

Review of Wireless Mesh Network for Different Routing Protocol

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ABSTRACT

Wireless Mesh Network is a new emerging and promising technology in the wireless network world. It could completely change the way its next generation wireless network using capability. Wireless Mesh Network characteristics have a strong impact on routing. It has the features of self- healing, self- configuring, self- organizing, low deployment cost, robustness, network maintenance and large area network coverage. Routing is the main task to satisfy various parameters like packet delivery ratio, packet loss ratio, throughput, overhead and delay. We generally use virtual clustering concept in the protocol. In this paper routing protocols used are AODV (Ad Hoc On Demand Distance Vector Routing) and DSDV (Destination Sequence Distance Vector Routing) and NS-2 simulator is used for simulation. This paper discusses the performance of AODV and DSDV in wireless mesh network by considering various metrics and compared.

Key words: Wireless Mesh Network, Routing Protocol, AODV, DSDV.

1. INTRODUCTION:

Wireless Mesh Network is a communication network made up of radio nodes that are organized in a mesh topology. It is the form of wireless ad-hoc network. Wireless Mesh Network consists of mesh clients, mesh routers and gateways. Mesh clients are laptop, cell phones and various wireless devices and the mesh routers forward traffic to the gateway and vice versa. Access points that have wired connection in WMN are known as Mesh Points whereas access points that don't have wired connections are Mesh Routers. Mesh points and Mesh routers are equipped with multiple wireless interfaces which are made on same or different wireless technology. Mesh network is very reliable and also offers redundancy. When one node drops out of the network or can no longer operate due to hardware failure, its neighbor can find another route using routing protocol. Applications of WMN are Defense and National Security, Automated Meter Reading, Industries, Office Management, Industrial Plant Monitoring, Home Automation etc.

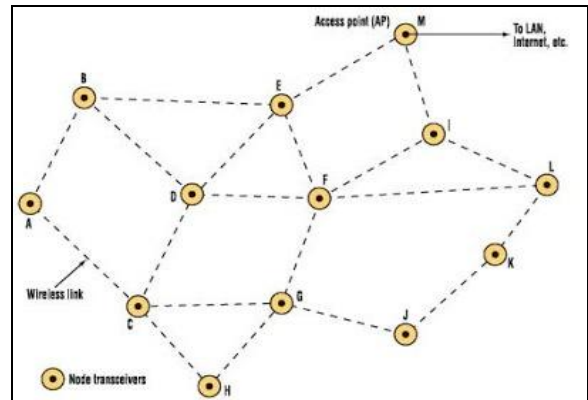


Fig. 1. Wireless Mesh Network

Wireless Mesh Network is a collection of nodes which are interconnected by wireless links. Wireless mesh network nodes are differentiated as stationary and mobile nodes. It is the subclass of adhoc networking. Wireless mesh network are developed for military applications. There exist a family of ad hoc routing protocol.

Routing Protocols :

The goal of wireless mesh network is to establish a correct and efficient route between the nodes and to ensure correct delivery of packets. Routing protocols are used whenever a packet needs to be transmitted to the destination through number of nodes. These protocols find the route and deliver the packet to the proper destination. Routing is used to select the best suitable path for the transmission of packets from one place to another.

Routing Protocols are divided into:

- 1.Proactive protocol
- 2.Reactive protocol

Proactive protocol:

These are also known as table driven protocol in which route to all nodes is predefined in routing table. These protocols require each and every node to maintain one or more tables to store routing information. These protocols

give response to change in network topology by providing route update throughout the network. Packet forwarding is done fast because routes are defined before transferring packets. Proactive routing protocols have the significance of providing lower latency in packet delivery and possibility of supporting applications which have quality-of-service constraints.

Example- DSDV (Destination Sequence Distance vector Routing)

Reactive protocol:

Generally, reactive protocols perform route discovery mechanism between the source and the destination, so that these protocols find the route only when necessary. Routes are not predefined for routing. They are created when required. A source node finds a new route whenever transmission is needed. It invokes the route discovery mechanism to determine the path to the destination. It depends on flooding algorithm. A node sends packets to all its neighbours and intermediate nodes forward that packet to all their neighbours. This is repeated until it reaches the correct destination.

Example- AODV

2. LITERATURE REVIEW:

“Multicast Scheduling Algorithm Supporting Spatial Minislot Reuse for IEEE 802.16 Mesh Networks” [1] this paper is presented to give high throughput. It is more scalable with respect to increasing number of multicast groups and number of members inside each multicast groups.

“Routing Protocol in Wireless Mesh Networks: Challenges and Design Considerations” [2] In this paper the characteristics of wireless mesh network is discussed and compared with other wireless networks. Existing routing protocol have been categorized according to these properties.

“Simulation and Performance analysis of Proactive, Reactive and Hybrid Routing Protocols in MANET” [3] In this paper performance of routing protocol is analyzed with scenario of 5 nodes and observations are made with variation in node speed in network.

3. PROPOSED SYSTEM

In this paper we review the performance of AODV and DSDV protocol in wireless mesh network. For that we have to first write the TCL coding for generating nodes and their connection. TCL coding allows sending more bits per symbol and achieves higher throughput and better spectral efficiency. NS2 simulator will be used. This software will continuously monitor the network parameter and channel state information. After that wireless mesh network will be

created in which all the nodes are stationary forwarding each other packets. This network will be created using AODV and DSDV protocol and results will be calculated. And then by increasing the number of nodes for both the protocol results will be compared.

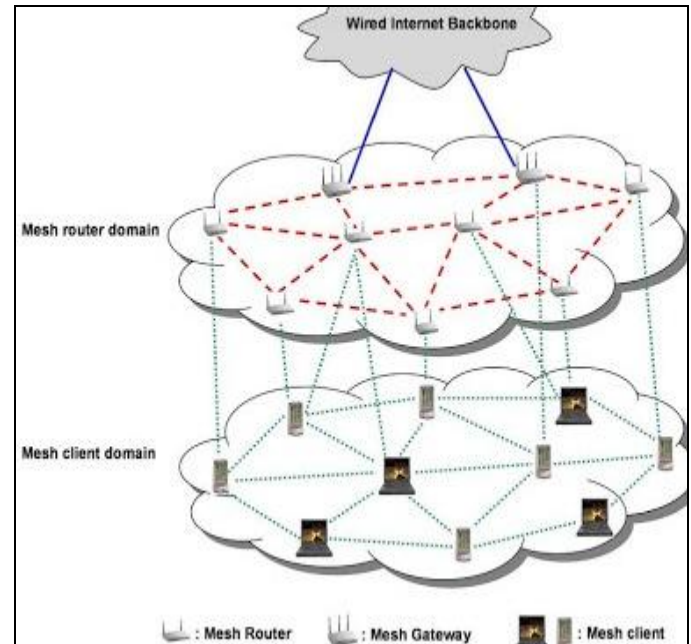


Fig.2. Wireless Mesh Network with mesh router, clients and gateway

4. OBJECTIVE OF PRESENT WORK

The main objective of project is to design wireless mesh network using two routing protocol that are AODV and DSDV and compare the performance of both the protocol for various parameters.

5. WORK PLAN AND METHODOLOGY

The first step of my project is to write the TCL coding for generation of nodes and their connection so that the wireless mesh network is created by considering various performance metrics. This network is created by using two protocols AODV and DSDV and thus parameters are evaluated and the performance of both the protocols in wireless mesh network will be compared by varying the number of nodes.

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