

Mobile cluster based relay reconfiguration Optimization of Dynamic Channel Allocation Techniques in Mobile Wireless Sensor Network

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ABSTRACT

Wireless network needs an access mechanism and communication services during the mobility of the nodes. A Mobile Ad hoc network is a type of Wireless network services which is provided when infrastructure is not available or in an impractical or expensive environment like Emergency rescue operation , military application, home networking. In ad hoc network host (mobile node) movement is frequent, topology changes are frequent, where there is no fixed cellular infrastructure for a multi hop network and data must be routed via intermediate nodes. Ad hoc network is used for setting up of fixed access point as the backbone infrastructure is not viable i.e. impractical or destroyed and with increased users daily in turn increases the importance of bandwidth efficiency by maintaining the tight requirement on energy consumption and delay. An Ad hoc On-Demand Distance Vector (AODV) Routing is a routing protocol used in these mobile ad hoc networks (MANETs) which provides on demand services by providing the dynamic channel allocation. A novel algorithm for the optimization of the dynamic channel allocation is provided for a CBR (cluster based routing) called “Mobile cluster based relay reconfiguration (MCRR)” Where the cluster head is chosen considering the energy of the all nodes in the cluster .This approach is used for increasing the performance by optimization in terms of throughput, energy consumption, packet loss and bandwidth for mobility mobile nodes. In this paper the existing approaches are compared to the

optimized algorithm MCRR through the simulation using the RED HAT software.

Keywords: MANET, AODV, CBR, MCRR, Mobile

INTRODUCTION

A Mobile Ad hoc Network (MANET) is an autonomous system of nodes (MSs) connected by wireless links. A MANET does not necessarily need support from any existing network infrastructure like an Internet gateway or other fixed stations. The network’s wireless topology may dynamically change in an unpredictable manner since nodes are free to move. Information is transmitted in a store-and-forward manner using multi hop routing. Each node is equipped with a wireless transmitter and a receiver with an appropriate antenna. We assume that it is not possible to have all nodes within each other’s radio range. When the nodes are close-by i.e., within radio range, there are no routing issues to be addressed.. The use of wireless communication between mobile users has become increasingly popular due to recent performance advancements in computer and wireless technologies. This has led to lower prices and higher data rates, which are the two main reasons why mobile computing is expected to see increasingly widespread use and applications.. The first approach is to use a fixed network infrastructure that provides wireless access points. In this network, a mobile host communicates to the network through an access point within its communication radius. When it goes out of range of one access point, it connects with a new access point within its range and starts communicating

through it. The second approach is to form an ad-hoc network among users wanting to communicate with each other. This means that all nodes of these networks behave as routers and take part in discovery and maintenance of routes to other nodes in the network. This form of networking is limited in range by the individual nodes transmission ranges and is typically smaller compared to the range of cellular systems.

RELATED WORKS

Dynamic channel allocation in wireless ad hoc networks

‘shaan mahubani’, says that lowest number of packets can be transmitted through the assigned channel. It improves the throughput on 802.11 ad-hoc network by the factor up to 2 times the throughput achieved and also improves the network. Dynamic channel allocation provides an improvement only when the statically allocated channel suffers from a large amount of contention, and other channels are relatively underutilized.

An energy balanced routing method based on forward-aware factor for wireless sensor networks

Degan Zhang says that FAF-EBRM is compared with LEACH and EEVC, which balance the energy consumption and prolong the function lifetime and guarantees high Qos of WSN. it also balance the energy consumption, prolongs the function lifetime.

Dynamic channel allocation with location awareness for multi-hop mobile ad-hoc networks

In this protocol a new channel assignment and medium access GRID-B protocol for MANET that is characterized by interesting on-demand, dynamic and location aware properties. Most existing protocols do not have these properties. Simulation result shows the significant improvement in both throughput and

delay, over the GRID protocol, which uses static channel assignment.

Traffic –Aware Channel Assignment in Wireless Sensor Networks

In this paper, we propose a traffic-aware frequency assignment design that actually considers different traffic requirements from neighboring nodes while making frequency decisions. The traffic-aware frequency assignment is incorporated into the existing MMSN MAC and compared with two conventional frequency assignment methods: even selection and eavesdropping. Our simulation evaluation demonstrates that the traffic-aware channel assignment greatly improves multi-channel MAC performance: it significantly enhances the packet delivery ratio and throughput, while at the same time reducing channel access delay and energy consumption.

Channel allocation and medium access control for wireless sensor networks

This paper proposed a distributed channel assignment algorithm .using DCA which efficiently allocates channels to select randomly deployed sensor nodes. This proposed solution can be used as a base algorithm for several different schemes like channel allocation, to assign a non overlapping TDMA slots and nodes addresses to sensor networks.

Zone-divided and energy-balanced clustering routing protocols for wireless sensor networks

In this article, a wireless sensors network routing protocol ZECR protocol which is efficient which is efficient in the energy heterogeneous environment. This protocol simplifies the network topology through the zone division and considers the energy the energy factor in the cluster head competition phase and in the inter-cluster routing selection phase and also to solve the hot spots problem.

An innovation mobility based self-stabilizing clustering algorithm for MANET

s.muhuramalingam, v.vignaraj ananth, m.sahish kumar describes that In mobility based algorithm, the reconfiguration frequency of the network is reduced by the selection of a cluster head with least mobility. This is done by calculating the response time of the nodes in the cluster and the node with highest response time will be selected as the cluster head. This can be considerably reduce overhead caused by the increase in reconfiguration frequency and increases the self stabilizing quality of MANETs.

An improved energy efficient clustering algorithm for non availability of spectrum in cognitive radio users

V.Shunmuga Sundaram ,to avoid the overlapping of the cluster and maximum provides the equal sized cluster and constant energy to the mobile nodes .The nodes rate should be very low, therefore the overall throughput should be increased and avoid he transmission of the redundant information using multichannel sequence algorithm.

Dynamic channel allocation

In wireless and cellular networks it allocates bandwidth and communicates the channel to the base station. Dynamic channel allocation is more efficient because voice channel are not allocated to cell permanently, instead for every cell request to the base station request channel from the mobile station channel. Dynamic channel allocation also handles the cell traffic and utilizes the cellular radio resources more efficiently. It allows the no of channels in a cell to vary with the traffic load, hence increasing channel capacity with little cost.

METHODOLOGY OF WORK

MCRR(Mobile cluster based relay reconfiguration)is the algorithm based on the **Ad hoc On-Demand**

Distance Vector (AODV) Routing used as a routing protocol in mobile ad hoc networks (MANETs).AODV enables “dynamic, self-starting, multi-hop routing between mobile nodes wishing to establish and maintain an ad hoc network. AODV allows for the construction of routes to specific destinations and does not require that nodes keep these routes when they are not in active communication. The AOSV based MCRR (mobile cluster based relay reconfiguration) where the relay is re-configured for the moving nodes within the clusters using various factors like range, mobility, bandwidth and energy efficient hence it is used to increase the network lifetime. The function of the algorithm is to detect the available channel of the device and regularly check the interference and malicious node in the group of the nodes of the cluster. If any interference detected it should alternate the channel or if any malicious node is encountered it neglects the path formed along the particular node.

Flow Chart for Establishment of the Wireless scenario



