Cloud Based Decentralized Approach For FANET

Anjali Savita
Research Scholar, CSE Department
VITM, Gwalior, India
anjalisavita91@gmail.com

Pankaj Sharma
Asst. Professor, CSE Department
VITM, Gwalior, India
Pnkjsharma07@gmail.com

Sandeep Kumar Tiwari
Asst. Professor, CSE Department
VITM, Gwalior, India
sandeep72128@gmail.com

***Abstract*–Flying ad-hoc network is now growing area of research. There are few work done in this area. This whole paper going to stdy about flying network and its protocols. İn our propose work we give decentalize cloud based approach in which cloud have data form sensor and base station and then all the base station and device or sensor connected to the each other through many to many connectivity.**

***Keywords:* FANET, MANET, VANET, LIS, UAV.**

I. INTRODUCTION

Wireless connection can used in the scenarios to extend network to dissimilar places as it eliminates required to found source to endpoint wired link. Substructure Based Networks have a central coordinator which manages each device while ad-hoc network doesn't have a fixed topology or central coordination which increases complexity in sending or receiving packets between nodes [1].

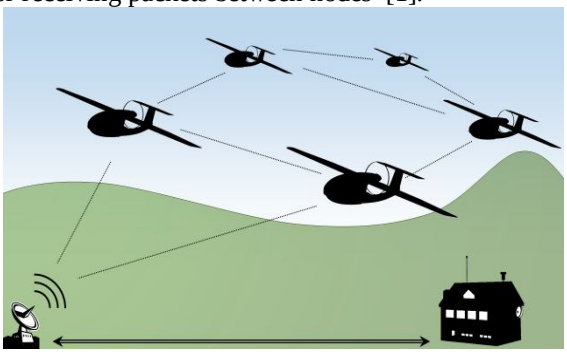


Fig 1. FANET Scenario

We know that there is a quick change in technology advancement on sensor, communication and electronic technologies, it has been likely to produce UAV system. Because of their many property such as easy installation, flexibility, versatility in addition to comparatively small operating expenses, the usage of UAVs promises new methods for both civilian and military applications, such as finish operations and search, disaster monitoring, border surveillance, managing wildfire, communicate for ad hoc networks. [2].

The overall work is organized as follows. Section 2 describes the Improved PSO algorithm called as PSO with mutation algorithm. Association rule mining is explained in section 3. Proposed methodology is discussed in section 4. About experiments and different parameters used in this work for performing experiments are explained in section 5. Finally section 6 summarized the overall work.

II. LITERATURE SURVEY

Describe the protocol, implement this as well as estimate its presentation with NS-2. Simulation outcomes reveal that suggested protocol achieves better presentation in case of average end on delay and average packet drop fraction, which is respectively compared with VBF[4].Two dissimilar routing procedures for ad hoc networks: P-OLSR and OLSR. This takes benefit of GPS info obtainable on board [5].FANET is comparably concept of MANET and it has capabilities to tackle with situations where traditional MANET cannot do so. Due to mobility and topology change in FANET, this is highly challengeable for researcher to implement routing in FANETs [6].The amount of UAVs increases, the LIS with a single token circulation in FANET will take longer time [7].present that novel MAC protocol, LODMAC, which incorporates use of location

estimation and directional antennas of neighboring nodes within MAC layer.for oncoming protocols of FANET MAC [8].Present ability LODMAC protocol gain which confirm that it is substitute good for HAP&FANET based scenarios. Also LODMAC well handles data broadcast and neighbor discovery in parallel with help of directional antennas[9]. In multi-UAV system, communiqué between UAVs is provided with all UAVs connecting directly to the ground station. It different ad hoc network structure is known as FANET [10]. A microstrip patch antenna and its lx2, lx4 and 2x4 arrays are suggested for FANET communication in multi-UAV systems. The arrays and antennas are suggested in addition to planned using Rogers RT/duroid 5880LZ substrate which is light weight and has specific applications in UA V antennas. [11].The Utilization of traditional omnidirectional antennas on FANETs absences to address enhanced spatial reuse requests since interference through simultaneous broadcasts restrictions maximum amount of concurrent communiqués. Otherwise, use of directional antennas may significantly increase network capacity and spatial reuse of FANETs [12].

III. PROBLEM STATEMENT

The existing system deploys numerous servers at all station under ATC to communicate between pilots and stations, various servers growths human errors, communication delays, signal losses and weak time management system on probability of higher traffic air spaces. There is resources synchronization required such as flights, communication networks and devices to develop vital importance and emerged as a problem with existing systems. Cloud may be higher solution for FANET in existing technique author propose a centralized approach which gives better result but if central server fails than whole system going down.

IV. PROPOSED METHODOLOGY

In our propose work we apply distributed approach for solve existing problem so that if one system goes to down another have connectivity to UAV, so that whole system does not effect. Connectivity of system mention below

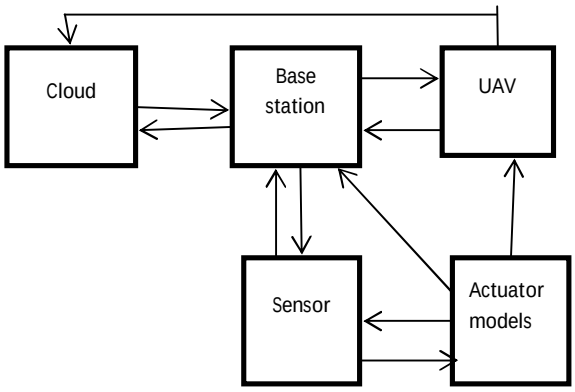


Fig 2. Proposed architecture.

In the first phase, cloud computing technique offers high end integration of resource, and in our propose work its only communicate with base station, so that if connectivity goes to down system does not fail, now base station connect with sensor actuators models and UAV so that information flows between all devices. Network and cloud simultaneously to fix on parameters in run time environment. Nonlinear aircraft models which change directions as per required based or instructions provided are connected through FANET cloud and updated as soon as system alerts them hence reduces risk situations. Numerous sensor models are deployed at this phase which are connected to Cloud and upload data sensed from the surrounding and various sources.

Algorithm:

```
Step1:  if(sensorsenseevent){
          Send event to base station and Actuators
// updating info
  Step2: if(RCVnewENT) {
           Update UAV and cloud
         }
Step3:if(eventid){
         // check event or update information
          Discard info }
      Else
         Update information for moving
Step4: exit
Routing for data transmission
Step1: send hello message
Step2: connectivity built
Step3: tc message generate      // topology control
message generate
```

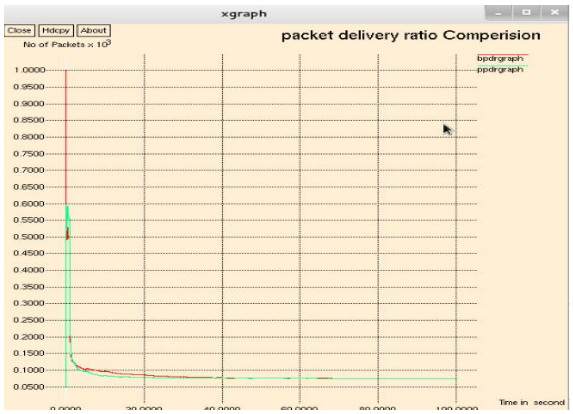
Step4: multiple interface declaration generate for control links

Step5: exit.

V. EXPERIMENTAL RESULTS & PARAMETER SETUP

1. Packet delivery ratio:

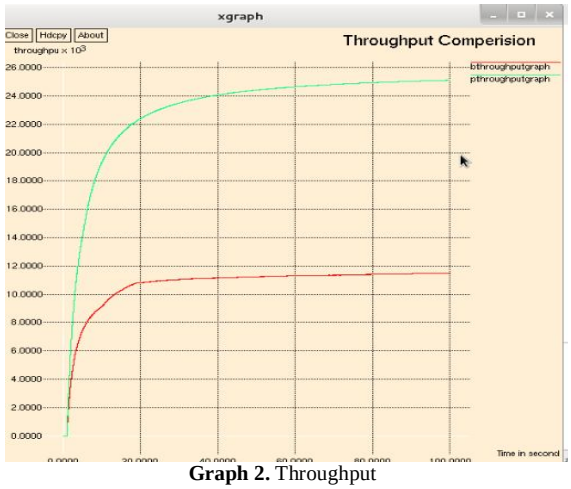
Defined as packets delivered ratio from source to destination. The graph 1 represents graph of PDR between proposed approach and existing approach. The PDR of the proposed approach is good than the existing approach.



Graph 1. Packet delivery ratio

2. Throughput:

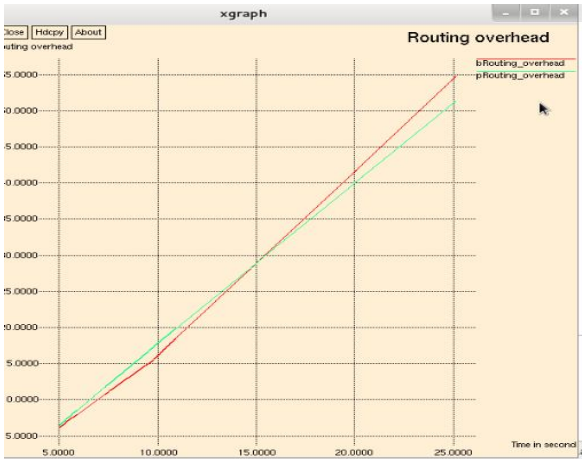
Per second transfer of information on bandwidth is called as throughput. The graph 2 represents a throughput graph between existing approach and proposed approach. The proposed approach throughput is good than the existing approach.



Graph 2. Throughput

3. Routing Overhead:

The routing overhead is describe as information of data and data flooding in network transmitted through application, which uses accessible transfer rate bit of communication protocols. The graph 3 represents a routing overhead graph between existing approach and proposed approach. The overhead of the proposed approach is more than the base approach. Since overhead should be minimum but as the routing growths in proposed work the overhead also growths.



Graph 3. Routing Overhead

VI. CONCLUSION

İn this paper we study about cloud and flying ad-hoc network and then implement this scenario in ns-2.35 above result shows that our propose work gives better result as compare to base result. İn future work we apply optimization technique to get more better result.

REFERENCES

[1]. Karan Palan and Priyanka Sharma," FANET Communication Protocols: A Survey", www.csjournalss.com, Volume 7 • Number 1 Sept 2015 - March 2016 pp. 219-223.

[2] Naveen and Sunil Maakar," Concept of Flying Ad-hoc Network: A Survey", National Conference on Innovative Trends in Computer Science Engineering (ITCSE-2015), pp: 178-182.

[3] Md. Hasan Tareque, Md. Shohrab Hossain and Mohammed Atiquzzaman," On the Routing in Flying Ad hoc Networks", Proceedings of the Federated Conference on Computer Science and Information Systems 2015, IEEE ACSIS, Vol. 5 pp. 1–9.

[4] Wang Qingwen, Li Zhi, Liu Gang andQi Qian," An Adaptive Forwarding Protocol for Three Dimensional Flying Ad Hoc Networks", 2015 IEEE, pp: 142-145.

[5] Stefano Rosati, Karol Kru˙zeckiGr´egoire Heitz, Dario Floreano and Bixio Rimoldi," Dynamic Routing for Flying Ad Hoc Networks", 2015 IEEE.

[6] Kuldeep Singh and Ani! Kumar Verma," Experimental Analysis of AODV, DSDV and OLSR Routing Protocol for Flying Adhoc Networks (F ANETs)", 20 15 IEEE.

[7] İlker Bekmezci and Eyüp Emre Ülkü," Location Information Sharing with Multi Token Circulation in Flying Ad Hoc Networks", 2015 IEEE, pp: 669-673.

[8] Samil Temel and Ilker Bekmezci," LODMAC: Location Oriented Directional MAC protocol for FANETs", Computer Networks2015 Published by Elsevier.

[9] Samil TEMEL and İlker BEKMEZCİ," On the performance of Flying Ad Hoc Networks (FANETs) Utilizing Near Space High Altitude Platforms (HAPs)", 2013 IEEE, pp: 461-465.

[10] Dr. Ilker Bekmezci and Ismail Sen, Ercan Erkalkan," Flying Ad Hoc Networks (FANET) Test Bed Implementation", 2015 IEEE, pp: 665-668.

[11] Asghar A. Razzaqi, Muhammad Mustaqim and Bilal A. Khawaja," Antenna Array Design for Multi-UAVs Communication in Next Generation Flying Ad-HocNetworks (FANETs)", 2014 IEEE, pp: 25-28.

[12] Samil Temel and Ilker Bekmezci," Scalability Analysis of Flying Ad Hoc Networks (FANETs): A Directional Antenna Approach", 2014 IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom), pp: 185-187.