© 2017 IJSRST | Volume 3 | Issue 6| Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

Error Recovery Terms in Mobile Adhoc Networks

Dr N. Sathishkumar
Professor, Department of ECE Teegala Krishna Reddy Engineering College, Medbowli, Telangana, India

ABSTRACT

Wireless links are prone to errors. High packet loss rate is detrimental to transport layer performance. Use of acknowledgements When node B receives a data packet from node A, node B sends an Acknowledgement (Ack). If node A fails to receive an Ack, it will retransmit the packet This approach adopted in many protocols .In this paper we discuss basic Error prone terminology while data packets are transmitted.
Keywords : Acknowledgment, Transport Layer, Nodes.

I. INTRODUCTION

An Ad hoc network is a collection of mobile nodes, which forms a temporary network without the aid of centralized administration or standard support devices regularly available as conventional networks. These nodes generally have a limited transmission range and, so, each node seeks the assistance of its neighboring nodes in forwarding packets and hence the nodes in an Ad hoc network can act as both routers and hosts. Thus a node may forward packets between other nodes as well as run user applications. By nature these types of networks are suitable for situations where either no fixed infrastructure exists or deploying network is not possible. Ad hoc mobile networks have found many applications in various fields like military, emergency, conferencing and sensor networks. Each of these application areas has their specific requirements for routing protocols.

II. FEATURES OF MOBILE AD HOC NETWORKS

The mobile Ad hoc networks has the following features-

1. Autonomous terminal
2. Distributed operation
3. Multihop routing
4. Dynamic network topology
5. Fluctuating link capacity
6. Light-weight terminal
7. Autonomous Terminals

In MANET, each mobile terminal is an autonomous node, which may functions both a host and a router.

In other words, beside the basic processing ability as a host, the mobile nodes can also perform switching functions as a router. So usually endpoints and switches are indistinguishable in MANET.

Distributed Operation-Since there is no background network for the central control of the network operations, the control and management of the network is distributed among the terminals. The nodes involved in a MANET should collaborate amongst themselves and each node acts as a relay as needed to implement functions like security and routing. Multihop Routing Basic types of Ad hoc routing algorithms can be single-hop and multihop, based on different link layer ttributes and routing protocols. Single-hop MANET is simpler than multihop in terms of structure and implementation, with the lesser cost of functionality and applicability. When delivering data packets from a source to its destination out of the direct wireless transmission

range, the packets should be forwarded via one or more intermediate nodes.

Dynamic Network Topology Since the nodes are mobile, the network topology may change rapidly and unpredictably and the connectivity among the terminals may vary with time.

MANET should adapt to the traffic and propagation conditions as well as the mobility patterns of the mobile network nodes. The mobile nodes in the network dynamically establish routing among themselves as they move about, forming their own network on the fly. Moreover, a user in the MANET may not only operate within the Ad hoc network, but may require access to a public fixed network (e.g. Internet)

Fluctuating Link Capacity The nature of high bit-error rates of wireless connection might be more profound in a MANET. One end-to-end path can be shared by several sessions. The channel over which the terminals communicate is subjected to noise, fading, and interference, and has less bandwidth than a wired network. In some scenarios, the path between any pair of users can traverse multiple wireless links and the link themselves can be heterogeneous.

Light Weight Terminals In most of the cases, the MANET nodes are mobile devices with less CPU processing capability, small memory size, and low power storage. Such devices need optimized algorithms and mechanisms that implement the computing and communicating functions.

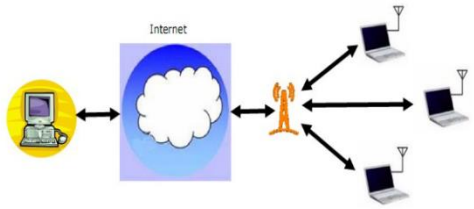


Figure 1. Client server Model

Applications:

Personal area networking

- ✓ cell phone, laptop, ear phone, wrist watch
- ✓ Military environments
- ✓ soldiers, tanks, planes
- ✓ Civilian environments
- ✓ taxi cab network
- ✓ meeting rooms
- ✓ sports stadiums
- ✓ boats, small aircraft
- ✓ Emergency operations
- ✓ searchandrescue
- ✓ policing and fire fighting

Link Failure:

A neighbor of node X is considered active for a routing table entry if the neighbor sent a packet within *active_route_timeout* interval which was forwarded using that entry Neighboring nodes periodically exchange hello message When the next hop link in a routing table entry breaks, all active neighbors are informed Link failures are propagated by means of Route Error (RERR) messages, which also update destination sequence numbers.

Detection of packet loss in TCP

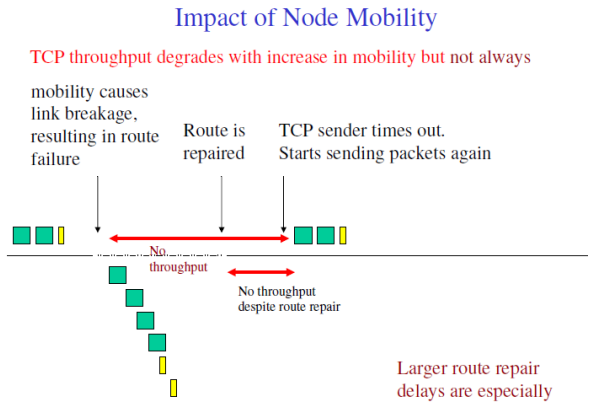
Retransmission timeout (RTO)

- ✓ sender sets retransmission timer for only one packet
- ✓ if Ack not received before timer expiry, the packet is assumed lost
- ✓ RTO dynamically calculated, doubles on each timeout

Duplicate acks sender assumes packet loss if it receives three consecutive duplicate acknowledgements (dupacks) On detecting a packet loss, TCP sender assumes that network congestion has occurred and drastically reduces the congestion window.

The problem of multi-path selection in MANETs under disaster recovery circumstances can be modeled

as a complex dynamic system of many parameters. Performance metrics such as reliability, delay, throughput, power consumption, etc. can be taken into account. Furthermore, there exist many operational considerations that require careful investigations such as the dynamic environmental changes, heterogeneity, lack of centralized control, survivability, and autonomous failure recovery. Thus, developing a computationally efficient algorithm is known to be extremely difficult. Heuristic methods such as evolutionary computing and bio-inspired schemes have been brought into attention due to their intrinsic adaptability to varying environmental conditions, robustness to failures and damages, collaborative operation based on simple rules, self-organization, survivability, and evolvability



III. EXPERIMENTAL VIEW

TCP Parameters after Route Repair

Window Size after route repair

- ✓ Same as before route break: may be too optimistic
- ✓ Same as startup: may be too conservative
- ✓ Better be conservative than overly optimistic
- ✓ Reset window to small value; let TCP learn the window size

Retransmission Timeout (RTO) after route repair

- ✓ Same as before route break: may be too small for long routes
- ✓ Same as TCP startup:
- ✓ may be too large and respond slowly topacket loss

IV. CONCLUSIONS

This paper we gave the basic error terminologies. 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. Some of the other problems to be considered further are Address assignment,QoS issues Improving interaction between protocol layers. The simulation results exhibit a significant amount of improvement in terms of the packet delivery ratio, QoS delivery ratio and average throughput. Some of the future work includes determining the values of rate coefficients.

V. REFERENCES

[1]. http://www.it.iitb.ernet.in.in/~sri, Sridhar IyerIIT Bombay

[2]. A MOBILE AD-HOC NETWORK MULTI-PATH ROUTING PROTOCOL BASED ON BIOLOGICAL ATTRACTOR SELECTION FOR DISASTER RECOVERY COMMUNICATION

[3]. Kumar, P., et al.: Effect of pause time on performance of AODV and DSR routing protocols in wireless ad-hoc networks. Int. J. Modern Trends Eng. Res. 1(5), 61–70 (2014).

[4]. Khattak, M.A.K., Iqbal, K., Khiyal, S.H.: Challenging ad-hoc networks under reliable & unreliable transport with variable node density. J. Theoret. Appl. Inf. Technol. (2008).

[5]. Gupta, S., Kumar, C., Rani, S., Bhushan, B.: Performance comparison of routing protocols using different mobility models. IJMECS 4(8), 54–61 (2012)CrossRef.

[6]. Lee, J.-H.: Performance comparison of mobile ad-hoc multicast routing protocols. In: IEEE Journal Conference on Advanced Technologies for Communications, pp. 399–402, Oct 2008.