www.ioirp.com

International Journal of Innovative Research in Technology, Science & Engineering (IJIRTSE)
ISSN: 2395-5619, Volume – 2, Issue – 5. May 2016

SENCAR SCHEDULING ALGORITHM BASED ON PACKET LIFETIME IN WSN'S

D.NAVEENA
[1]PG Scholar, Department of Electronics and
Communication Engineering,
Priyadarshini Engineering College,
Vaniyambadi – 6005,Vellore, INDIA

ABSTRACT

In this paper, a three-layer framework is proposed for mobile data collection in wireless sensor networks, which includes the sensor layer, cluster head layer, and mobile collector (called SenCar) layer. The framework employs distributed load balanced clustering and dual data uploading, which is referred to as LBC-DDU.At the sensor layer, a distributed load balanced clustering (LBC) algorithm is proposed for sensors to self-organize themselves into clusters. At the cluster head layer, the inter-cluster transmission range is carefully chosen to guarantee the connectivity among the clusters. Multiple cluster heads within a cluster cooperate with each other to perform energy-saving inter-cluster.At the mobile collector layer, SenCar is equipped with two antennas, which enables two cluster heads to simultaneously upload data to SenCar in each time by utilizing multi-user multiple-input and multiple-output (MU-MIMO) technique. The results show that when each cluster has at most two cluster heads, LBC-DDU achieves over 50 percent energy saving per node and 60 percent energy saving on cluster heads comparing with data collection through multi-hop relay to the static data sink, and 20 percent shorter data collection time compared to traditional mobile data gathering.

Index Terms: Wireless Sensor Networks (WSNs), data collection, load balanced clustering, dual data uploading, multi-user multi-input and multiple-output (MU-MIMO), mobility control, polling point

INTRODUCTION

This chapter includes basic introduction of the wireless networks, differences between the wired and wireless networks, objective of the project, overview, tools which are used to implement the project and thesis organization.

WIRELESS NETWORKS

Wireless networks provide unprecedented freedom and mobility for a growing number of laptop and PDA users which no longer need wires to stay connected with their workplace and the Internet. Ironically, the very devices that provide wireless service to these clients need lots of wiring themselves to connect to private networks and the internet [1]. This project presents a viable alternative to all those wires the wireless mesh network. Unlike basic Wi-Fi that simply untethers the client the wireless mesh untethers the network itself giving IT departments, network architects and systems integrators unprecedented freedom and flexibility to build out networks in record time with high performance and without the expensive cabling.

Wireless means transmitting signals using radio waves as the medium instead of wires. Wireless technologies are used for tasks as simple as switching off the television or as complex as supplying the sales force with information from an automated enterprise application while in the field. Now cordless keyboards and mice, pagers and digital and cellular phones have become part of our daily life. Some of the inherent characteristics of wireless communications systems which make it attractive for users are given below:

Mobility: A wireless communications system allows users to access information beyond their desk and conduct business from anywhere without having wire connectivity.

Reachability: Wireless communications systems enable people to be better connected and reachable without any limitation of any location.

Simplicity: Wireless communication system is easy and fast to deploy in comparison of cabled network. Initial setup cost could be a bit high but other advantages overcome that high cost.

Maintainability: Being a wireless system, you do no need to spend too much to maintain a wireless network setup. Using a wireless network system you can provide service any where any time including train, busses, airplanes etc.

New Services: Wireless communications systems provide new smart services like SMS and MMS.

Wireless Network Topologies: There are basically three ways to setup a wireless network.

Point-to-point Bridge: As you know a bridge is used to connect two networks. A point-to-point bridge interconnects two buildings having different networks. For example, a wireless LAN bridge can interface with an Ethernet network directly to a particular access point.

Point-to-multipoint Bridge: This topology is used to connect three or more LANs that may be located on different floors in a building or across buildings. Mesh or ad hoc network: This network is an independent local area network that is not connected to a wired infrastructure and in which all stations are connected directly to one another.

WIRED VS WIRELESS NETWORKS

The different types of networks available today are Wired and Wireless networks. Wired are differentiated from wireless as being wired from point to point.

Wired Networks

These networks are generally connected with the help of wires and cables. Generally the cables being used in this type of networks are CAT5 or CAT6 cables. The connection is usually established with the help of physical devices like Switches and Hubs in between to increase the strength of the connection. These networks are usually more efficient, less expensive and much faster than wireless networks. Once the connection is set there is a very little chance of getting disconnected.

Wireless Networks

Wireless networks use some sort of radio frequencies in air to transmit and receive data instead of using some physical cables. The most admiring fact in these networks is that it eliminates the need for laying out expensive cables and maintenance costs.

Infrastructure Networks

Infrastructure network have fixed network topology. Wireless nodes connect through the fixed point known as base station or access point. In most cases the access point or base station or connected to the main network through wired link. The base station, or access point, is one of the important elements in such types of networks.

All of the wireless connections must pass from the base station. Whenever a node is in the range of several base stations then it connect to any one of them on the bases of some criteria.

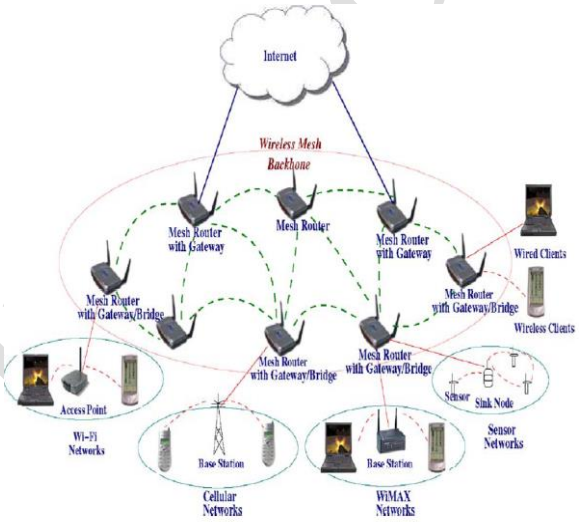

Fig 3.1.2: Infrastructure network

Infrastructure networks contain special nodes called access points (APs), which are connected via existing networks. APs are special in the sense that they can interact with wireless nodes as well as with the existing wired network. The other wireless nodes, also known as mobile stations (STAs), communicate via APs. The APs also act as bridges with other networks as shown in figure 2.1.

OUTPUT DESIGN

The output generated by the system is often regarded as the criterion for evaluating the usefulness for the system. Here the output requirements use to be predetermined before going to the actual system design.

The output design is based on the following:

- Determining the various outputs to be presented to the user.
- Differentiating between inputs to be displayed and those to be printed.

- The format for the presentation of the outputs.

7.2 COMPONENTS OF NETWORK SIMULATOR

7.2.1 Network Animator

Network Animator (NAM) provides the packet level simulation output in a graphical manner. Network Animator is an animation tool for viewing network simulation traces and real world packet traces. It supports topology layout, packet level animation and various data inspection tools. Before starting to use NAM, a trace file needs to be created. This trace file is usually generated by NS. It contains topology information, e.g. nodes and links, as well as packet traces. During a simulation, the user can produce topology configurations, layout information and packet traces using tracing events in NS. Once the trace file is generated, NAM can be used to animate it as shown in figure 5.1. Upon startup, NAM will read the trace file, create topology, pop up a window, do layout if necessary and then pause at time 0. Through its user interface, NAM provides control over many aspects of animation.

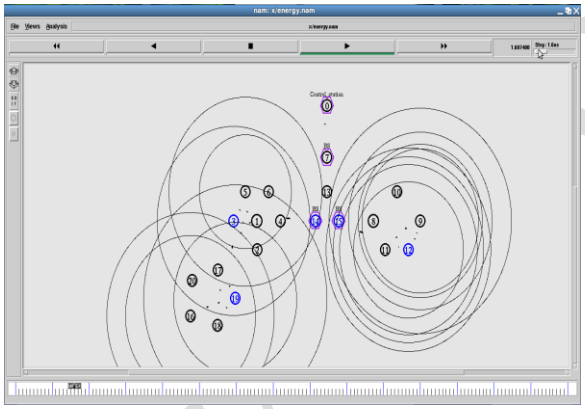

Fig 7.2.1: Simulated output of NAM

7.2.2 Xgraph

Provides the throughput comparison based on a graph which will be generated automatically based on the TCL coding as shown in figure 5.2.

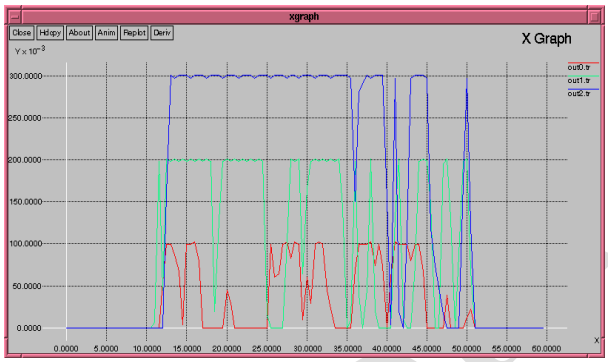

Fig 7.2.2: Xgraph for simulated output

REFERENCE

[1] B. Krishnamachari, Networking Wireless Sensors. Cambridge, U.K.:
Cambridge Univ. Press, Dec. 2005.
[2] R. Shorey, A. Ananda, M. C. Chan, and W. T. Ooi, Mobile, Wireless,
Sensor Networks. Piscataway, NJ, USA: IEEE Press, Mar. 2006.
[3] I. F. Akyildiz, W. Su, Y. Sankarasubramaniam, and E. Cayirci, "A
survey on sensor networks," IEEE Commun. Mag., vol. 40, no. 8,
pp. 102–114, Aug. 2002.
[4] W. C. Cheng, C. Chou, L. Golubchik, S. Khuller, and Y. C. Wan,
"A coordinated data collection approach: Design, evaluation, and
comparison," IEEE J. Sel. Areas Commun., vol. 22, no. 10, pp. 2004–
2018, Dec. 2004.
[5] K. Xu, H. Hassanein, G. Takahara, and Q. Wang, "Relay node
deployment strategies in heterogeneous wireless sensor
networks," IEEE Trans. Mobile Comput., vol. 9, no. 2, pp. 145–159,
Feb. 2010.
[6] O. Gnawali, R. Fonseca, K. Jamieson, D. Moss, and P. Levis,
"Collection tree protocol," in Proc. 7th ACM Conf. Embedded Netw.
Sensor Syst., 2009, pp. 1–14.
[7] E. Lee, S. Park, F. Yu, and S.-H. Kim, "Data gathering mechanism with local sink in geographic routing for wireless sensor.