A STUDY ON PROTOCOLS IN WIRELESS MESH NETWORK

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ABSTRACT:

Wireless Mesh Networks (WMN) are the networks in which each node can communicate directly with more than one peer nodes. Wireless mesh networks can self form and self heal. In this paper we discuss about the some protocols like ODMRP, IMAODV, AODV and so onto increase the throughput. After that comparisons then choose the best one for the future enhancement.

Keyword: Wireless Mesh Networks, Peer Nodes, Self Heal.

INTRODUCTION:

Wireless mesh network (WMN) is a communications network design of radio nodes planned in a mesh topology. Wireless mesh networks are contains of mesh clients, routers and gateways. The mesh clients are often computers, mobiles, Bluetooth devices and other wireless devices during the mesh routers send traffic from and to the gateways which may be not connect to the Internet. Sometimes called a mesh cloud when the coverage area of the radio nodes work as a single network in Access to the mesh cloud is dependent on the radio nodes working in match with each other to make a radio network. When a node can't operate, the rest of the nodes can still have communication with each other nodes, directly or using the intermediate nodes. The Wireless Mesh Network is an emerging new technology which is being adopted as the wireless internetworking solution for the future. WMN has characteristics are rapid deployment and the WMNs don't rely on any fixed infrastructure. Hosts are relying on each other to keep the network connected. Wireless Internet service providers choosing WMNs to offer Internet connectivity, as it allows a fast, easy and un-expensive network. The WMN's increased popular wireless networking technology for establishing the last-mile connectivity for home networking, community and communication protocols for these networks it is imperative to design efficient and secure of transmissions in the wireless medium and the dependency on the intermediate nodes for multi-hop communications in such networks lead to several security vulnerabilities.
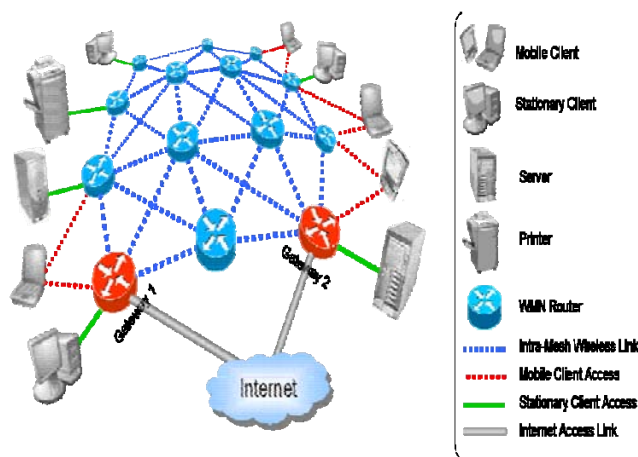

Figure 1.1 Wireless Mesh Network

A Wireless Mesh Network (WMN) is a communications network made up of radio nodes organized in a mesh topology. It is a form of wireless ad hoc network. Wireless mesh networks (WMN's) contains several stationary wireless routers which are interlinked by the wireless links. Wireless routers are access points (APs) for wireless mobile devices. Through the high speed wired links, some wireless routers act as a gateway for internet. Wireless mobile devices are transfer data to the corresponding wireless router and further these data's are transferred in a multi-hop manner to the internet via intermediate wireless routers. The popularity of WMN's is due to their low cost and auto-organizing features. Mesh routers may be mobile, and able to move according to exact demands coming in the network. These mesh routers are not limited in terms of resources compared to other nodes in the network and thus can be used to perform more resource and functions. In this way, the wireless mesh network different from an ad-hoc network. These nodes are often forced to do by the resources.

LITERATURE REVIEW:

Rakesh and et al proposed that [1] wireless mesh network always connect with the neighbouring node to send a data to the destination. In wireless mesh network all nodes are perform perfectly during transaction. Then data transmission leads to unexpected consequences in the network where these nodes act as intruders. Here they found the attacker which is against the high throughput multicast routing in wireless mesh networks. These attackers are highly successful against multicast protocols based on high-throughput metrics. so that purpose we secure the path selection in networks. Various attacks against multicast protocols that use of high-throughput metrics, including LOCAL METRIC MANIPULATION and GLOBAL METRIC MANIPULATION. And they show that aggressive path selection is a double edged sword: It increased throughput, it also leads to devastating effects in the presence of attacks here they used the rate guard mechanism to defend against the attacker. Rate Guard contains measurement-based detection and accusation-based reaction scheme to deal with the metric manipulation and packet dropping attacks. To prevent intruders from destroy the defence mechanism itself, Rate Guard limits the total number of accusations that can be produced by a node. Applying rate guard mechanism to detect the intruder in the network.

Anwar1and et al proposed that [2] the design of an efficient routing protocol for Wireless Mesh Networks (WMNs) demands sufficient consideration of the pertinent features. But the wireless mesh network is a permanent or semi-permanent network. The constituents of WMNs are mesh clients and mesh routers which form the backbone of the network due to their limited mobility capability. And also mesh routers provide network access to both mesh and conventional clients. Route discovery among nodes can be achieved by using multicast routing protocols which help to facilitate communication between nodes Distance Vector Multicast Routing Protocol (DVMRP) is the first protocol designed for multicasting in Layer 3 of TCP/IP protocol stack. then, a number of protocols were designed such as Multicast Open Shorted Path First (MOSPF).The MAODV-IM starts performing better than its counterpart while the traffic load is increased, Then proposed protocol selects reliable path and avoid highly loaded and lossy links which original MAODV never support. Instead, when multicast traffic load is 60 packets/sec, PDR of MAODV-IM is 11.49% higher than traditional MAODV and then the average throughput of MAODV-IM is higher than MAODV. For example, when multicast traffic load is 60 packets/sec,Then Average throughput of MAODV-IM is 7.64% higher than traditional MAODV.MAODV-IM avoids the loaded and lossy links. Finally MAODV-IM is better than MAODV in terms of Packet Delivery Ratio (PDR), Throughput and Average end-to-end delay.

Moustafa and et al proposed that [3] a new on demand multicast routing protocol, Source Routing based Multicast Protocol (SRMP) to increase a better result for throughput, route lifetime .and so on. SRMP constructs a mesh to connect group members, providing robustness against mobility. The SRMP also including route discovery otherwise reply, forwarding group selection, data forwarding and maintenance procedures. And This SRMP protocol shows important to decrease in the control overhead; its impact on the delay is acceptable depending on the mobility type, and provides an incremental delivery ratio starting from intermediate mobility. ODMRP produce a worst performance in Join-reply packet compared to SRMP.Then this protocol applies the source routing mechanism, proposed The DSR unicast protocol act as modified manner.

Royand et al. Proposed that [4] numerous link-quality based routing metrics have been proposed for choosing high-throughput paths for unicast protocols. They adapt certain routing metrics for unicast for high-throughput multicast routing and propose new ones not previously used for high-throughput. ODMRP equipped with any of the link quality- based routing metrics can achieve higher throughput than the original ODMRP. The heavily penalizing lossy links is an effective way to avoid low throughput paths and SPP and PP achieve the highest throughput performance because of their aggressive manner of penalizing lossy links. ODMRP consist the five metrics, ETT, ETX, METX, PP, and SPP, outperforms the original ODMRP by significant margins of improvement similar to those achieved in unicast routing using high-throughput routing metrics, on average, ODMRP using SPP and PP achieve 14% and 17% higher throughput over ODMRP, respectively..The routers in mesh networks are static, and dynamic topology changes are much less of a concern in such networks. They are used some routing metrics to enhance the throughput. The experiment results show that ODMRP enhanced with link quality routing metrics can achieve up to 17.5% throughput improvement as compared to the original ODMRP.

Garg and et al proposed that [5] Hybrid Wireless Mesh Protocol (HWMP) using this protocol to select high throughput path to reduce the overhead of control messages. Some control messages such as Path request (PREQ),

these messages transmit again and again by every interface. HWMP protocol is used for the Multi Interfaces and Multiple Channels (MIMC) it also calculates the overall cost of selecting path. IEEE 802.11 it does not consider the channel diversity. This protocol is used to overcome this problem and also choose the high throughput path. Some other routing protocols are recently used such as Dynamic source routing (DSR), Link Quality Source Routing (LQSR), Multi radio-Link Quality source routing(MLQSR),The Hybrid Wireless Mesh Protocol(HWMP) protocol combines an on- demand mode with a proactive tree.

CONCLUSION:

In this paper we have analysed some protocols and mechanism to increase the high throughput each protocols have some unique specialization within that and also having some drawback also. Here we consider various protocols which is used to achieve high throughput in wireless mesh networks. Different protocols verified such as Source Routing based Multicast Protocol(SRMP),Distance Vector Multicast Routing Protocol(DVMRP),Multicast Ad-hoc On-Demand Distance Vector(MAODV),on-demand multicast routing protocol(ODMRP),Hybrid Wireless Mesh Protocol(HWMP).At last we have chosen one protocol namely IMAODV-IM which is the best one to get better solution. In future work we plan to enhance this protocol to get a better solution.

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BIOGRAPHY

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