© 2017 IJSRST | Volume 3 | Issue 1 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

Effective Shortest Path using Fusion Dynamic Routing Algorithm

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ABSTRACT

Internet is important source in all over the world; it will increase the internet users. This will heavy load to the network. It is a very big task for network to deliver the packets in efficient way. Network routing is one of the necessary processes in computer using various routing algorithms. The various routing algorithms are used to deliver the message to suitable port address. So the network in need of efficient algorithm to deliver the packets its destinations. Shortest path should be detected by routing algorithm. In this paper we introduced a new efficient algorithm to find the shortest path. The proposed algorithm efficiently delivered the packets using shortest path with fast delivery ratio. The proposed algorithm is focusing the packet delivery ratio, delay ratio and shortest path. This algorithm implemented by using NS2 simulator. Simulation results give significant improvement.

Keywords : Routing, Packet, Fusion Dynamic

I. INTRODUCTION

Routing the packets from source to destination is the important function of the network layer. Many routing algorithms are used to choose the routes and the data structures. The routing algorithms have the responsible to monitoring the incoming and outgoing packets transmitted in the network layer. If the subnet uses data grams within, this assessment must be made a new for every incoming data packet since the best route may have changed since last time. The virtual circuits in the subnet are made decision ones per session. Today's internet world use static single shortest path routing model. It means this model can give single shortest path between the nodes with least cost path at any given time. Static metric refers to connection cost assignments which are based on static properties of a link, such as its bandwidth or latency. But this model doesn't provide fastest performance. In this model routing tables to be manually built and manually updated. Because the routing tables are static; static routers do not inform each other in the event of a route change, nor do they exchange routing information with dynamic routers. This is the main drawback of this model. In the dynamic model routes changes more quickly. This is the advantage of the dynamic model. Periodic update of the route information in the route table link with least cost. The proposed method takes the advantages of both model and try to give new shortest path routing algorithm.

II. METHODS AND MATERIAL

Types and Properties of routing algorithm

There are two types of routing algorithm : Static and Dynamic routing

Static Routing : In this routing the optimal path between source and destination set up by manually. It uses static routing protocols and if there is any faults in the routing does not have any controlling methods. Finding the path between two routers this static routers do not have sense the faulty computers in the network. This type of routing is suitable for small networks. The

static routing follows the simplest mode of routing the data packets from a source to a destination in a network. It has the advantage that it requires minimum memory. The network administrator finds out the optimal path and makes the changes in the routing table in the case of static routing. It is best routing used where there are fewer than five devices and the routes are known to be stable.

Dynamic Routing : This type uses dynamic protocols to update the routing table and find the optimal path between source and destination. Dynamic routing algorithms are used to manage the dynamic routers and these routers able to catch the faulty routers in the network. It eliminates the duplicate routers and suggests another optimal path to deliver the packets. This routing is very useful in large scale networks. The dynamic routers use special routing algorithm like IGRP(Interior Gateway Routing protocol) and RIP (Routing Information protocols). It uses complex algorithms for routing the data packets. It has disadvantage that it requires quite a few memory overheads, depending on the routing algorithms used. In this routing the algorithm and the protocol is responsible for routing the packets and making the changes accordingly in the routing table. Dynamic routers are appropriate for use in networks where there are multiple routers.

The routing algorithm has the following important properties. They are adaptivity,connectivity, deadlock and livelock freedom, fault tolerance.

Connectivity focus the route packet delivery from source to destination.
Adaptivity is used to maintain the route packet through alternate path or faulty path.
Deadlock freedom is the capability to assurance that packets will not block or wander across the network forever.
Fault tolerance means ability to direct the route packets in the presence of faulty components

Proposed algorithm

The proposed algorithm takes the advantages of static and dynamic routing algorithm. The main advantages of dynamic routing are scalability and adaptability. Static routing algorithm calculates the path between starting point and ending point. So it is effective method. This routing algorithm spends more time to find closest point. This will reduce the speed and increase the packet loss. In a gap phase, the routing table does not reflect the actual network topology until it finishes its computation, thereby packet losses can occur, which is problematic. In support of all of these reasons a dynamic routing algorithm should be chosen over a static routing algorithm, since it reduces the computation time by getting all of its information from the old routing table and only re-computing the nodes affected by updated shortest paths list. The proposed algorithm first applies the static algorithm to find the closest points after that dynamic algorithm is applied to send the packets. Packet delivery ratio of proposed algorithm considerably increased. The energy through put is good and computation time is considerably reduced.

III. RESULTS AND DISCUSSION

Node Creation

The following figure 1 shows the node creation of the proposed algorithm. In this 18 nodes are created to find the shortest path.

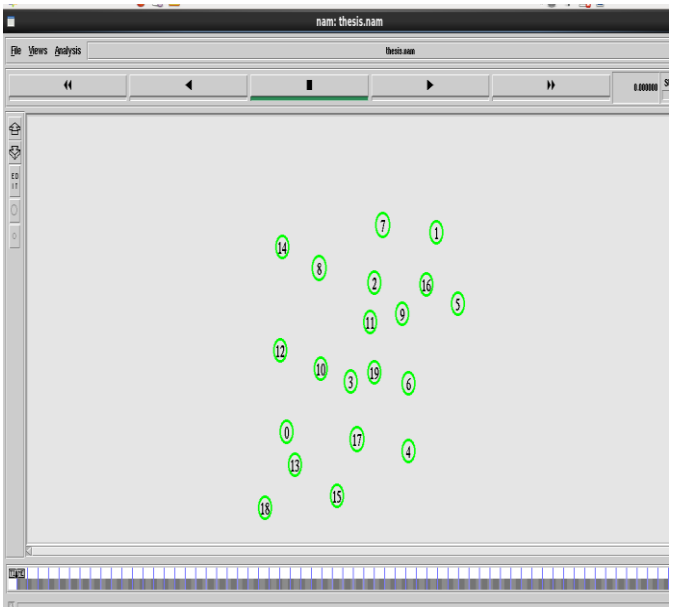

Figure 1. Node Creation

Node creation with source and destination

The figure 2 shows the source and destination. In this node 1 is base station and node 13 is destination. The proposed algorithm find the shortest path between source and destination.

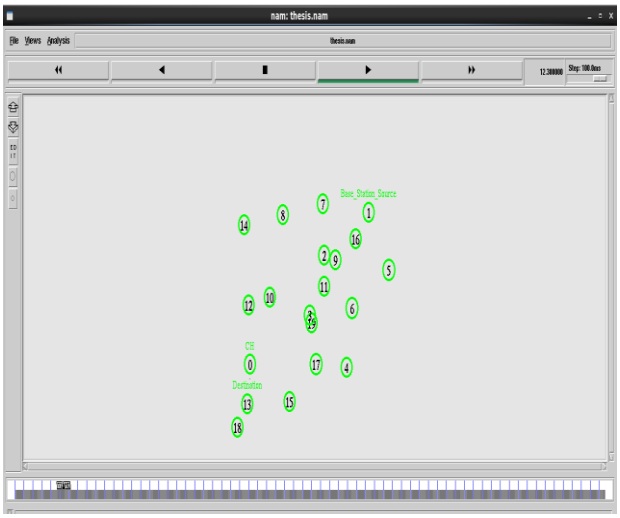

Figure 2. Source and Destination

Find the shortest path

Figure 3 shows the process of finding the shortest path between source and destination. The nodes 1, 15, 11,4,0,4,7,12 is the shortest path between source and destination.

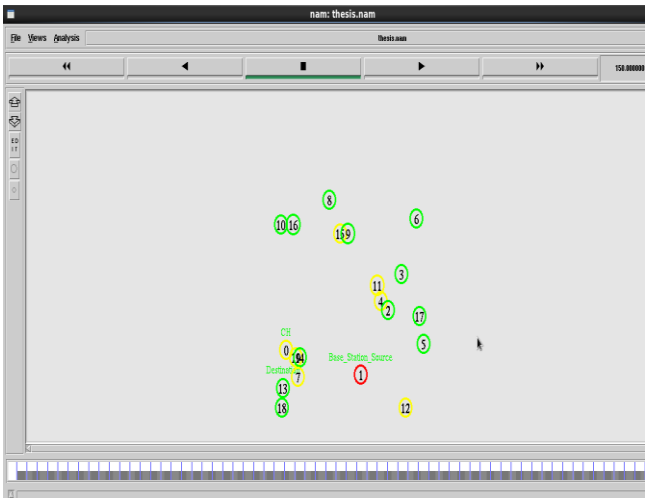

Figure 3. Shortest path

Packet Delivery Ratio

The packet delivery ratio of the proposed algorithm is higher than the existing algorithm such as Dijkstra algorithm, Dynamic Dijkstra algorithm and RDSP algorithm.

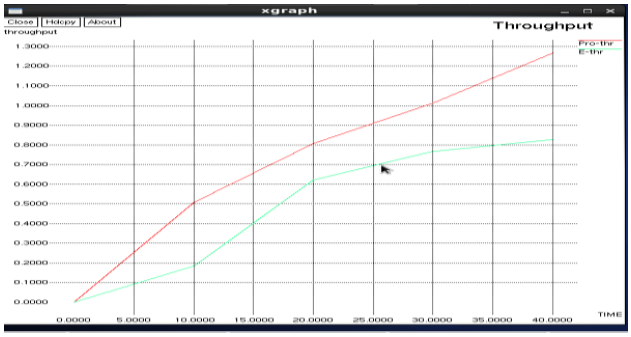

Figure 4. Packet Delivery Ratio

Packet delivery Delay ratio

The packet delivery delay ratio is low when compared with existing algorithm. The figure 5 shows the delay comparison ratio.

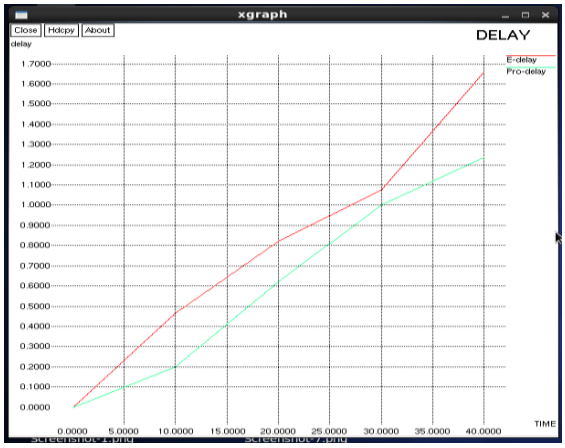

Figure 5. Delay Ratio

Energy Throughput

The energy consumption of proposed algorithm is low when compared with existing algorithm. The Figure 6 shows the Energy Consumption ratio.

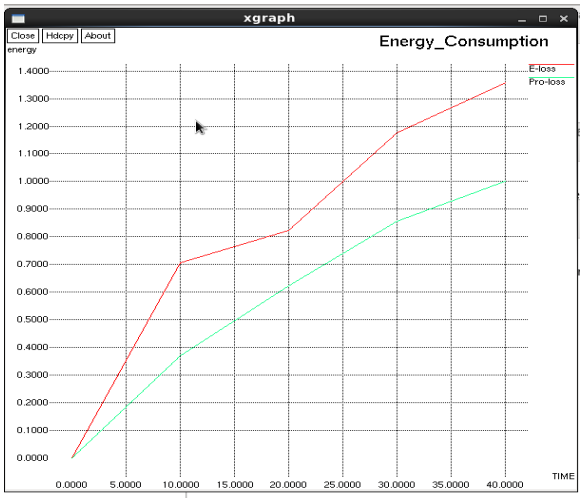

Figure 6. Energy Consumption ratio.

IV. CONCLUSION

The internet plays a vital role in the world. Efficient finding of shortest path with high packet delivery ratio is necessary in internet. The proposed algorithm efficiently finds the most optimized shortest path with high packet delivery ratio, low energy consumption and low packet delivery delay ratio. The simulation result proven the performance of proposed algorithm. In future this research will focus other parameters of routing algorithm and it include advantages of other existing algorithm.