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

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# Analysis of Multipath Routing Protocol for Mobile Ad Hoc Networks

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**Abstract** – A fundamental problem in ad hoc networking is how to deliver data packets among nodes efficiently without predetermined topology or centralized control, which is the main objective of ad hoc routing protocols. Each node in the network functions as both a host and a router, and changes of network topology are distributed among the nodes. Design of efficient and reliable routing protocols in such a network is a challenging issue. This paper analyzes multipath routing protocol for Mobile Ad Hoc Networks.

**Keywords:** Networking, Mobile Ad Hoc Networks, Routing Protocol

## INTRODUCTION

Multipath routing is a technique that exploits the underlying physical network resources by utilizing multiple source-destination paths. It is used for a number of purposes, including bandwidth aggregation, minimizing end-to-end delay, increasing fault-tolerance, enhancing reliability, load balancing, and so on. The idea of using multiple paths has existed for some time and it has been explored in different areas of networking. In wireless networking, there are two main architectures: infrastructure (single-hop) networks and mobile ad hoc (multi-hop) networks (MANETs). Infrastructure networks include cellular networks and wireless local area networks. Users are connected via base stations/access points and backbone networks. Although users can handover between base stations or access points and roam among different networks, their mobility is limited within the coverage areas of the base stations or access points. Ad hoc networks exclude the use of a wired infra-structure. Mobile nodes can form arbitrary networks "on the fly" to exchange information without the need of pre-existing network infrastructure. Ad hoc networks can extend communication beyond the limit of infrastructure-based networks.

## REVIEW OF LITERATURE:

Multipath routing has been explored in several different contexts. Traditional circuit switched telephone networks used a type of multipath routing called alternate path routing. In alternate path routing, each source node and destination node have a set of paths (or multipath) which consist of a primary path and one or more alternate paths. Alternate path

routing was proposed in order to decrease the call blocking probability and increase overall network utilization. In alternate path routing, the shortest path between exchanges is typically one hop across the backbone network; the network core consists of a fully connected set of switches. When the shortest path for a particular source destination pair becomes unavailable (due to either link failure or full capacity), rather than blocking a connection, an alternate path, which is typically two hops, is used. Well known alternate path routing schemes such as Dynamic Nonhierarchical Routing and Dynamic Alternative Routing are proposed and evaluated in. Multipath routing has also been addressed in data networks which are intended to support connection-oriented service with QoS. For instance, Asynchronous Transfer Mode (ATM) networks use a signaling protocol, PNNI, to set up multiple paths between a source node and a destination node. The primary (or optimal) path is used until it either fails or becomes over-utilized, and then alternate paths are tried. Using a crankback process, the alternate routes are attempted until a connection is completed.

## SOME IMPORTANT KEY MULTIPATH ROUTING PROTOCOL FOR MOBILE AD HOC NETWORKS-

➤ **Ad Hoc On-Demand Distance Vector Routing (AODV)** uses traditional routing tables, one entry per destination. This is in contrast to DSR, which can maintain multiple route cache entries for each destination. Without source routing, AODV relies on routing table entries to propagate an RREP back to the source and, subsequently, to route data packets to the destination. AODV uses sequence numbers maintained at each destination to determine

freshness of routing information and to prevent routing loops. All routing packets carry these sequence numbers. AODV shares DSR's on-demand characteristics in that it also discovers routes on an as needed basis via a similar route discovery process. However, AODV adopts a very different mechanism to maintain routing information. It uses traditional routing tables, one entry per destination. This is in contrast to DSR, which can maintain multiple route cache entries for each destination. Without source routing, AODV relies on routing table entries to propagate an RREP back to the source and, subsequently, to route data packets to the destination. AODV maintains a route table in which the next hop routing information for destination nodes is stored [1].

#### ➤ **Destination-Sequenced Distance Vector (DSDV)**

The Destination-Sequenced Distance-Vector (DSDV) Routing Algorithm is based on the idea of the classical Bellman-Ford Routing Algorithm with certain improvements. DSDV still introduces the large amount of overhead to the network due to the requirement of the periodic update messages and the overhead grows [3].

➤ **The DSR protocol** is composed of two main mechanisms that work together to allow discovery and maintenance of source routes in MANET Mechanism [2]:

1. Route Discovery
2. Route Maintenance

➤ **Hybrid Protocols based Multipath Routing** protocols include the merits of both on-demand and proactive routing protocols. Zone Routing Protocol "ZRP" is an example of Hybrid protocol [4-6] which is similar to a cluster with the exception that each node acts as a cluster head and a member of other clusters. The routing zone forms limited mobile ad hoc nodes within one, two or more hops level away where the central node is positioned. The statement that hybrid routing protocols, provide better performance.

#### **CONCLUSION:**

In this paper we found that in multipath routing protocols few obstruction have an effect on power-aware routing and security protocols level which need to enhance.

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