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Routing Delay Prime Implecants of AODV for Mobility and Distributed Services

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ABSTRACT

Cellular networks are expected to provide distributed services and broadband access to a continuously growing number of mobile users. An cost effective solution to Internet broadband access for both stationary is must for mobile hosts. To efficiently support the large number of customers in the network, the network is expected to support distributed services. Unfortunately, present networks do not support network services because of the absence of a dynamic routing algorithm that would locate the destination even if the mobile node moves from one cell to another. We have used AODV algorithm to compute the performance of the proposed algorithm. Our conclusions are based on four important performance on Route delay time

Keywords : Route delay time,AODV.

I. INTRODUCTION

The evolution of wireless networks technologies have made internet access more flexible. Internet access is now accessible on the move. Wireless networks enable users to access the internet from any place, unlike the wired network which provides only fixed point of network attachment. In the recent years, WLANs and cellular networks have gained much importance in replacing wired networks for internet access. Nowadays WLANs are successfully deployed in home and office environments for internet access; however they are not suitable for mobile users because of narrow coverage and lack of mobility support. Cellular networks on the other hand provide wider coverage and better mobility support. This makes it more suitable for mobile users. On the contrary, communication cost and narrow bandwidth of the cellular network makes it less attractive for internet access.

The AODV protocol builds routes between nodes only if they are requested by source nodes. AODV is therefore considered an on-demand algorithm and does not create any extra traffic for communication along links. The routes are maintained as long as they are required by the sources. They also form trees to connect multicast group members. AODV makes use of sequence numbers to ensure route freshness. They are self-starting and loop-free besides scaling to numerous mobile nodes..

Dynamic Source Routing the class of reactive protocols and allows nodes dynamically discover a route across multiple network hops to any destination that each packet in its header carries the complete ordered list of nodes through which the packet must pass. DSR uses no periodic routing messages thereby reducing network bandwidth overhead, conserving battery power and avoiding large routing updates throughout the ad network. Instead DSR relies on support from the MAC layer (the MAC layer should inform the routing protocol about link failures). The two basic modes of operation in DSR are route discovery and route maintenance.

In AODV, networks are silent until connections are established. Network nodes that need connections broadcast a request for connection. The remaining AODV nodes forward the message and record the node that requested a connection. Thus, they create a series of temporary routes back to the requesting node.

A node that receives such messages and holds a route to a desired node sends a backward message through temporary routes to the requesting node. The node that initiated the request uses the route containing the least number of hops through other nodes. The entries that are not used in routing tables are recycled after some time. If a link fails, the routing error is passed back to the transmitting node and the process is repeated.

Routing refers to establishing the routes that data packets take on their way to a particular destination. This term can be applied to data traveling on the Internet, over 3G or 4G networks, or over similar networks used for telecom and other digital communications setups. Routing can also take place within proprietary networks.

Techopedia explains Routing

In general, routing involves the network topology, or the setup of hardware, that can effectively relay data. Standard protocols help to identify the best routes for data and to ensure quality transmission. Individual pieces of hardware such as routers are referred to as "nodes" in the network. Different algorithms and protocols can be used to figure out how to best route data packets, and which nodes should be used. For example, some data packets travel according to a distance vector model that primarily uses distance as a factor, whereas others use Link-State Protocol, which involves other aspects of a "best path" for data.

Data packets are also made to give networks information. Headers on packets provide details about origin and destination. Standards for data packets allow for conventional design, which can help with future routing methodologies. As the world of digital technology evolves, routing will also evolve according to the needs and utility of a particular network.

Routing Information Protocol (RIP) is a dynamic protocol used to find the best route or path from end-to-end (source to destination) over a network by using a routing metric/hop count algorithm. This algorithm is used to determine the shortest path from the source to destination, which allows the data to be delivered at high speed in the shortest time.

RIP plays an important role providing the shortest and best path for data to take from node to node. The hop is the step towards the next existing device, which could be a router, computer or other device. Once the length of the hop is determined, the information is stored in a routing table for future use. RIP is being used in both local and wide area networks and is generally considered to be easily configured and implemented.

Architectural Design

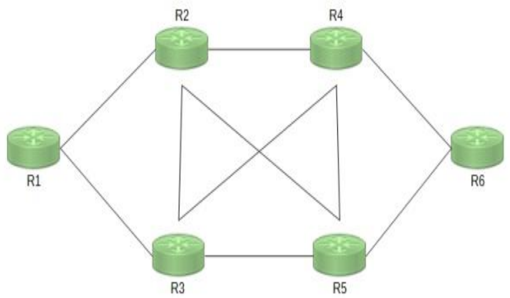

Figure 1. Current Routing Delay Architecture.

II. EXPERIMENTAL VIEW

Delay

Delay represents the end-to-end delay of all the packets received by the LTE MACs of all the LTE nodes in the network and forwarded to the higher layer.

oute Requests (RREQs), Route Replies (RREPs), and Route Errors (RERRs) are the message types defined by AODV. These message types are received via UDP, and normal IP header processing applies. So, for instance, the requesting node is expected to use its IP address as the Originator IP address for the messages. For broadcast messages, the IP limited broadcast address (255.255.255.255) is used.

This means that such messages are not blindly forwarded. However, AODV operation does require certain messages (e.g., RREQ) to be disseminated widely, perhaps throughout the ad hoc network. The range of dissemination of such RREQs is indicated by the TTL in the IP header. Fragmentation is typically not required. As long as the endpoints of a communication connection have valid routes to each other, AODV does not play any role. When a route to a new destination is needed, the node broadcasts a RREQ to find a route to the destination. A route can be determined when the RREQ reaches either the destination itself, or an intermediate node with a 'fresh enough' route to the destination. A 'fresh enough' route is a valid route entry for the destination whose associated sequence number is at least as great as that contained in the RREQ. The route is made available by unicasting a RREP back to the origination of the RREQ. Each node receiving the request caches a route back to the originator of the request, so that the RREP can be unicast from the destination along a path to that originator, or likewise from any intermediate node that is able to satisfy the request. Nodes monitor the link status of next hops in active routes. When a link break in an active route is detected, a RERR message is used to notify other nodes that the loss of that link has occurred. The RERR message indicates those destinations (possibly subnets) which are no longer reachable by way of the broken link. In order to enable this reporting mechanism, each node keeps a "precursor list", containing the IP address for each its neighbors that are likely to use it as a next hop towards each destination. The information in the precursor lists is most easily acquired during the processing for generation of a RREP message, which by definition has to be sent to a node in a precursor list (see section 6.6). If the RREP has a nonzero prefix to the source node's IP address, current sequence number, and broadcast ID, the RREQ also contains the most recent sequence number for the destination of which the source node is aware. A node receiving the RRE Q may send a route reply (RREP) if it is either the destination or if it has a route to the destination with corresponding.

III. CONCLUSIONS

This paper does the realistic comparison of three routing Protocols in mobile environment. A static routing solution could work. However, even if the network is small, a dynamic routing method can be used without a lot of configuration, and it will continue to work as the network grows. As we know, routing delay time protocols are prime targets for impersonation attacks.

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