

A Survey on Wireless Mesh Network based on Routing Protocols

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Abstract - Wireless Sensor Network info transmission, which can be used to exactly estimate the system working quality. The WSN reliability exact calculation method presented in this paper gives insight on how to secure WSN through reliable backbone connectivity, dependable sensor network and data aggregation. Solutions to meet WSN security interconnectivity reliability, network dependability and data aggregation scheme for robust security systems designing also have been introduced. The Wireless Mesh Networks referred as WMN is an emerging concept in wireless communications network. The addition of WMNs with additional networks such as the cellular system, Internet, IEEE 802.11, sensor networks, etc., can be talented in the mesh network finished the gateway and bridging functions. Wireless Mesh Network has a huge potential to be the future technology for providing internet connections to hand held devices. WMN has three types of nodes: mesh router, mesh client and gateway. MRs are the users of the WMN. Routing of packets from source MC to destination MC is performed by the MR. the GW receives and transmits the internet packets to and from the WMN. Many Routing schemes have been proposed for wireless mesh network which provides different level for maintain quality-of-service. Some provides new routing protocol for data transformation and some provides security over existing routing protocol. As the backhaul construction of crossbreed ad-hoc/cellular schemes, high-bandwidth is more critical to WMN backbone.

Keywords: Wireless Sensor Network, Mesh Network, Routing Protocols and Hybrid ad-hoc/ cellular systems.

I. INTRODUCTION

Wireless Mesh Network [1], [2] has a huge potential to be the future technology for providing internet connections to hand held devices. WMN has three types of nodes: mesh router (MR), mesh client and gateway. MRs are the users of the WMN. Routing of packets from source MC to destination MC is performed by the MR. the GW receives and transmits the internet packets to and from the WMN. Wireless mesh routers are deployed in the WMNs as partially mobile or fully static nodes whereas mesh clients are dynamic nodes in the network. WMNs have much compensation such as low up-front price, easy network maintenance and robustness in network operation. Regular path length which is clear by the end-to-end hop distance

averaged over the network, has improved worth in the situation of WMN due to its even network topology.

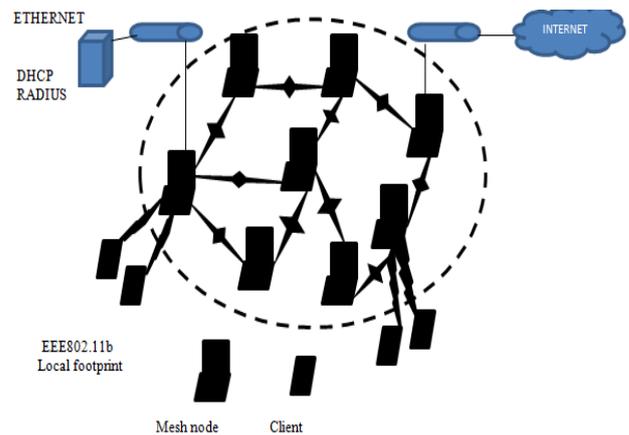


Fig.1: Wireless Mesh Network

II. ADVANTAGE AND DISADVANTAGES OF WIRELESS MESH NETWORK

Advantages

- WMN offer the advantages of self-organizing and self-healing but it has the problem of providing seamless mobility.
- Many mobility organization schemes have been future [3]. These schemes are categorized into two types: tunnel based approach and non-tunnel based approach.
- In tunnel based approach, packets from the GW to MC will be sent through a tunnel but in case of non-tunnel based approach no tunnel is used for sending of packets.

Disadvantages

- Maintaining mesh systems can be very hard to manage. It needs continuous supervision because of the redundancy present in the network. Accomplished network managers will find it informal to accomplish this thoughtful of topology.
- In arrears to the detail that building this topology needs a lot of plans [4] it will essential a lot of principal to spend in. It may be expensive but the service it delivers you will definitely give back the capitalized capital.
- Every network topology has its own ups and downs. It will only matter on how you construction it actual well

and if the wildlife of your business needs a bigger network system.

- It is significant to keep learning about what you essential in your business or place to be able to come up with an effective scheme where in your asset won't go to leftover and your profits will give you outstanding output.

III. APPLICATION OF WIRELESS MESH NETWORK

- In CBRP the nodes of a wireless network are alienated into several disjoint or overlying bunches. Each bunch elects one knob as the so-called cluster head.
- These singular nodes are responsible for the routing process [5]. But cluster heads are able to connect with each other by gateway nodes.

- A gateway is a node that has two or more cluster heads as its nationals or when the clusters are splits at least one cluster head and another gateway node.

IV. WIRELESS MESH ROUTING

WMN backbone routers use multi-hop communication correspondingly to ad hoc networks Figure 2. On the other hand, mobile users attach to the backbone via mesh routers live the role of access points. The backbone routers are [6] characteristically stationary, which permits routing metrics to model link quality instead of simply using the number of hops. Supposing that the common-case application in WMNs is Internet access, traffic is intense on links close to the gateways.

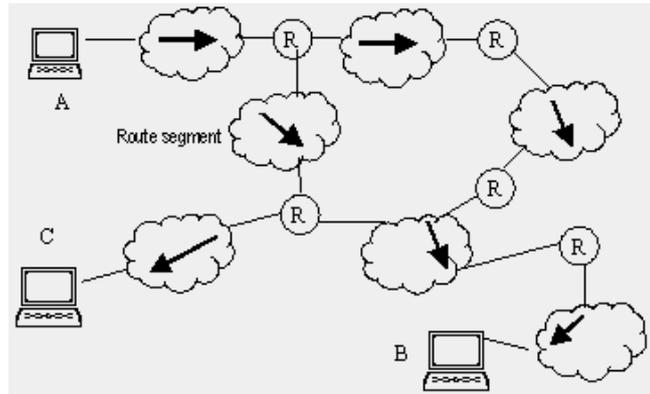


Fig.2: Routing Protocol

a) Ad hoc On-Demand Distance Vector

Routing protocol is used for mobile nodes in an ad hoc network [7]. It offers quick adaptation to dynamic link circumstances, low network use, low processing and memory overhead and determines unicast routes to destinations within the ad hoc network. Before AODV, DSDV routing protocol used for the communication. It is table-driven direction-finding scheme founded on Bellman ford algorithm. As DSDV is table-driven routing scheme, it store predefine communication path. It is very well suited for wired network but not for wireless network where nodes are portable. If any node is unavailable, communication stop, because of this reason AODV routing protocol is introduced.

Advantages of AODV

Because of its sensitive nature, AODV can grip highly dynamic behavior of Vehicle Ad-hoc networks [8]. It used for together multicast and unicast spending the 'J' (Join multicast collection) flag in the packets. B.

Limitations AODV

Obligation on broadcast medium: The procedure expects/requires that the nodes in the broadcast medium can detect each other's' broadcasts.

Above on the bandwidth: Above on bandwidth will be occurred compared to DSR, when an RREQ travels from node to node in the process of learning the route info on demand, it sets up the reverse path in itself with the speeches of all the nodes through which it is transitory and it carries all this info all its way.

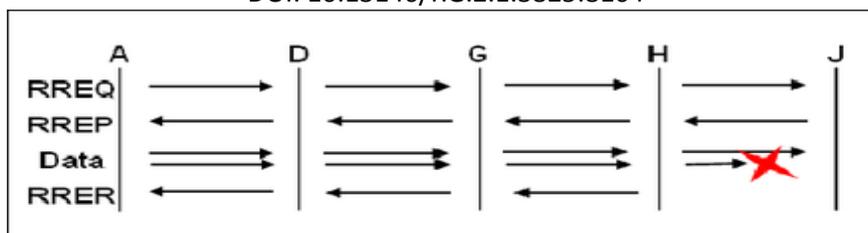


Fig.3: AODV Routing Protocol

V. RELATED WORK

Gaur, Nidhi et.,al(2014) [8] designed of a low complexity spatial time division multiple access link scheduling algorithm for wireless mesh network. In this paper, link scheduling is considered as a decision-making problematic. This method is conflicting to physical interference model that requires SINR evaluation in global network. We suggest the mesh attention possibility as a new performance metric in the design of mesh link scheduling algorithm. Constructed on this method, we deliver the tradeoff between spatial reuse and mesh coverage probability, which can be recycled as a benchmark in the proposal of scheduling algorithms for wireless mesh system. Wei Liu1 et.,al(2012)[9] supposing a wireless mesh network which contains of wireless mesh routing devices and a base station directly linked to external networks. The base position is located at the center of the wireless mesh network chooses a certain amount of wireless mesh routers as entries, and establishes a connection with each of them. Our goal is to easily and rapidly find the applicant gateways that exploit the system amount without resolving a complex optimization problematic which comprises a large number of limits and includes heavy calculation load. The presentation of the proposed scheme is assessed by numerical examination, and established through computer imitations. The results show that our proposed scheme can determine the appropriate applicant gateway with high correctness when there is a certain variance in the amount of traffic made by users at all wireless mesh router. Alrayes et.,al(2012)[10] AODV routing protocol is being considered as routing procedure in hybrid wireless mesh net. Route breaks in mobile mesh client is one of the research issues in hybrid wireless mesh net, particularly if the traffic originates from internet to movable mesh clients. To ensure the heftiness of the network a link breaks in direction-finding protocol should be able to repair as fast as possible. In this paper, we have proposed a novel device for the improvement of route maintenance features of AODV in hybrid wireless mesh networks. The suggestion device usages the ability of mesh router mainstay in terms of negligible mobility and no restraint in power consumption. Where edge mesh routers that involves in route path between the internet gateway and mobile mesh customers can finds a new way when the route breaks if a local repair is fail between mobile mesh clients. Imitation results display that the planned method outdoes the ordinary AODV under

routing overhead, end to end delay, amount, number of packet distribution ratio in hybrid Wireless mesh networks.

VI. PREVIOUS WORK

- Load-aware Non-Persistent small-world long link Direction-finding algorithm for small-world wireless mesh networks to attain lower [11] average broadcast path length for data transfer meetings between a set of source knob and destination node pairs in the network.
- LNPR uses load complementary strategy to improved allocate the network traffic amongst the normal-links and the non-persistent long-links in the small-world wireless mesh systems for efficient usage of long-links which are valued data broadcast paths in the network. LNPR delivers 58% to 95% development in call obstructive possibility and 23% to 70% in maximum load discount with increase ranging since only 0.7% to 9% growth in regular transmission path length. Small-world wireless mesh networks find many applications in rustic and unrestricted networks for cost-effective transmission.
- The scheming of a low difficulty altitudinal time division multiple access link scheduling algorithms for wireless mesh networks. In this paper, association arrangement is measured as a choice making problematic. This method is contrary to somatic interference typical that needs SINR assessment in worldwide network.
- We suggest the mesh attention possibility as a novel presentation metric in the plan of mesh association scheduling algorithm. Established on this method, we deliver the tradeoff among spatial reuse and mesh coverage probability, which can be used as a benchmark in the design of preparation algorithms [12] for wireless mesh network. Transition, which can be recycled to precisely approximation the system working quality.
- The WSN reliability exact calculation method presented in this paper provides vision on how to secure WSN concluded reliable mainstay connectivity, dependable sensor network and data accumulation. Explanations to meet WSN safety interconnectivity dependability, network dependability and data aggregation arrangement for robust safety systems scheming also have been obtainable.

VII. CONCLUSION

WMN is multihopping infrastructure based network. Therefore, security solution available for ad-hoc or wireless network is ineffective for WMN. Also, there should be more improvement requires in current AODV routing protocol with data security to for implementing in wireless mesh network which can decrease computational overload of the network and maintain QoS in term of bandwidth, system throughput end-to-end communication delay. AODV routing protocol can be improved if we calculates the load at each node and take the optimal shortest path. The scheme has been analyzed and compared with MEMO, iMesh and WMM. Numerical analysis shows that FPBR performs better than MEMO, iMesh and WMM with respect to handoff cost, packet delivery cost and total communication cost.

VIII. REFERENCES

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