

Wireless Mesh Network Re-Authentication

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Abstract: Wireless mesh network rapidly change with current research. In it each wireless device has multiple uplinks for data transmission and speared signals in Omni and Directional. Currently mesh network make communication between devices with in each device zone but when user device move from one wireless device zone to another, where again need for new configuration in new zone wireless device to provide connectivity to user device. In our term paper we will proposed a solution for this problem. Wireless network work with 802.11 in wireless mesh network. In solution to solve mobility issue of wireless devices we present the combination of wireless network 802.11s, 802.15 and 802.16. Each wireless standard define wireless area of wireless devices in mesh network and make a division at each level between devices such as PAN (Personal Area Network), LAN (Local Area Network) and MAN (Metropolitan Network). User device make configuration at its area wireless device and mobility of this device from one area to another will be manage by gateway device of that zone and no need for reconfiguration every time on user device mobility.

Keywords: Data Transmission, Wireless Mesh Network, Provide Connectivity, Personal Area Network.

I. INTRODUCTION

Today wireless technology is world most commonly use medium for communication. There are different topologies in wireless network like cable network but currently most commonly used for better communication between devices is mesh network wireless as well as in cable network. Due to fast communication or data passing between devices delay is unbearable so that's why mostly research is occur on remove or reduce delay as much as can. In wireless mesh network wireless devices are connected with each other with multiple uplinks in cabled or wireless point to point link as redundant link for better communication and reduce delay.

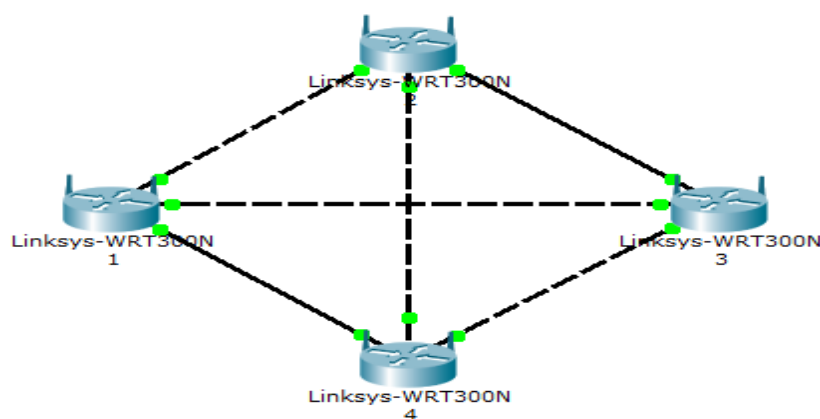


Figure: 1

In figure: 1: wireless mesh network connectivity is shown; each wireless router is connected with each other with multiple links as redundant link. Now the problem which we face in today wireless mesh network is the communication delay when user system going to move from one region to another wireless region. When user system move from one to another wireless router area that again require reconfiguration for connectivity which will take a time for assigning authentication by wireless router. Today for fast communication this huge delay is not bearable in computer network. In our term paper we will purposed a solution for this problem with the combination of wireless network topologies.

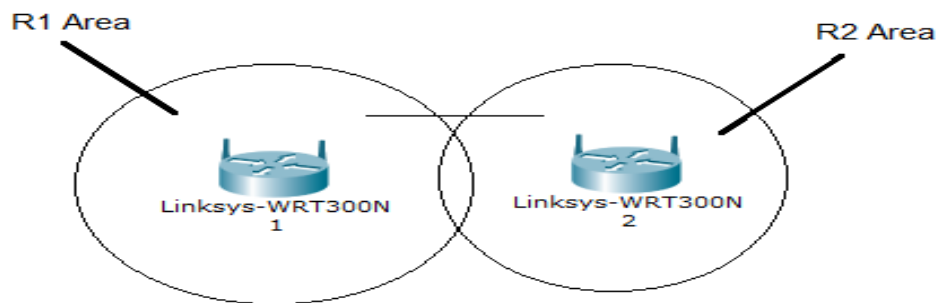


Figure: 2

As per Figure: 2 problem statement is define that when a wireless user move from one wireless router area zone to another router area zone that time the user system connectivity is removed from previous router and need to reconfiguration and authentication in new wireless router area zone. Such as from R1 area to R2 router area, user system needs reconfiguration in R2 wireless router area again for network connectivity.

II. LITERATURE REVIEW

In recent years management of multi hop wireless networks has an hot area of research. In literature many proposals for hierarchical and clustering schemes are proposed for ad hoc networks and more recently for WMNs and wireless sensor networks. To handle efficiently frequent network topology changes due to ad hoc nodes clustering is introduced [4]-[13]. So clustering quickly adapts topological changes designed for ad hoc networks so these protocols are not suitable for WMN due to two reasons: different communication patterns and static topology. Clustering algorithm in [4] for “quasi-static” ad hoc networks having static nodes or very slowly moving adaptable for WMN but appropriate for one-hop clustering. Scheme in [5] for ad hoc networks forms cluster on node mobility, dynamically organize nodes in cluster to maintain availability of path to cluster destination and simplify routing operations in mobile environment. This scheme is not suitable for WMN as it is based on mobility of APs which are static in WMNs.

In [9],[10] d-hop clustering algorithms allow a node at most d hop away from CH in any cluster, not limited by one-hop clustering constraint but clusters have same radius and not suitable for RRU cost minimizing Clustering scheme in [11]-[13], connected dominating set (CDS) in graph theory, identify smallest CHs that forms CDS known as Minimum Connected Dominating Set (MCDS). Thus CDS not include each ad hoc node in set of CHs has at least one adjacent node belonging to CH set. Set of CHs operate as routers. This scheme is not suitable for WMN since it concerns with one-hop clustering. More recent clustering algorithms selecting CHs based on energy consumption constraint proposed

in [14]-[16] but our concern is to achieve efficient resource utilization rather than reducing energy consumption in WMNs. Clustering proposed in [17]-[20] combine WMNs with wired backbone and investigate gateway placement problem in WMNs, divide WMN into minimum number of disjoint macro-clusters, a gateway assigned to each macro-cluster that connects it directly to wired network, minimizing deployed gateways need to connect all APs to wired network matter to QoS constraints like cluster radius, gateway capacity etc. Our scheme focus on virtual clustering inside each macro-clustering dividing it into virtual micro-clusters to minimize RRU cost in WMN. So required gateways are minimized by macro-clustering and RRU cost is reduced by micro-clustering. Both clustering schemes are matched and required to achieve cost effective WMNs.

III. CASE STUDY

Quality of services is main objective in network communication because a little bit delay in communication is not bearable in today communication medium. In wireless network reconfiguration method is cause of delay in communication which is not a good sign for Quality of Services in computer network. Such as a company move its whole network on wireless medium. Wireless clients nodes are in hundreds but they face a problem when a user system make a movement from one area to another that time he/she need renew configuration for become the company network part. This reconfiguration method need a time which is not bearable for network communication. Company whole network is on wireless devices so according to current situation user system need every time reconfiguration for network communication when he or she moves from one place to another.

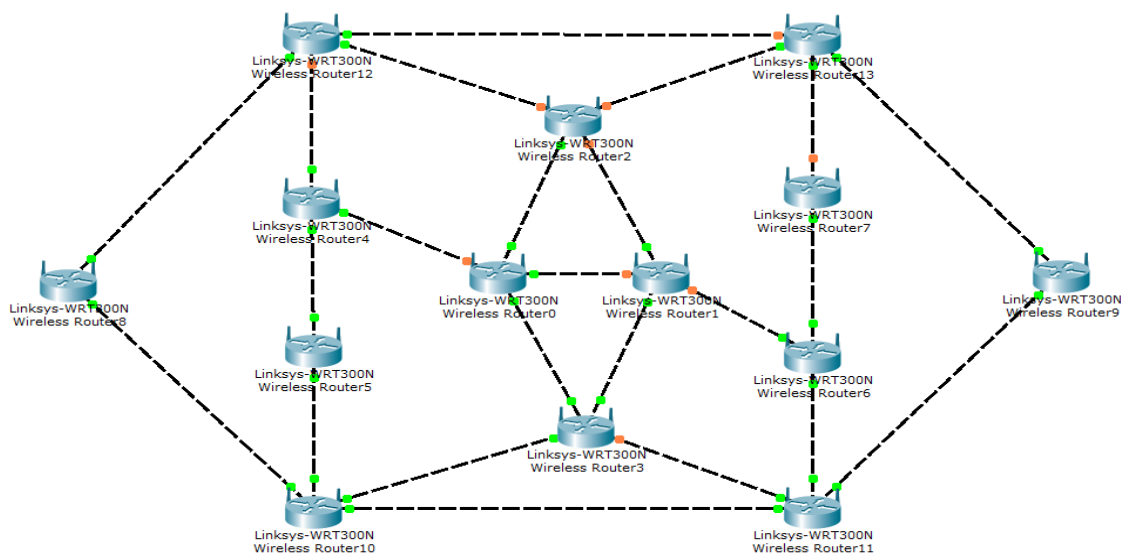


Figure: 3

In Figure: 3 if user system connected to Wireless Router 1, after certain period he or she move to another department, user system require resetting in new zone. This is bad approach for communication. Due to hundreds client nodes every user need resetting after a movement in his company network. For quality of services we need to configure a user system one time in network and no need reconfiguration when user moves from a site to another. Our wireless mesh network need to able pick one configuration of a system for whole company network. Each wireless router takes user system connectivity automatically and as well as secure communication.

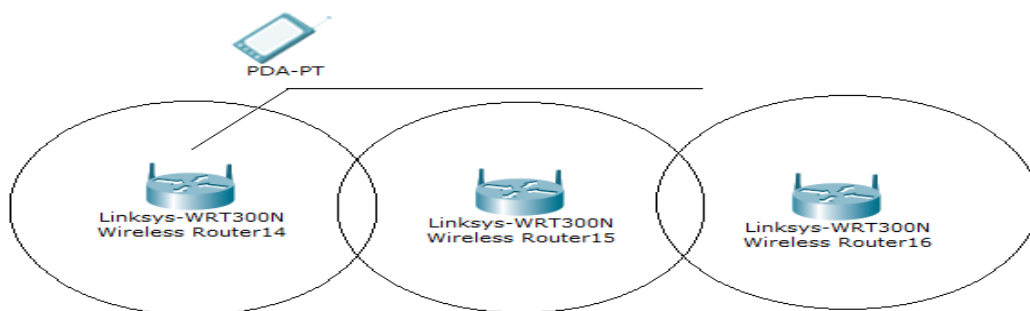


Figure: 4

IV. PROPOSED SOLUTION

In wireless mesh network whole network topology act like a single network means local area network for each wireless router or device. For better communication or removing reconfiguration issue we will combine wireless topologies for connectivity such as 802.11, 802.15 and 802.16. With it each user can connect with his topology router without resetting. When user makes movement out of his network, that time main router perform his functionality as a gateway and manage user system connectivity without delay. As per upper case study we will solve this issue with division of wireless network in topologies. 802.15 is PAN (Personal Area Network) IEEE standard define for wireless network topology. In upper case study we assign this network area to first two wireless routers. Next router boundaries or 802.11 and 802.16 means LAN and WAN\MAN. In 802.15 areas one router perform gateway task for those system user who want to move in next area. Similarly in 801.11 one router perform same task like in PAN, it receive remote user from PAN area and provide connectivity to system user in its wireless network range.

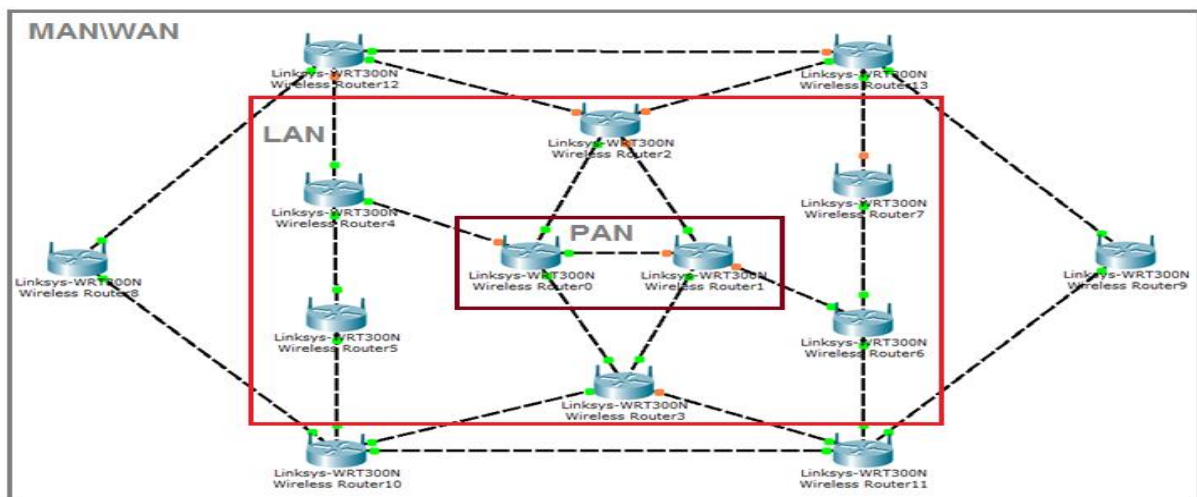


Figure: 5

V. FUTURE WORK

We will design a protocol to manage Wireless Mesh Network in topologies. A mechanism which will provide wireless network connectivity without re-authentication. After activation of this protocol one router in each network perform gateway router task and manage authentication table for of each node and share it when node change the zone.

VI. CONCLUSION

As we know quality of services is the main theme for connectivity. With our proposed solution WMN work without delay in communication and no need for authentication when user system move from one to another wireless router zone. Every time this task will perform automatically by router with the change of areas divisions.

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