

Security analysis of proactive, reactive and hybrid routing protocol in MANET

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Abstract— A MANET is used to utilize the wireless connection to attach with network. The information can send and receive safe and secure using the routing protocols. This paper focuses on Security analysis of Proactive, Reactive and hybrid routing protocol. All type of routing protocol should be used here for the security purpose. HRP is used to determine optimal network destination routes and to report topology data notifications. The different attacks are going to be prevented by using different routing protocols. So, we are using a hybrid routing protocol. By using hybrid routing protocol can support plenty of routings like AODV, OLSR, ZRP, etc.,

1 INTRODUCTION

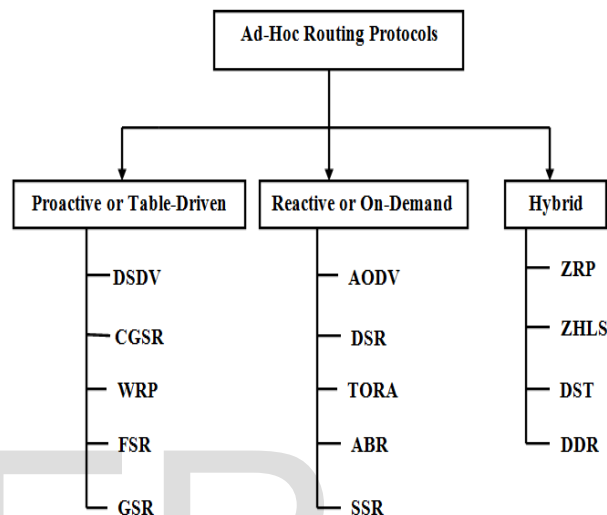
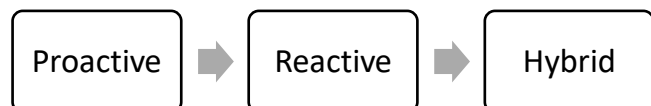
A Mobile ad-hoc is an wireless network used to connect the mobile devices. The device in MANET is free to move without any support and can move in any direction and it will change the devices with the links to other devices frequently. Routing is the process in MANET for selecting a path for traffic in a network (or) across a multiple networks. It may contain different transceivers between nodes. The routing protocol specifies how router communicates with each other, distributing information and to enables to select routes between any two nodes in a computer networks.

A MANET categorized into two types, such as Proactive and Reactive. Every node maintains one or more tables representing the whole topology of networks called proactive. A bandwidth for efficient on-demand routing protocol for mobile ad-hoc network is called reactive.

1.1 Types of Applications used

- Emergency and Rescue operation
- Aircrafts
- Military application
- Wireless sensor networks
- Collaborative and distributed computing
- Sensor network

2 CLASSIFICATION OF ROUTING PROTOCOLS



These are the routing protocols used to determine the optimal network for data transformation between networks nodes are devices.

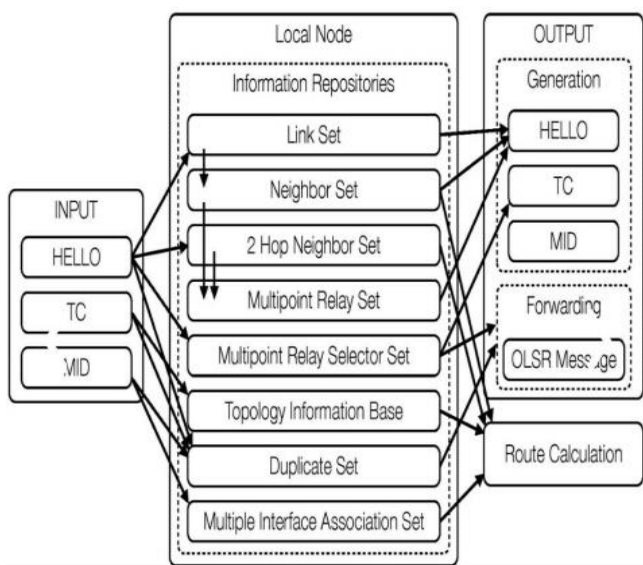
2.1 Proactive Routing

In this routing every node should have more than tables to represent the whole topology of a network. These tables are upgraded every day-by-day because to update the information from one node to every node. And the routers will always to be in the available state on the request. There is a result in routing traffic, but there is not an initial delay of time in communication while sending and receiving the data/information.

3 OPTIMIZED LINK STATE ROUTING PROTOCOL (OLSR)

OLSR acts as an intermediate router. It has a limit to the number of message retransmissions during the necessary flooding operations. And it works for large ad-hoc networks. OLSR performs Packet forwarding; Neighbor sensing, Topology discovery procedures. OLSR uses four messages: Hello message, Topology control, Multiple Interface Declaration (MID), Host and Network Association (HNA).

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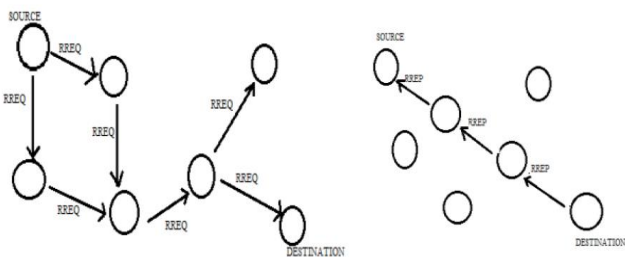


3.1 Reactive Routing Protocol

It follows a route determining procedure. If a source node has to send a packet to destination node, firstly the route to the destination node is determined and then a connection is established between these nodes.

4 AD-HOC ON DEMAND VECTOR ROUTING (AODV)

AODV is a distance vector routing protocol which determines route to the destination only on demand. It is used to forward tables at each node. When the node is ready to send the packet to destination, it broadcast the Route request packet (RREQ). While forwarding RREQ, a reverse path is established through which the destination node replies back by sending RREP packet.



(a) RREQ message (b) RREP message

5 HYBRID ROUTING PROTOCOL

It makes use of both proactive and Reactive routing protocols. It is suitable for ZRP (Zone Routing Protocol).

5.1 Zone Routing Protocol (ZRP)

ZRP routing the communication takes place in between the nodes that is close to each other, and that nodes called K-neighbor. ZRP has two sub protocols that is IARP, IERP. Therefore the source and destination in the same zone and that can deliver the packet immediately.

6 ROUTING PROTOCOL TERMINOLOGIES

6.1 Multicasting

It has a capability of delivering the data packets to the numerous nodes. It takes minimum time to transmit data packets to various nodes.

6.2 Loop Free

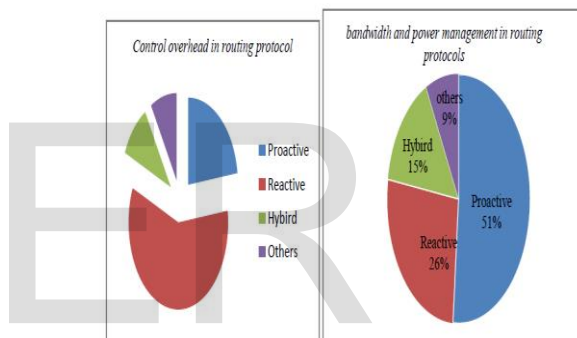
It is a popular problem with the numerous types of networks, especially computer networks. It is used to prevent the misuse of CPU consumption or bandwidth.

6.3 Multiple Paths

The protocol should allow the multiple paths to establishing the data. If due to any reason, anyone one of the path get destroyed means then the data packet could send through some other path.

7 COMPARISON OF PROACTIVE, REACTIVE AND HYBRID ROUTING PROTOCOL

Protocols	Routing structure	Periodic updates	Control Overhead	Route acquisition delay	Bandwidth requirement	Power requirement
Proactive	Both Flat and hierarchical structures	Yes, some may use Conditional	High	Low	High	High
Reactive	Mostly Flat, Except CBRP	Some nodes may require Periodic beacons.	Low	High	Low	Low
Hybrid	Flat	Yes	Medium	Lower for Intra-zone; Higher for Inter-zone	Medium	Medium



8 CONCLUSION

In the day by day application there is a plenty of development in an applications using this MANET. Still now we are facing many changes using the networks through the routing and had a great challenge. In this paper, we are focusing on preventing the attacks by using different protocols. In proactive OLSR is used, in Reactive AODV is used, and finally we use ZRP to prevent the attacks.

REFERENCES

- [1] Harjeet karur, Varsha sahani, Dr.Marju Bala "A survey of Reactive, Proactive and Hybrid Routing Protocols in MANET:A Review"-2013
- [2] S.Saranya, Dr.R.Manika Chezian " Comparison of Proactive, Reactive and Hybrid Routing Protocol in MANET", July-2016
- [3] Suhas KR, Mohankumar N M, Devaraju J.T " Performance study of Proactive, Reactive and Hybrid Routing protocols for MANET in Multiple CBR scenario", January-2015
- [4] Nawneet Raj,Priyanka Bharti, Sanjeev Thakur "Qualitative based study of Hybrid Routing Protocols in MANET" December-2015
- [5] Harmandeep Kaur, Jasvir Singh "Analysis of Hybrid Routing Protocols ZRP, HCR and ANTHOCNET: A Review" June-2017