International Journal of Education and Science Research Review
E-ISSN 2348-6457
Volume-2, Issue-3 June- 2015 P-ISSN 2348-1817
www.ijesrr.org Email- editor@ijesrr.org

Wireless Mash Networking

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ABSTRACT:
A wireless Mash network is a new exciting Technology that is anticipated to resolve the limitation and to significantly improve the performance of Adhoc network, wireles local area network. Wireless Mash Network is a decentralized networking Technology that is currently being adopted to connect peer to peer client and large scale back bound network.It will deliver Wirless Service for a large variety of application in personal local campus and metropolitan area in WMNS, nodes are comprised of Mash router and Mash Client each note operate not only as a host but also as a router, forwarding packets on behalf of other nodes that may not be within direct wirless transmission range of their destination. A WMN is dynamically self organized and self configured. With the node in the network automatically establishing and maintaining mash connectivity among themselves creating in effect, and adhoc network.
Mash network provide a number of application. For Example indeficult environment such as emergency situation, tunnel, oil rigs, betel
field surveillance, high speed mobile video application on board public transport or real time racing car telemetry some current application are.
1. USA military Force are Now using wireless Mash networking to connect there computer.
2. Electric meter now being deployed on residence transfer there reading from one to another & eventually to the centeral office for billing without the need for human meter readers are the need to connect the meter with cable.
3. Broad band home networking.
4. Community and neighborhood networking.
5. Enterprises networking.
6. Metropolitan area network.
7. Transporation system
8. Health and Medical system
9. Building automation.

AN INTRODUCTION TO WIRELESS NETWORK:
Wireless network refer to any type of computer network that is not connected by cable of any kind. It is a method by which telecommunication network and Enterprise (Business), installation avoid the costly process of introducing cables into a building, or as a connection between a various equipment location. Wireless
Telecommunication network are generally implemented and administered using a transmission a system called radio wave (Radio wave are a type of electromagnetic radiation with wave length in the electromagnetic spectrum longer than infra red light)
Wireless networking is used to meet many needs. Perhaps the most common use is to connect Laptop user who travel from location to location. Another common use is for Mobile Networks that connect via satellite. A wireless transmission method is a logical choice to network a LAN segment that must frequently change location. The following situation justifies the use of wireless Technology.
1. To span a distance beyond the capabilities of typical cabling,
2. To provide a backup communication link in case of normal network failure.
3. To link portable or temporary work station.

4. To overcome situation where normal cabling in dificuilt or financially impractical, or to remotely connect user network.

LITRATURE SURVAY ON WIRELESS MASH NETWORK:

Wireless Mash Network have emerged as a promising concept to meet the challenges in next generation network such as providing flexible, adaptive and reconfigurable architecture while offering cost effective solution to the service provider. Unlike traditional wifi network, with each
access point connected to the wired network, in WMNS only a subset of the APS are required to the connected to the wired network. APs that are connectedto the wired network are called the internet gateway. While the APs that do not have wired connection are called the Mash router. The MRs are connected to the IGWs using multi hope communication .the IGWs provide access to conventional client and interconnect adhoc, sencer cellular, and other network to the internet.

Wireless Mash network is a most typical application of Mash architectures. As various Wireless Network evolve in to the next generation to provide better services, a key Technology, Wireless Mash Network has emerged recently. Wireless was originally developed for military application but has under gone significant evolution in the past decade. As the cost of the Radio plummeted, single radio product evolved support more radios per Mash node with the additional radios providing specific function such as client access, backhaul service or scaning radios for high speed handover in mobility application. The Mash node design also became modular a single box could support multiply radio card each operating at a high frequency.

Wireless Mash architecture is quite different from a cellular or wireless lane architecture. All node are equal so there is no centralized control and, therefore , each node must participate in networking as well as ba a source or sink of traffic. Rather than a single hope to a base, multi hoping amongst nodes is a common capability. All this bring the
promise of great flexibility, particularly when we wish to create a new network, or expand an existingone it is a Mash with Hierarchy of node type that support both intra as well as extra Mash Trafic. In other word the overly routing network also has gateway to other external network such as internet. This type of WMNs include Mash router forming an infrastructure for the client that connect to them. The Mash router from a Mash of self configuringself healing link among themselves.With gateways function Mash router can be connected to the internet. This approach also referred to as infrastructure Mashing provide backbone for conventional client and enable integration of WMNs with existing wireless network.

CHALLENGE INDIFFERENT LAYER

1. Physical layer :- This layer consist of the part which directly concern the air interface, e.g Antenna and transceiver electronic by implication it also include detail design element,such as choice of modulation scheme and transmit power. The most basic concern is how Mashes are formed. Infect there are two way to accomplish this

a. PHYSICAL AND LOGICAL MESHES

2. Intra Mash in this case source and sink of all traffic are with in the mash network thus it follow that there is no need of connection to an external network, such as connection to the internet,controlecentre, etc. For such intra mash traffic the mash may consist entirely of subscriber nodes.

a. Extra mash in this case traffic enters and leaves the mash via one are more excess point which are connected to public are private access network. As with backbone network the traffic follow is no longer evenly distributed throughout the mobile nodes, but it concentrated around node in the vicinity of the acess point.

3. Routing is simple the function of knowing which path to take in order to deliver the data from one end to another it must include and addressing scheme and routing protocol

SUMMARY OF POTENTIAL MASH PIT FALLS TO AVOID :

Capacity:- as noted in begining mashes are self-organizing and self-generating. The reason behind this claim was usely along the lines 'each new user brings additional capacities to the mash' or each new user becomes a base station 104. Since there is difference between the user throughout and network capacity, it concludes. that user through put cannot grow as fast as the mash grow. The simple reason is the relay imposed on each node, due to traffic of other node.

INFRASTRUCTUTE:

following the finding on capacity, to increase the scale of mash network such that the performance is maintained, as user increase in number, than the infrastructure must be added.

The purpose of this infrastructure is to separate local traffic from traffic which has a more distant destination, including external to the mash. In this way the relay load may be limited 104 the pitfall to avoid is trying to design a pure mash where one is not strictly dictated by the application. Since one with infrastructure would either be more capable, or would require less complex nodes for similar capability.

EFFICIENCY:

Where it is Clare that there are effency advantage in dividing a single link in to two equal hope, as is typical of mutihopingmash, it was questioned how often this could be relied upon to happen in a real deployment. It was seen that if the split was not 50:50 than the advantage decrease, and if the hope introduced a kink or dog leg in the path, than the extra path length quickly negated any advantage. Finly it was noted that for the link from node to access point, the optimum path split depended on the power difference of the access point and normal node. In term of MAC efficiency the basic conclusion was that a mash typical force a decentralized

SUCCESSFUL MESH IMPLEMENTATION:

Wireless cities: Nowadays several cities have been made wireless to provide is internet access e.g. uk London and Bristol war the first country where wireless internet implementation were practiced .also new york Portland and a number of other area are rapidly coming under this kind of implementation .in each case the aim is to provide easy Mobil connection to the internet. This can serve the gernal Public, business for user and city authorities, who may use it for operational purpose including for public service.

Community internet:.It may not be cost effective for a remote community to connect to the internet as the density of homesmay be too low for an operator to amortize the cost of the necessary backhaul and local distribution. This often occur in two broad cases specifically in rulers communities with in the well-developed area of the and gernally within the less well developed area of the world .interest in the latter appear highest.

Lack of infructure and easy of setup are the prime mesh property taken advantage of by community internet schemes. Deployment opportunities are

highest where no suite able alternative exist or is affordable

The desire to introduce intelligent transport system is high is many countries today including the use japan and Europe. The initialdriver forafford in this area wassafety, which has been joint by the economy due the economy cost of the congestion and the environment. Current work

useincludes the dot ten year visions,to 2012, whim aim for aim10% reduction in road fatalities.

The use, the vehicle safety consortium of car manufacture found that four application which would have the most impact, most likely, on improving safety statistics were as fellow

CONCLUSION:

The capacity of self-organization in WMNs reduces the complexity of network deployment andmaintenance, and thus requires minimal upfront investment. The backbone of WMNs provides a viable solution for users to access the internet anywhere anytime .it can also enhance the reliability of the mobile adhoc network of mesh client. WMNs enable the integration of multiple wireless networks. WMNs can be built up based on existing technology. Some companies already have product for sale, while other companies have started to deploy

WMNs in various application scenarios. However, field trials and experiment with existing WMNs prove that the performance of WMNs is still far below what they are expected to be. As explained throughout this dissertation, many open research issue need to be resolve;
Scalability:-based on existing MAC, routing, and transport protocol, the network performance, index by throughput, end to end delay, and fairness, is not scalable with either the number of node or the number of hops in the network.
Self-organization and self-configuration:- self organization and self configuration required
all protocol in WMNs to be distributive and collaborative.
Security:-due to wireless adhocarchitecture,WMNs are vulnerable to security attack in various protocol layer
Network integration:- current WMNs have very limited capabilities of intergrating heterogeneous wireless network.Protocol improvement relying on single layer cannot entirely solve all the existing problem all protocol ranging from physical to application layer need to be improve or re invented,and the cross-layer design among these protocols is needed in order to each the optimal performance.

RESEARCH METHODOLOGY :

Wireless mesh network, recently time due to incredible development of wireless mesh network into the future Gernation to offer enhanced service
The methodology aim at constricting a topology for rulers wireless mesh network.
Mesh network the methodology used in the proposed approach are
A:- an efficient and minimum cost topology construction for rular wireless mesh network
B:-a novel topology constrction for rular wireless mesh network
C:- a topology construction for rulers wireless mesh network with minimum cost energy reduction and self organization Literature review
Mesh network is a new exciting technology.Thisthesis introduces the contemporary debates on various expects of mesh network. By using literature review we can use A.A ABOUZEED S.RAY stochastic modeling of tcp in network with abrupt delay variations, A, ACHORYA,amisras.bansol high performance architecture for IP based muti HP
802.11 network 125,they introduced mesh networking is a decentralized networking technology that is currently being adopted to connect peer to peer client and large scale backbone network ,it well delivers wireless service for a large verity of application in personal local computer and metropolitan area .the main purpose of bandwidth utilization efficiency is to provide service so that user can get higher data rates and wider coverage, however there is no single network that can provide this kind of service(30) 4G network is expected to integrated las –CDMA-OFDM-CDMA, UWD and network LMD so that the higher data rate and wider coverage can be achieved 31 in this Gera nation ,the user will served by either one of those network as a result an important problem occurred in which in these over loping area most of the network resource in not fully utilized since only one of those network server user.

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