Maximizing the Network Lifetime by using Mobile Data Gathering in Wireless Sensor Networks

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Abstract

In wireless networks, with the go forward of wireless communication skill, small size and high concert computing and communication plans like commercial laptops and personal computers are increasingly used in convention centers, conferences and electronic classrooms. In wireless ad-hoc networks, a collection of nodes with wireless communications and networking capability communicate with each other without the aid of any centralized administrator. The nodes are mechanical by battery with limited power reservoir. It becomes difficult to recharge or replace the batteries of the nodes hence energy conservation is essential. An energy efficient routing protocol balances node energy utilization to reduce energy consumption and increase the life of nodes thus increasing the network lifetime, reducing the routing delay and increasing the reliability of the packets reaching the destination. Wireless networks do not have any fixed communication infrastructure. For an active connection the end host as well as the intermediate nodes can be mobile. Therefore routes are subject to frequent disconnection. In such an surroundings it is imperative to diminish disruptions caused by altering topology for application using voice and video. Power Aware Routing enables the nodes to detect misbehavior like deviation from regular routing and forwarding by observing the status of the node. By exploit non-random behaviors for the mobility pattern that movable user show, state of network topology can be predict and perform route reconstruction proactively in a timely manner. In this paper we propose an Energy Efficient-Power Aware routing algorithm where we have integrated energy efficiency with power awareness parameters for routing of packets.

Keyword

Network, Energy efficiency, routing protocol, communication, package,

I. INTRODUCTION

Energy-efficient green cellular networks have become a hot research topic nowadays to deal with the dramatically increasing energy consumption of cellular infrastructure. As one of the key features of 5G networks, the energy-efficient design is valued by operators from both the environmental and economic viewpoints. For cellular networks, BSs are dominant in energy consumption and consume around 60-80% of the total network energy. The objective of this project is to seize the opportunity of tracking the traffic variation in the temporal and spatial domains of the network to adapt the radio resource allocation accordingly such that a great amount of energy can be saved.

As one of the most popular and efficient energy saving schemes, BS sleeping has a great potential in energy saving when the traffic load is low. The following figure illustrates several simple BS sleeping patterns. Besides traffic active BSs. Second, traffic-aware sleeping makes both the topology of active BSs and the interference scenarios change. So new frequency reuses pattern, scheduling, and power control schemes should be developed accordingly.-aware BS sleeping, there are also new technical problems that need to be addressed and will be studied in this project.

II. RELATED WORK

C. Hua ....[1]The global mobile communication industry is growing rapidly. Today there are already more than 4 billion mobile phone subscribers worldwide, more than half the entire population of the planet. Obviously, this growth is accompanied by an increased energy consumption of mobile networks. Global warming and heightened concerns for the environment of the planet require a special focus on the energy efficiency of these systems. The EARTH1 project is a concerted effort to achieve this goal and as part of its objectives, a holistic framework is developed to evaluate and compare the energy efficiency of a number of design approaches of wireless cellular communication networks.

Y. Wu....[2] The development of Long-Term-Evolution (LTE)- advanced and beyond cellular networks is expected to offer considerably higher data rates than the existing 3rd generation (3G) networks. In the middle of the many possible technologies in LTE-Advanced systems, users' individuality and social behavior have been studied to improve the networks' performance. In this paper we present the concept of user social pattern (USP), which characterizes the general user behavior, pattern and rules of a group of users as a social way, and utilize USP as an optimization basis for system presentation improvement.

Z. Zhang....[3] In this paper, an energy efficient traffic transmission scheme based on user convergence behavior is proposed which characterizes the phenomenon of similar/convergent users' traffic requests during a certain time window. First a system model is built to study the relations of user convergence, length of time-window and transmission power consumption. Especially in each time-window the spreader analyzes the similarity of users' traffic requests and the like traffics will be transmitting by multicast mode while the other traffics will be transmitted using single cast mode. To analyze the performance of our scheme, we establish a simple stochastic model in which locations and density of users, wireless channel conditions and transmitting mode are considered. Analytical results, such as power reduction ratio and energy efficiency of the proposed scheme, are developed, from which the quantitative relationship between UCB and the energy conservation can be obtained. Simulation results validate the theoretical analysis and demonstrate that our scheme can potentially lead to 35% power consumption deduction compared with the conventional transmission scheme.

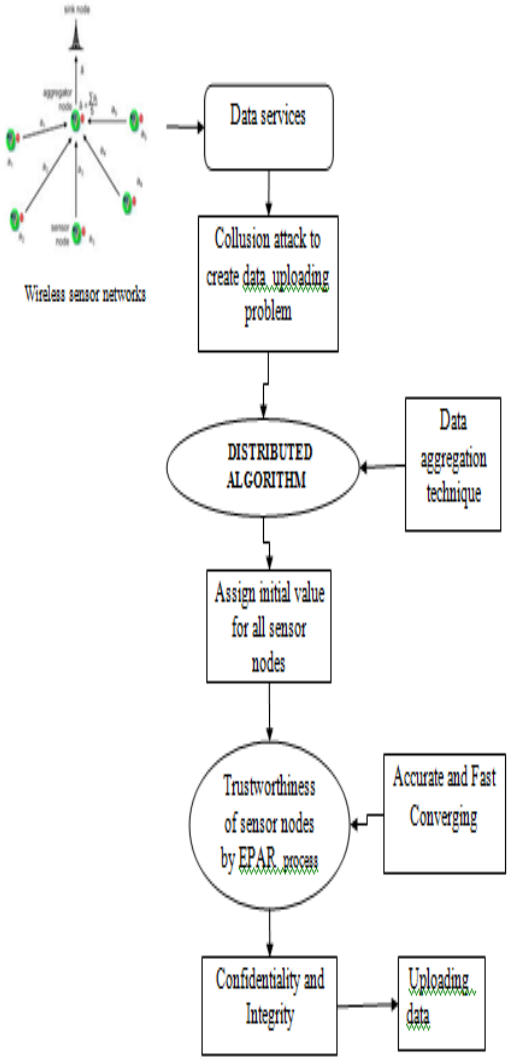
N. Ahmed.....[4] Different to the fixed patching multicast with fixed bandwidth plan, in our patching multicast system, the spreader can animatedly allocate all idle scheme bandwidth for uncast/multicast broadcast. Thirdly, we establish the closed form formulas of the power consumption in the proposed scheme and derive a tight upper bound on the minimum power consumption which increases with the O³e√y of the request arrival rate, which indicates that the proposed scheme can potentially lead to significant energy saving especially at large user request rate. In this paper, we propose a new multicast streaming transmission scheme and establish closed form formulas for power consumption of our scheme.

R. W. N. Pazzi....[5] This work provides essential understanding for successful deployment of green heterogeneous networks, and has the guidance to deploy a energy efficient heterogeneous networks. The theoretical analysis is validated by simulations. The results show that the energy efficiency of the two-tier networks with orthogonal spectrum deployment is better than that with co-channel spectrum deployment.

The consequences also show that the best compactness of small-cells for maximal energy competence is only dependent on the coverage presentation of small-cells in orthogonal spectrum deployment scenario. However, in co-channel spectrum deployment scenario, the optimal density of small-cells for maximal energy efficiency is jointly decided by the coverage performance of both macro-cell and small-cell. This work provides an essential understanding for successful deployment of green heterogeneous networks.

Proposes system, Architecture

Power management is a technique to diminish the energy addicted in the wireless line of battery mechanical mobile devices. The design of optimal power management policies needs to explicitly account for the diverse performance requirements posed by different application scenarios such as latency, throughput and other performance metrics. Power management techniques have been studied extensively in the context of CPU, memory and disk management in the past. The main idea is to switch devices to the low-power state in periods of inactivity. As compare with conventional techniques in commission systems, command management in communication devices requires distributed coordination between two and more than those communicating entities, as all the entities have to be in the active mode for a successful communication. When the entrance prototype of message actions is not known a priori, communication over the same wireless channel is required to inform a remote sleeping node to wake up for packets destined for it. This makes power management seemingly simpler. For example, if node A has packets destined for node B while node B is in the low power state, node A has to wait till node B becomes active before it transmits any packet. On the additional hand, when node B is in the low power condition, it has no idea that node A has packet destined for it. Therefore, power saving and performance inherently disagree with each other in power managed wireless networks. A naive design that minimizes the energy consumption may render the network non-operational. This paper proposes a plan to present an analytical characterization of energy consumption, delay and loss rate of power management policies as a function of the Traffic load, buffer size and protocol specific parameters. By proposing a theoretical model to analyze the time-out driven policies based on a variation of M/G/1/K queuing system with multiple vacations.



III. METHODOLOGIES WITH ALGORITHM

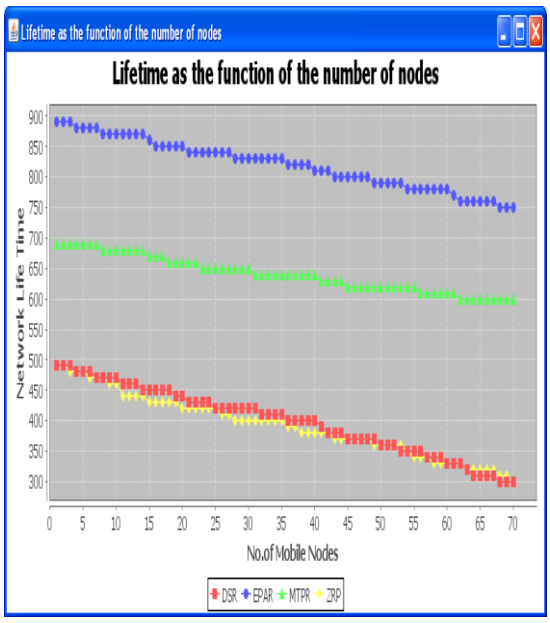
Minimizing energy consumption is the important challenge in mobile networking. Wireless network interface is often a device's single largest power consumer. Since the network interface may often be idle, turning the node off when not in use could save a considerable amount of power. In practice. However, this approach is not straightforward. A node must position to revolve it on not now to send packet, but also to receive packets addressed to it and to participate in any higher level routing and manage protocols. The requirement of cooperation between power saving and routing protocols is particularly acute in the case of multichip ad hoc wireless networks, where nodes must forward packets to each other. A node must button its condition from time to time sandwiched between being a negotiator node and organism a member. A node becomes a gateway, if its agent node chooses it as a gateway to route the packets between nodes. It has to control its state to undecided, if it loses get in stroke with its manager node due to mobility. The main aim of proposed routing is to increase the life time of network with low overhead while achieving many desired features of routing protocol of MANET. It selects the best paths by control aware metric and optimizes the power expenditure, overhead and bandwidth. It supports reliability by providing node-disjoint paths and it provides the stability (increasing mean life time of the nodes) by distributing the burden of routing and congestion control.

It consists of the following 4 major mechanisms

- Route selection
- Route Discovery
- Maximization of Network lifetime and Congestion control
- Route Maintenance

IV. EXPERIMENTAL RESULTS

The integrated energy and power conscious protocol considerably reduce the total no of route request packets, this result in an increased packet delivery ratio, decreasing end-to-end delays for the data packet, lower organize above your head, less collision of packets, at the bottom of dependability and lessening power use. Each route command carries the increasing cost, so very little bit overhead is increased to carry the cumulative cost but it is negligible. In the fig. 2 red line indicates the existing system and the blue indicates the proposed system



V. CONCLUSION AND FUTURE WORK

The Energy Efficient, Power Aware Routing protocol significantly reduces the total number of route request packets, this result in an increased packet delivery ratio, decreasing end- to-end delays for the data packet, lower control in the clouds, and fewer collisions of packets, at the bottom of reliability and decreasing power use. Each way demand carry the increasing cost, so incredibly little bit overhead is greater than before to carry the cumulative cost but it is negligible In this paper we discussed the need to make routing protocols energy efficient and power-aware. We proposed a method of direction-finding procedure for disobedient system with a power running scheme protocol, and to improve routing protocol performance by using mobility prediction. The protocol used here enables nodes to detect misbehavior by observing the status of the nodes.

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