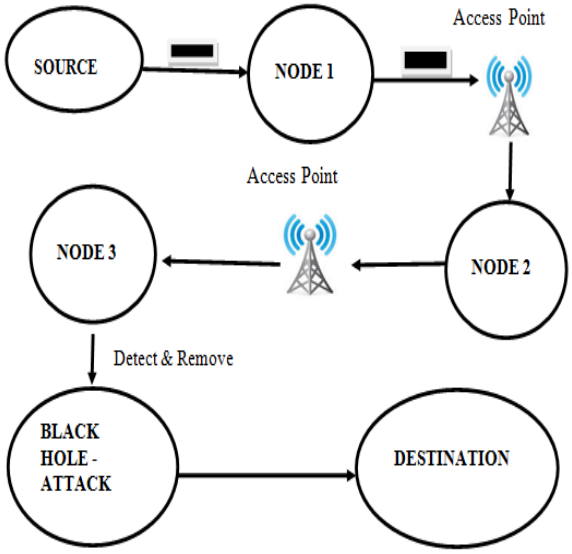

Figure 2 System Model

The above Figure 2 shows that the node will first select the source and destination. And then the message will send from the source and it will reach the first node and then it will reach the Access point and it will find the next node with the help of access point and then the message will send to next node and next the message will reach the Access Point and then the message will find next node to send the message and Black Hole –Attack will attack the message it will Detect and Remove the message and at last it will reach the Destination point.

3.3 Network Forming

Wireless channel is demonstrated of every node with PSD (Path Source and Destination).Packets spread successful, and packets spread during the bad state are lost. PSD leftovers unmovable for a comparatively. Detecting Packet drops may not be portable networks, the main cause for packet losses is the bad state of network. An arrangement of B packet is spread above the network. The transmitting can be executed to organize the network for the efficient data communication. The transmitting network can implemented in AODV. The discrete organization can be applying a simple concept of data transmission .

3.4 FO RMATION OF CLOUDLET

The cloudlet formation was done by the sensor node by implementing the data. The next cloudlet formation is based upon clustering concept that performed by the access point. The Access point can be useful for the requirements through which it should be used. Wireless sensor networks (WSNs) may consist of several thousands of homogeneous or heterogeneous sensors that can collect reliable and accurate information in distant and hazardous environments. It commonly expected for energy controlled of sensor nodes work with DC source replaced such an energy source. Battery is used to supply power to the deployed nodes, It is useful to route the motes to efficiently utilize its power. A basic wireless sensor network requires very little infrastructure. In one such network, nodes can be arranged in an ad hoc style. Sensor network arranged to acquire data from surrounding need a large amount of sensor nodes, depending on the area to be covered. Due to large numbers of nodes the management of network becomes difficult, and complex structure is required. And the node is forming the group by use the Cluster formation and then the node will create the Cluster head. The node will send the sample packet from the source to destination.

3.5 Data Transmission

The data transmission is processed in the simple usage of the system could be used for the system through which it could be maintained. The AODV transmitting protocol is the important concept of which it should be transmitted in the simple consequent concept. The most useful concept of the proposed work is based upon the simple and efficient usage of the model through which it can be determined. Here AODV is the transmitting used for the information monitoring concept. The most powerful usage of the AODV is the upcoming usage of the system that should be used for the information passing from the node to another.

4. ADOV TRANSMITTINGPROTOCOL

The AODV transmitting protocol is the important concept of which it should be transmitted in the simple consequent concept. The most useful concept of the proposed work is based upon the simple and efficient usage of the model through which it can be determined. Here AODV is the Ad Hoc On demand transmitting used for the information monitoring concept. Ad-hoc On-Demand Distance Vector (AODV) is a transmitting protocol for portable ad hoc networks (MANETs) and additional wireless ad hoc networks. The most powerful usage of the AODV is the upcoming usage of the system that should be used for the information passing. The main usage of the routing protocol is simplified and maintained in the system through which it should be processed for the system usage and performance of the function.

5. PERFORMANCE ANALYSIS

The performance and evaluation of the two models are used to process under the different set of scenarios. The main scheme of the proposed and the existing work is based on the simple and efficient process of the scheme through which it can be maintained. Figure 6.3.1 shows the graphical representation the data security and time efficiency; it is proved that the data security and time efficiency is highly achieved in this research work.

5.1Time Delay Calculation for ADOV

The time delay calculation is given below. The formula is

$E\text{-}D_{elay}=\sum_{i=0}^{n}\frac{E-E_{delayi}}{n}$

Proposed System=10J-5/1=5J

Existing System=10J-3/1=7J

Table: 1 Time delay Accuracy

Number of packets transmitted	TIME DELAY	
	Existing System	Proposed System
10	7J	5J
20	17J	15J
50	47J	45J

The above table 1 explain how the packet send Time delay will be explain in this table, the time delay of existing system and the proposed system is tabulated.

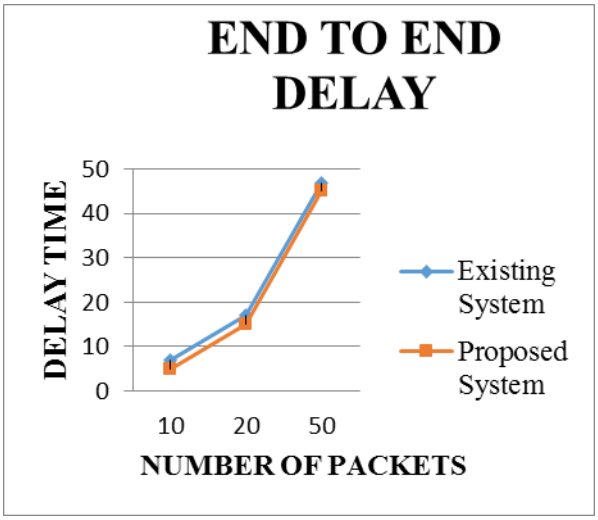

Figure: 3 Time delay Comparison

The Time delay must be less than the previous model. Thus the color representation of the proposed algorithm EBR based time delay the comparison graph is mentioned in the above picture model. Regarding to that diagram red color indicates the Existing System and the green color represents the proposed model. Based on the above model the main use of the systematic representation clearly denotes the time delay is high in the existing system and the proposed method time delay is less. Thus the time delay calculation is performed with the simple calculation.

Packet Distribution Percentage

$\text{Throughput}=\frac{Numberofpacketsrecieved}{NetwortkOperationTime}$

=50/10=5

Existing System throughput

=20/10=2

Number of packets transmitted	**PACKET DISTRIBUTION PERCENTAGE**	
	Existing System	Proposed System
10	0.5%	0.9%
20	0.5%	0.75%
50	0.4%	0.8%

Table: 2 Data Security Analysis

The above table 2 shows that the data security in the network .how the data will be send secured without any packet loss.

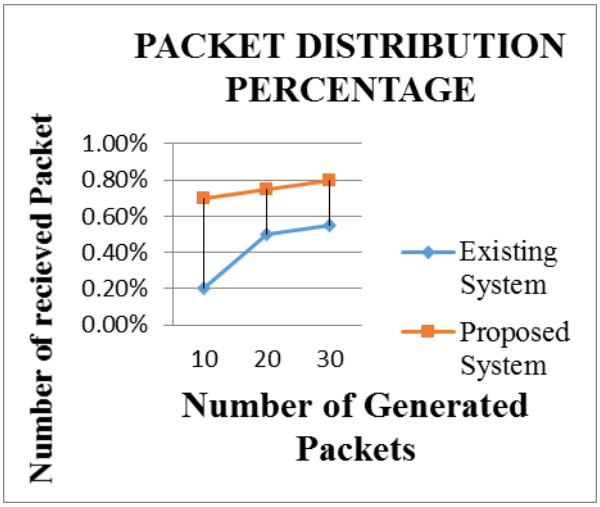

Figure: 4 Packet distribution percentage comparison

The above diagram is placed on the single dimension through which it is maintained. The main purpose of the packet delivery ratio will easy to calculate the network life time.

And also it is efficient for performing the simple media through which it may be maintained under the sequence of the system. The overall measure should be maintained under the function of the proposed model. The main task of the system is powerful saving of each sensor battery power. Thus the work lead to enhance the good scalability of the system through which it can performed under the use of the model through which it can be performed.

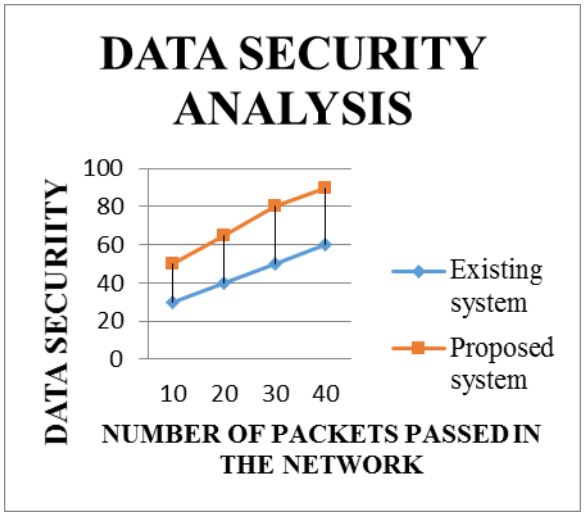

Figure: 5 Data Security Analysis

The above diagram show that the data security analysis it will explain that the packet passed in network will be send secured and then the data will not loss and the graph show that the orange color is the proposed system the data will be send secured and in the blue color is Existing System in that data may be loss.

NUMBER OF PACKETS	DATA SECURITY	
	EXISTIG SYSTEM	PROPOSED SYSTEM
10	30	50
20	40	65
30	50	80
40	60	90

Table: 3 Packet distribution Percentage

The table 3 will show that the packet send in the network and the value of the proposed and existing system. The number of packet send and the how the data is secured and the value is given in the packet distribution table.

6. NS-2

NS-2 is a Simulator for Networking Research. It is responsible for significant model of TCP, transmitting and multicast protocols over wired and wireless networks. The aim of the NS-2 is to create an open model for networking research.NS-2 will community with the operators and creators.

7. CONCLUSION

The proposed model is built with the concept of load balancing concept based upon the dynamic approach. The dynamic model is used for the processing of the data usage. The main concept is used to transmit the data in a dynamic manner. Hence the overload of data is simply processed in the simplest way of performance through which it should be processed. Here the usage can be maintained in the work of DBA concept. The concept was proposed perfectly based upon the simulation working model. The model should be maintained in the way through which can be processed in the simplest usage of the routine of the system. The model Output is obviously mentioned that the system can be deliberately worked under the concept of the dynamic system it should process. Thus the 95% of the system should work under the conception of the work at can be maintained in the simple concept.

FUTURE ENHANCEMENT

In this research work, Wireless Internet is easy-of-use stays developing, public accessible and easy-to-access cloudlets will energetic to the upcoming Data processing. Here the proposed model was further improved by the concept should be maintain in the real time application. This can be processed in the useful of the processing in real time manner. In real time the supported format can be maintained in the simplest form of the hardware through which it should be designed. The supporting hardware the ardino tools were implemented to simultaneously support the real processing.

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