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ENERGY EFFICIENT STABLE MULTIPATH ROUTING IN MANET

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Abstract:

Energy efficient routing is very essential in MANET. Energy efficient routing techniques play a significant role in saving the energy consumption of the network. We decided to design an energy efficient routing protocol which reduces the total energy consumption in the network and thus maximize the life time of the network. We proposed an energy efficient routing protocol which is based on residual energy and transmission power of nodes for choosing energy efficient path. The goal of this work is to choose the best route based on these two energy metrics. The simulation is carried out using NS-2.34. The experimental results show that the proposed algorithm reduces the average energy consumption when compared to the standard AOMDV routing protocol.

Keywords: AOMDV, energy efficient, residual energy, transmission power control.

1. INTRODUCTION

An ad-hoc mobile network is a collection of mobile nodes .The primary goal of ad-hoc network is to provide a stable and efficient route between the nodes it uses the link state routing protocol by using OSPF to provide shortest path between the nodes and to transfer the data within the short time without losing data packets. Network (MANET) is generally defined as a network that has many free or autonomous nodes, often composed of mobile devices that can arrange themselves in various ways and operate without strict top-down network administration.

MANET is a decentralized type of wireless network. The network is ad hoc because it does not rely on a pre-existing infrastructure, such as base stations (infrastructure) wireless networks. In MANETs node's battery energy and stability of the links are often affecting the communication activities in network. Based on these parameters the network selects the path to transmit the data packets between the nodes.

In MANET, node's battery energy and stability of the links are often affecting the communication activities in the network. These two factors are one of the main reasons which are responsible for the loss of data packets and occurrence of congestion issue that networks are facing today. In order to overcome these issues, we propose an approach known as efficient and stable multipath routing in MANETs with congestion awareness. This approach is an extension work to our previous work where bandwidth and delay are considered during the routing. Here, in this approach, network estimates the residual energy and stability of the links in the network. While estimating the residual energy, it also considers the receiving energy and transmitting energy of the node.

Then, stability of the link LET is estimated; this LET is obtained by using motion parameters (i.e. velocity, direction of the nodes). Based on these parameters, the network selects the path to transmit the data packets between the nodes. Is a collection of wireless nodes that is self-configured to form a

network without the aid of any established infrastructure The nodes are mobile and their movement is random..

2. PROBLEM STATEMENT

In MANETs nodes battery energy and stability of links are often affecting the communication activities in network. This is the reason which is responsible for loss pf data packets and occurrence of congestion issue that networks for facing today. Inter-router authentication needed prior to the exchange of network control information.Often bandwidth-constrained,often power-constrained Limited security, unnecessary transmission is something to be avoided.A base station that will hand over the offered traffic from a station to another.The same entity will regulate the attribution of radio resources, for instance. When a node S wishes to communicate to a node D, the former notifies the base station, which eventually establishes a communication with the destination node. At this point, the communicating nodes do not need to know of a route for one to each other. All that matters is that both nodes source and destination are within the transmission range of the base station. If one of them fails to fulfil this condition, the communication will abort.

3. OBJECTIVE

All aspects of protocol operation are entirely on-demand,Nodes ignoreall topology changes not affecting them,Overhead scales automatically as movement increases,Zero overhead when stationary and found routes already,Also can support unidirectionallinks and asymmetric routes,Extensive implementation and demonstration with real workloads.Ad hoc networks have to face several challenges, such as dynamic topology, real-time communication, resource constraint, bandwidth management and packet broadcast overhead. These issues complicate the network to design the routing protocols. There have been many routing protocols developed for MANET over the past few years. The primary routing protocols for MANET consume considerable amount of the limited amount of battery power present in the nodes. Thus, routing in MANET is very much energy-constrained

4. EXISTING SYSTEM

The residual energy and stability are the twomain factors which are considered in the networkduring the transmission of the data packets betweenthe nodes. In the mobile Adhocnetworks finding afeasible path which satisfies the bandwidth and energyconstraint is very important. To maximize the chance of selecting a feasible path, the information is collectively utilized to make hop by hop selection. If a specific QoS request is not being requested by a user then high energy paths are selected in the network in order to improve the overall network lifetime. Every node in the MANET serves as a host or router generating a consuming or forwarding information. These mobile nodes are fitted with and powered by batteries. The exhaustion of participating nodes' battery power during routing between the nodes will reduce the network lifetime. Since charging or replacing batteries on site is a difficult operation, hence it is important to use the available energy efficiently to increase the lifetime of the nodes.Mounting an energy efficient routing scheme is one way of achieving optimized performance of network. In the network the nodes consume energy during transmitting beacon signals to neighbouring nodes for the intention of knowing their existence ortransmitting data to another node. When an intermediate node has been selected as a router that intermediate node consumes more energy than an idle node which is actively involved in transmission of data packets. Thus, the nodes' residual energy is important in influential the path to successfully completing data transfer without any interruption. Hence a routing

protocol is necessary that considers the nodes' residual energy which will perform better than the protocols that do not. The other factor which is considered during the routing is the stability which is an important design criterion to be considered while developing multi-hoprouting protocols for mobile adhoc networks. In general MANETs are easily flat to congestion issue due to the low to sensible capacity of the wireless links. Also, in the MANETs the mobile nodes are used in energy-constrained environments like sensorNetworks and embedded networks which cannot afford to lose their battery power quickly. Regular route changes can also result in out-of-order packet delivery, causing high jitter in multi-media, real-time applications. If the application layer is overloaded then it has to take care of lost and out-of-order packets which may lead to reduced throughput. Thus, stability and residual energy are important from Quality of Service (QoS) point of view for the network

ISSUES IN EXISTING SYSTEM

In the MANETs the residual energy andstability are one of main issues at present. Since theMANETs are limited resources and very dynamicnature which have made a challenging issue indesigning an efficient and stable routing protocolstrategy. In general while addressing the residualenergy issues at therouting level in MANETs, it isimportant to know the energy model which representsthe power consumption behaviour of the nodes in thewireless interfaces. It is very important to select the intermediate nodes with higher residual energy toroute the data packets successfully between the nodes.If the residual energy of the nodes is low then therouting of the data packets fail and this results indecrease of network's efficiency.

SECURITY REQUIREMENTS

Cisco has released an incredible new feature in ASA software version 7.2 that virtually eliminates the guesswork. Packet-tracer allows a firewall administrator to inject a virtual packet into the security appliance and track the flow from ingress to egress. Along the way, the packet is evaluated against flow and route lookups, ACLs, protocol inspection, NAT, and IDS. The power of the utility comes from the ability to simulate real-world traffic by specifying source and destination addresses with protocol and portinformation.Packet-tracer is available both from the CLI and in the ASDM. The ASDM version even includes animation

CONCLUSION

The final project was tested in different cases which are present the same network, which are present in other networks. If destination is present in different network then the message should be routed between the routers and finally replies to the source. If destination is present in same network the message need not to be routed between the two routers because both devices are connected to same network, so the switch itself passes the message and reply is sent to the source. If they do not have proper connection the packet discards.

FUTURE WORKS

All aspects of protocol operation are entirely on-demand, Nodes ignoreall topology changes not affecting them, Overhead scales automatically as movement increases, Zero overhead when stationary and found routes already, Also can support unidirectionallinks and asymmetric routes , Extensive implementation and demonstration with real workloads.Ad hoc networks have to face several

challenges, such as dynamic topology, real-time communication, resource constraint, bandwidth management and packet broadcast overhead. These issues complicate the network to design the routing protocols. There have been many routing protocols developed for MANET over the past few years. The primary routing protocols for MANET consume considerable amount of the limited amount of battery power present in the nodes. Thus, routing in MANET is very much energy-constrained.

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