



# **Reduced Path, Sink Failures in Autonomous Network Reconfiguration System (ANRS) Techniques**

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**ABSTRACT:** This paper Routing using Autonomous Network Reconfiguration System (ANRS) with bandwidth guarantees focuses on a wireless mesh network (WMN) consists of a large number of wireless nodes. WMN has to support diversified multimedia applications for its users. It is essential to provide efficient Quality-of-Service (QoS) support in this kind of network. Seeking the path with the maximum available bandwidth is one of the fundamental issues for supporting QoS in the wireless mesh network. In real time application, the communication path usually consists of a succession of links, each with its own bandwidth. If any one of these links is much slower than it is called bandwidth bottleneck. So in this paper we propose a new path weight which captures the maximum available bandwidth path information. In case of link failures which are recovered by Autonomous Network Reconfiguration System(ARNS) technique that allows to autonomously reconfiguring its local network settings. Finally routing can be performed with guarantee bandwidth where the routing protocols should satisfy both optimality and consistency.

**KEYWORDS:** Multiradio Wireless Mesh Networks (MRWMNS), Wireless Mesh Network; Reconfiguration System, Wireless Link Failures.

## **I. INTRODUCTION**

Wireless mesh network (WMN) is the key technology for present generation in wireless networking for providing fast and has self service to users. Nodes in wireless mesh networks comprise mesh routers and mesh clients. Each node operates not only a host but also as a router, forwarding packets on behalf of other nodes that may not be in with indirect wireless transmission vary [1].

Connectivity between nodes in wireless mesh networks is automatically established and maintained among the participating nodes. This makes wireless mesh network a dynamically, self-organized, and self-configured wireless network. This feature brings many advantages such as low installation cost, low cost in maintenance, robustness and reliable service coverage [9].

Wireless mesh networks can also be used in other applications such as broadband, Networking, community and neighborhood networks, enterprise networking building automation, etc Wireless mesh networks can be deployed one node at a time and they also have a capability of self-organization and self-configuring. Reliability and connectivity for the users of such networks increases significantly as more nodes are installed [10].

Wireless mesh network infrastructure is considered as the network providing cost effective and dynamic high bandwidth networks over a specific coverage area [9]. Mesh architecture sustains signal strength by breaking the long distances into a series of shorter hops. Intermediate nodes not only boost the signal, but cooperatively make forwarding Decisions based on their knowledge of the network, i.e. perform routing. Such architecture may with careful design

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provide high bandwidth, spectral efficiency, and economic advantage over the coverage area [2]. The Role of Access Points(APs) in WMN is it provides internet access to Mesh Clients(MCs) by forwarding aggregated traffic to Mesh Routers(MRs), known as relays, in a multi-hop fashion until a Mesh Gateway(MG) is reached. MG act as bridges between the wireless infrastructure and the Internet. WMNs are comprised of two types of nodes: mesh routers and mesh clients [16].

## II. RELATED WORKS

Generally Link failures are one of major issue in the networking area. So, that wireless information communication is the most promising and complicated field. As wireless mesh networks are concerned the provides larger coverage's and high data rate information transfer. Even though they provide lot of benefits to the user and several high range applications they still suffer from the occurrences of the link failure [13].

A considerable amount of work has been done to solve the problems in WMNs and to build a heal wireless network. Network reconfiguration needs a planning algorithm that keeps necessary network changes that is to recover from link failures as local as possible, as opposed to changing the entire network settings. And also the network change made autonomously when failure happens [15].

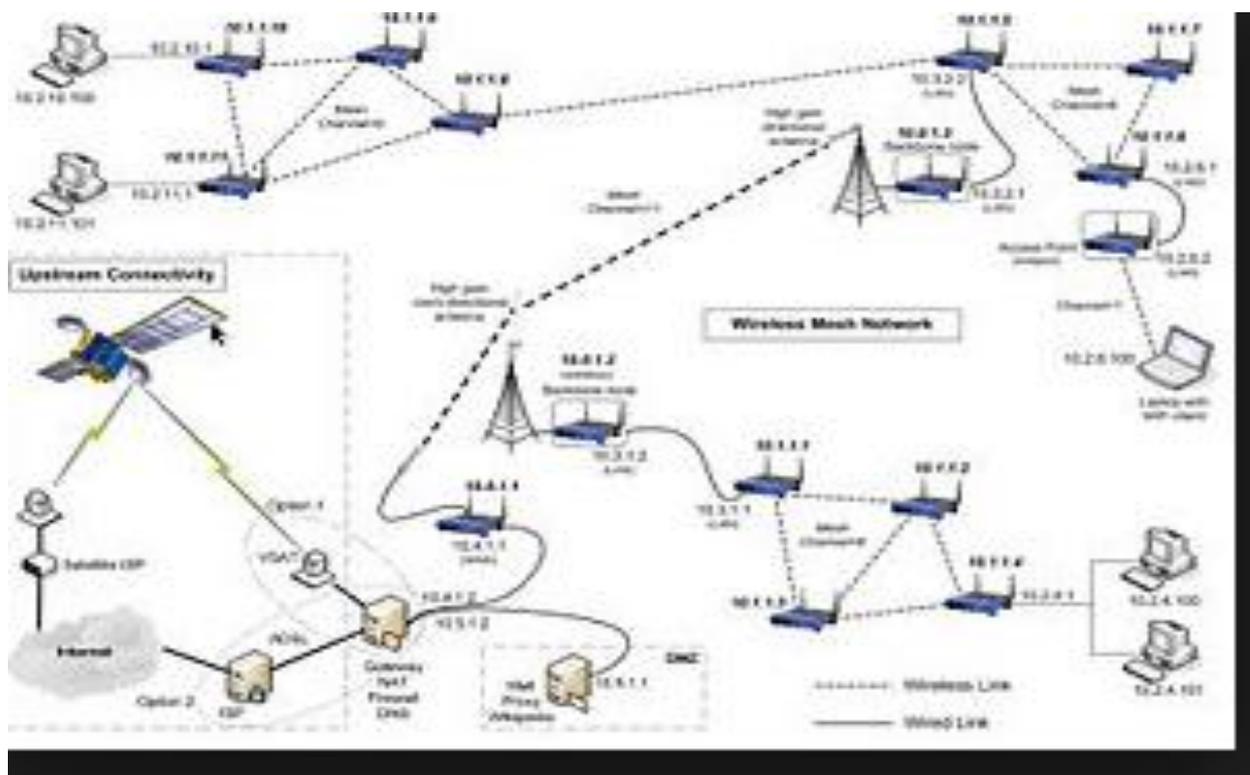


Fig. 1 : ARS Architecture with Mesh Nodes, Channel 1, Channel 2 etc.

These link failures will occur due to some interferences, different obstacles etc.. By this link failure the information transfer can be lost quality of communication cannot be achieved and also the performance of this Wireless Mesh Networks can low. So in order to recover from the link failures Autonomous Reconfiguration System is commonly used [11].

In environmental monitoring some link sofa WMN may experience significant channel interference from other



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(An ISO 3297: 2007 Certified Organization)

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coexisting wireless networks . Some parts of networks might not be able to meet increasing bandwidth demands from new mobile users and data can not reach to the destination within time owing to link failures [15].

### III. EXISTING SYSTEM

In Existing System, the packet can be route do available path bandwidth between the intermediate routers. It also considers the interference occur in the link. Static Protocol makes the packet forwarding in WMN. This protocol does not guaranteed the packet delivery and network performance in case of any link failures. If any link failures occur then the routing protocol made a manual change stop recede the further processing. When the packet will be lost in the network it leads to degraded performances. So retransmission of packet be the major issues in existing system and that can be overcome in proposed system by different techniques and routing Protocols [18].

Already the following technique made some more changes in network but they fail to satisfy the markable performance in the networking bandwidth guarantee. Resource-Allocation Algorithm when the link failure occur the entire network configuration settings have to change to recover from these local link failures. Drawback of this method is when the local link failure occur we have to change the entire configuration settings time is inefficient in this method [21]. Greedy Channel-Assignment Algorithm when the link failure occurs the acknowledgment will be send to the source. Source will transmit the data again in another path. Drawback of this method is when the link failure occurs the data have to be retransmitted from the source. Time is inefficient by using greedy method. Local rerouting or multipath routing can be adopted to use network-level path diversity for avoiding the faulty links. However, they rely on

Our paths or redundant transmissions, which may require more network resources than link-level network reconfiguration. To overcome the above limitations ANRS is proposed. Through put and efficiency improved with guaranteed information measure [19].

### IV. PROPOSED SYSTEM

The routing protocol used is OSPF. This Open Shortest Path First (OSPF) is an Interior Gateway Routing Protocol based on Shortest Path First (SPF) or link-state technology. OSPF is defined in RFC. OSPF was designed specifically for the TCP/IP Internet environment, and supports the following features like Authentication of routing updates, Tagging of externally-derived routes, Fast response to topology changes with low overhead, Load sharing over meshed links. And finally they should satisfy both consistency and optimal it requirements. Optimal it requirements made routing protocol and Consistency tend stop packet forwarding. While this is in progress the link failure also occurred in WMN. This Paper mainly proposed for link failure problem [25].

The link failure occurred means the packet will be reroute to another path by carrying the widest path by using the ANRS technique. ANRS technique autonomously recovers the local link failures and enable the reconfiguration phase. By reconfiguration the packets will be delivered to the particular destination with out the packet loss. And also we use Reconfiguration Planning Algorithm for further enhancements in order to achieve the higher information measure [29].

The algorithm used in ANRS technique is Reconfiguration Planning Algorithm. Why we need this algorithm is to improve and maintain the performance of ANRS and WMN in case of dynamic link failures in the network. To with stand failures by enabling MRWMN and to autonomously reconfigure channel and radio assignments. This algorithm have different phases to monitor and recover the dynamic link failures in the network. The major phases are;

- Monitoring Period
- Failure Detection
- Planning amount
- Reconfiguration Period

#### A. Monitoring Amount



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 3, March 2015

Monitoring is an important phenomenon when we consider the link failure. Generally monitoring is the basic operation involved in many link recovery algorithms. Monitoring period is used to monitor the links from which the information is started to the end of that period in the network that we considered [32].

## B. Failure Detection

After this link monitoring, the failure links are detected using the failure detector. Due to this link failure the packet dropping occurs. This packet loss occurred not only for link failure event they occur if the traffic exhibit some congestion [33].

## C. Planning Amount

The planning is here fully based on energy. And Energy is calculated for the neighboring nodes from the link failure occurred node. Then the node with highest energy is elected as an leader. It will send there quest to the failure occurred node and then that node will generate there configuration plan, send to the leader node. Finally the link failures are recovered and transmission continues through the leader node to the destination [34].

## D. Reconfiguration Amount

By using reconfiguration plan send to the leader node the changes to node are made. So that the changes are made to the links. The most important task car tried out in this period is the changes must be made to link. Here the link recovery is based on the high energy which is at the path in near by distance [30].

## V. RESULT ANALYSIS

They are under going rapid progress and inspiring numerous deployments in WMNs will deliver wireless services for a large variety of applications in personal, local, campus, and metropolitan areas. But they should satisfy some more requirements based on the application. It is essential to provide QoS guaranteed bandwidth, high Throughput, low cost, etc.

In this Paper, We Propose new path weight that captures the maximum available bandwidth incase of failure packets. The Packet can be routed based on OSPF protocols which satisfy consistency and optimality. If the link failure occurred then the packet can be rerouted to another path using Autonomous Network Reconfiguration System in order to find the bandwidth of packet transferred in WMN [37].

Finally the performance of the system can be measured by parameters like throughput, delay, packet delivery ratio, guaranteed bandwidth etc. A high performance system achieved high throughput, low delay, and high packet ratio compared to the existing system. And also by this technique we measure the each nodes involvement that is we found the flows taken by the each and every node in the network for the particular packet transmission. By finding each node flow we can able knows the traffic occurrence in each and every link of nodes concerned [35].

So by this we will able to know which path is better for particular size packet transmission in order to get a high packet delivery ratio and high performance compared to the existing techniques. Obviously we will get the guaranteed bandwidth, high throughput, and high packet delivery ratio when router flow or the performance is known. So this system can also be implemented in Java platform [38].

## VI. CONCLUSION AND FUTURE WORK

In this paper, the link failure recovery is considered as the main objective. It is done by using Autonomous Network Reconfigurable System with Reconfiguration Planning Algorithm. Even though it provides a lot of benefits still the router require more energy for every packet transfer. So Energy consumption can be considered as an issue for the



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 3, March 2015

future work. We can solve this energy consumption issue by preserving and fulfilling the demands of WMN. Mainly energy consumed because of the reconfiguration process. So it will be reduced for the high throughput. Then some Theoretical results need to be confirmed to enhance the scalability of Protocols. In order to overcome from these limitations, increased form will need.

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