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**ISSUES OF MULTIPATH ROUTING PROTOCOL
FOR MOBILE AD HOC NETWORKS**

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Issues of Multipath Routing Protocol for Mobile Ad Hoc Networks

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Abstract – In this paper we will discuss about different issues of multipath routing protocol for mobile ad hoc networks. Multi-path routing represents a shows potential routing technique for wireless mobile ad hoc networks. Multi-path routing attains load complementary and is more flexible to route failures. Recently, various multi-path routing protocols have been planned for wireless mobile ad hoc networks; apart from this routing is a major issue in ad hoc networks, different issues are associates with multipath routing protocol.

Keywords: Mobile ad hoc networks, MANET, Network, Routing

INTRODUCTION

Mobile ad hoc networks (MANETs) [1] consist of a collection of wireless mobile nodes which dynamically exchange data among themselves without the reliance on a fixed base station or a wired backbone network. In such networks, nodes are typically distinguished by their limited power, processing, and memory resources as well as high degree of mobility. Due to the limited transmission range of wireless network nodes, multiple hops are usually needed for a node to exchange information with any other node in the network. Thus routing protocols play an important role in ad hoc network communications. Since all nodes in an ad hoc network can be connected dynamically in an arbitrary manner it is usually possible to establish more than one path between a source and a destination. This property of ad-hoc network routing is called multipath routing.

ROUTING PROTOCOLS

Routing protocols are an important part of any network to discover and maintain routes between any given pair of node. Routing protocols in Ad Hoc network are differentiated in terms of hop-by-hop or source routing, reactive or proactive approach, single or multi-path, distance vector or link state based, unicast or multi-cast etc. A function of routing is included in every mobile host and multi-hops possibly will be essential to permit one node to interact with another node over the ad hoc network owing to the restricted transmission range. Reactive approach is considered more efficient than proactive approach as it only discovers and maintains routes between nodes which need to communicate with each other. Multipath routing protocols creates less overhead as compared to

single-path routing protocols and are susceptible to high network load, frequent route failure due to mobility, congested networks etc.

Issues of Multipath routing

Issues of Multipath routing are as:

➤ How to discover multiple paths [1]

To discover multiple paths from a source to a destination, the basic route discovery mechanisms used in DSR and AODV protocols need to be modified.

➤ How to select a path [1]

Once multiple paths are discovered, a multipath routing protocol should decide how to select a path for sending data packets. If a number of paths are discovered, there is a question to ask how many of these paths should be used?

➤ Route request tempest [2]

An enormous number of route request messages are created by the multipath reactive routing protocols. When the transitional nodes requires to process the duplicate request messages, there is a chance of unnecessary overhead packets be set up in the networks.

➤ Inefficient route discovery [2]

Certain multipath routing protocols keep away from intermediate node from forwarding a reply from its route cache in order to settle on node-disjoint or link

disjoint paths. Hence the source has to remain till it gets a reply from purpose. Thus the process of route discovery performed by the multipath routing protocol needs more time when compared with DSR or AODV protocols.

➤ **Problem Identification** [2]

There exist protocols for QoS aware routing in literature but what kind of link metric to use and how it can be used properly in MANET are still open issues.

➤ **How to distribute a load** [1]

Once a path or a set of paths are selected, a good multipath routing protocol should decide how to use these multiple paths while sending data packets. While using the paths, the following issues need to be addressed all paths can be used in a round-robin fashion. [3]

The routing protocols for ad hoc networks have been classified as Proactive/table driven e.g. Destination Sequenced Distance Vector (DSDV) [4], Optimized Link State Routing (OLSR)[5], Reactive/On-demand, e.g. Dynamic Source Routing Protocol (DSR) [6] , Ad hoc On-Demand Distance Vector routing protocol (AODV) [7], Temporally Ordered Routing Algorithm (TORA)[4] and Hybrid, e.g. Zone Routing Protocol (ZRP) [8], Hybrid Ad hoc Routing Protocol (HARP) [23].

Also Multipath routing based on hybrid approach (proactive and reactive) rarely consider QoS metrics for path selection. In [5], the Multipath optimized link state routing protocol uses OLSR as the base routing protocol and uses both proactive and reactive approaches for route discovery. But it does not consider the QoS based link quality metrics like power, bandwidth, delay etc. in routing table formation. In order to avoid these issues, we propose a QoS enhanced hybrid multi-path routing protocol which considers link quality as a QoS metric.

CONCLUSION:

In this paper we found that a routing protocol needs to endow with reliability and energy effectiveness with low control transparency. To ensure reliability, load balancing and QoS, multipath routing protocols proposed for Mobile ad hoc networks.

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