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DISTRIBUTED RECEIVER COOPERATION COMMUNICATON

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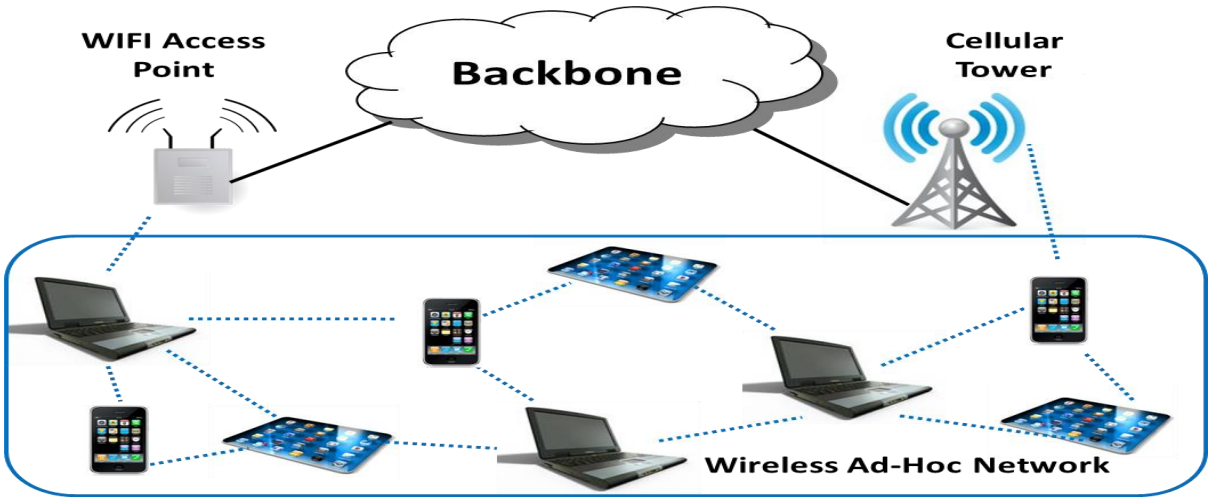
Abstract

An ad-hoc network is a LAN through which individual network nodes forward packets to and from each other. In the existing Ad-Hoc network, receiver cooperation in topology control is used to improve energy efficiency as well as network connectivity. But, the existing system does not employ distributed topology in receiver cooperation. To overcome these issues of centralized topology in the existing system, the proposed system presents an alternative based on the distributed cooperative topology control system.

Introduction

The wireless ad-hoc network (WANET) is a decentralized type of wireless network. The network is ad hoc because it does not rely on a pre existing infrastructure, such as routers in wired networks or access points in managed (infrastructure) wireless networks .Instead, each node participates in routing by forwarding data for other nodes, so the determination of which nodes forward data is made dynamically on the basis of network connectivity. In addition to the classic routing, ad hoc networks can use flooding for forwarding data. A wireless ad-hoc network, also known as IBSS – Independent Basic Service Set, is a computer network in which the communication links are wireless. The network is ad-hoc because each node is willing to forward data for other nodes, and so the determination of which nodes forward data is made dynamically based on the network connectivity.



Related works

[1] M. Agarwal, "Energy Efficient Broadcast in Wireless Ad hoc Networks with Hitch-hiking", Department of Electrical and Computer Engineering, University of Massachusetts, has proposed a novel concept called Hitch-hiking in order to reduce the energy consumption of broadcast application for wireless networks. It also aims at reducing the overall cost of broadcast in ad-hoc network. The drawback is that It does not extend the use of Hitch-hiking for reliable energy efficient broadcast.[2] X. Ao, F. R. Yu," Distributed cooperative topology control for WANETs with opportunistic interference cancellation", Department of Electrical Engineering from South China University of Technology, has proposed that the impacts of cooperative communications, particularly the IC-based cooperative communications, on topology control in WANETs. This can improve the network capacity if effectively captured. The proposed framework does not consider the imperfect CSI. [3] Bingyi Guo, "Energy-Efficient Topology Management with Interference Cancellation in Cooperative Wireless Ad Hoc Networks", Department of Electronic Engineering from China University of Mining and Technology has proposed energy-efficient topology control with interference cancellation (EEIC) to capture the benefits brought by IC-based cooperative communications by choosing the best transmission pattern to its destination node. The drawback is that In realistic networks, perfect channel state information may not be available.[4] Kenji Miyao," LTRT: An Efficient and Reliable Topology Control Algorithm for Ad-Hoc Networks", Department of Information Engineering from Tohoku University, has proposed LTRT, which preserves k-edge connectivity of the network to ensure reliable transmission.k-edge connected LTRT is easily constructed by repeating the topology construction and link deletion phase. The drawback of this system is that the link deletion phase can accidently remove a node from the network.

Research directions

The existing system incorporates centralized system which requires a base station to transfer data from source to destination. It does not employ distributed topology in receiver cooperation and thus leads to packet drop, and decrease in data deliver ratio. The centralized topology is prone to transmission delay and thus faces decrease in response time. The existing system consumes more power in order to increase network connectivity. The centralized topology control scheme guarantees only one

connected neighbor for each node, the network connectivity can be broken even when only a single link is disconnected.

Discussion

In the existing Ad-hoc network, receiver cooperation in topology control is used to improve energy efficiency as well as network connectivity.A node in a wireless ad-hoc network suffers from connectivity instability because of channel variation and limited battery lifespan.The existing system is prone to issues such as transmission delay, decrease in response time and high power requirement.The proposed system presents an alternative based on the distributed cooperative topology control system to overcome the issues of centralized one.The distributed system increases processing time and avoids loss of data packets in the network during transmission.The drawbacks of the existing system can be overcome by applying Cohen's Kappa.

Conclusion

An ad-hoc network is a LAN through which individual network nodes forward packets to and from each other. The existing system consists of centralized topology control but hold various issues. Ad-Hoc network, receiver cooperation in topology control is used to improve energy efficiency as well as network connectivity. The proposed system presents an alternative based on the distributed cooperative topology control system. It identifies the best node that has the capacity to stay, transmit, receive data on the network. The data to be forwarded or received is initiated by receiver initiate protocol.Distributed system in future can be combined with embedded systems which will result in development of real time applications.

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