Vol 6 Issue 5 Nov 2016 ISSN No :2231-5063

International Multidisciplinary Research Journal

Golden Research Thoughts

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RNI MAHMUL/2011/38595 **ISSN No.2231-5063**

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ISSN: 2231-5063 Impact Factor :4.6052(UIF) Volume - 6 | Issue - 5 | November - 2016

GRT Golden Research Thoughts

"A RESEARCH STUDY OF ROUTING PROTOCCOL IN MANETS: AODV,DSR,TORA"

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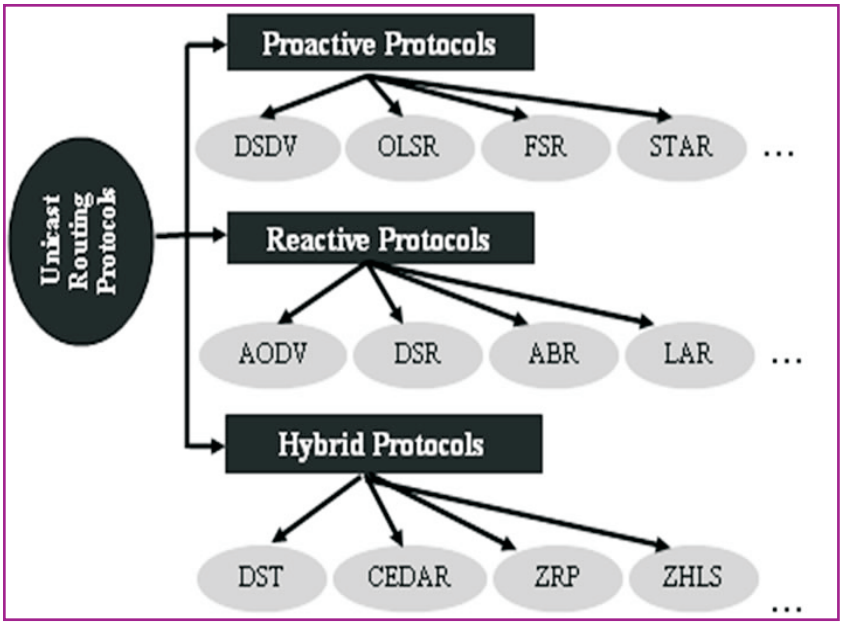
ABSTRACT

Security is one of the main issues in the MANET especially with respect to size and complexity of the network. The aim of the thesis is to discuss different aspects of security in MANET (e.g. multi-layer intrusion detection technique in multi hop network of MANET, security problems relates between multichip network and mobile nodes in MANET etc) and also implement some of the solutions (e.g. comparative study of different routing protocol (AODV, DSR and TORA) security threats within MANET network like intruder behavior, tapping and integrity, MANET link layer and network layer operations with respect to information security etc) with respect to MANET network. This paper also discusses different number of scenarios of MANET network which we implement in our simulation. In our simulation we use to implement different routing protocols and also did comparative study that which one is better with respect to different aspects.

KEYWORDS: *Attacks, MANETS, Security, AODV, DSR and TORA.*

1.INTRODUCTION:

Normally a network simulator will contain of an extensive variety of networking technologies and protocols and assistance users to form compound networks from elemen tary building blocks similar clusters of nodes and relations. Through their assistance, one can enterprise dissimilar network topologies using numerous kinds of nodes such as end-hosts, hubs, network bridges, routers, optical link-layer strategies, and mobile elements. In this fragment, we will familiarize certain straight forward conceptions in the capacity of network simulation. We correspondingly try to distinguish and simplify those that informal to reason misperception between readers. We usually present the rudimentary impression of the network simulation and simulator and then deliberate the dissimilarity between simulation and emulation. Commonly speaking, network simulators have effort to model the factual creation networks. The major knowledge is that uncertainty organization can be modeled, then types of the model can be transformed and the conforming consequences can be analyzed. As the process of model modification is relatively cheap than the whole actual implementation, a wide variability of scenarios can be investigated at small cost comparative to making variations to a material network. Network simulator continuously encompass the Nevertheless, network simulators are not seamless. They cannot faultlessly model all the particulars of the networks. Nevertheless, if well modeled, they will be adjacent enough so as to stretch the researcher a meaningful insight into the network below test, and how



deviations will disturb its process.

Network simulators name	
Commercial	OPNET, QualNet
Open source	NS2, NS3, OMNeT++, SSFNet, J-Sim

Table 1.1: Network simulators

Presently there are numerous network simulators that must dissimilar topographies in dissimilar features. A small angle of the present network simulators comprise OPNET, NS-2, NS-3, OMNeT++ [OMNeT], REAL [REAL], SSFNet [SSFNet], J-Sim [J-Sim], and QualNet [QualNet]. Though, in this thesis, we do not anticipate to conceal mental together the obtainable network simulators. We solitary choice some characteristic ones (the first 4 simulators) and organize some examination and associate particular from the others somewhat to become a recovering interpretation of the foremost topographies of a convinced network simulator. These thesis choices are the 4 characteristic network simulators that characterize the current expansion position in this zone.

The network simulators we select for discussion in this thesis include OPNET, NS2, NS3, and OMNet++. Of them, the OPNET is commercial software and is a little different from others and we will introduce in the first place. NS2 are the most popular one in academia because of its open-source and plenty of components library. Rations of no benefit establishments underwrite a portion in the machine ries lending library and it has been demonstrated that the expansion mode of NS2 is very fruitful. Though, since of certain accepted enterprise restriction of NS2, the NS3 is presently underneath expansion and calculation. Accompanying with NS2, NS3 positioned accompanying position on the certification everything and some generalized people are undertook to accomplish dissimilar mechanisms. Furthermore, NS3 is not impartial rationalized form of NS2. NS3 reshapes a portion of instruments grounded on the fruitful and ineffective involvements of NS2. OMNet++ is additional significant network simulator which has very commanding graphical interface and segmental core enterprise. OMNet++ is also open obtained and extensively recognized in academe.

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2 NETWORK DESIGN AND STRUCTURE

In the underneath subsequent figures there are some of the block illustrations of the network situations which we discussion above. In succeeding figure we instrument first three situations with diverse routing protocols with outline config, application config and Rx Group config and server for announcement and similarly use 25 mobile nodes for wireless announcement. Altogether these strategies are enlightened glowing in the underneath network constituent segment. Altogether nodes in the network are arranged to run AODV, DSR, and TORA routing protocol individual by one in the first three circumstances correspondingly; and we also custom to configure FTP traffic for our

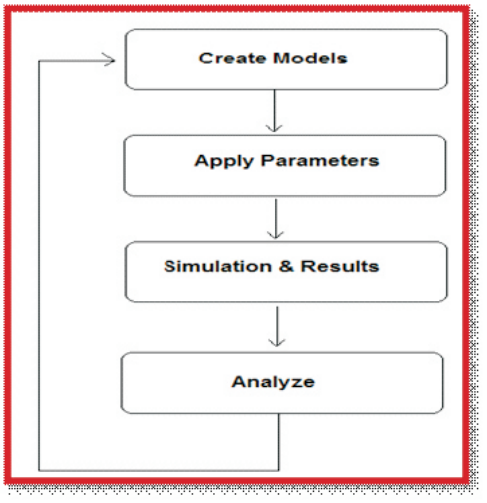


Figure 1.2: Flowchart for OPNET

resultremarks. The Rx collection config node is supplementary to speediness up the simulation. It is constructed to eradicate all headphones that are over 1500 meters missing. In circumstance of AODV scenario, AODV parameters are secondhand as recommended by RFC and WLAN data rate is 1Mbps.

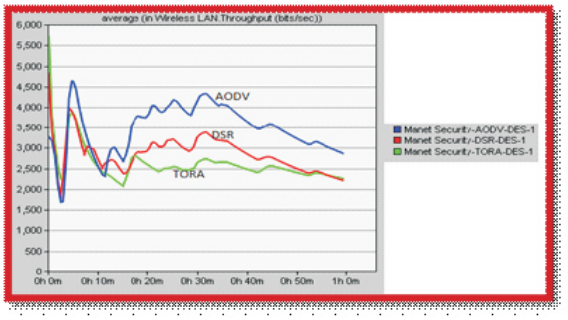
3 PERFORMANCE SETUP

Examined protocols	DSR , TORA , AODV
Simulation time	1 hour
Number of Nodes	25
Traffic Type	TCP
Performance Parameter	Throughput, delay, Network Load
Pause time	100
Packet Inter-Arrival Time (s)	exponential(1)
Packet size (bits)	exponential(1024)
Transmit Power(W)	0.005
Date Rate (Mbps)	11 Mbps
Mobility Model	Random waypoint
Simulation area (m x m)	1000 x 1000
Mobility	10 meter/second

4 PERFORMANCES OF PROTOCOL

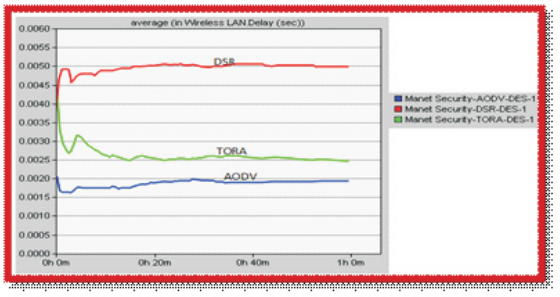
4.1 Throughput

The network throughput and load are chief limits that are recycled to reproduce the network competence. Uncertainty it describe Load then originated to distinguish that it is the amount of circulation entered to the "Network". In difference, uncertainty express throughput then we comes to recognize that it is the amount of traffic that is sendoff the "Network".



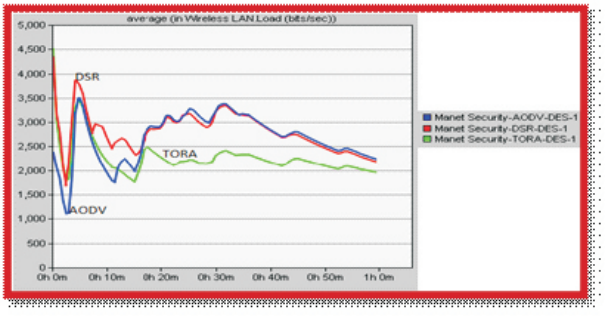
4.2 Delay

This measurement provides the End-to-End delay for traffic through an AODV, DSR and TORA. This delay is restrained as time elapsed among traffic toward the inside the "Network" over and done with one of the routing protocols and traffic leave-taking the "Network" through the comparable routing protocol.



4.3 Load

Uncertainty we appearance at the diagram then we originated to distinguish that TORA has small traffic load as associate to the supplementary routing protocols and happening the supplementary side AODV and DSR equally overlapping every supplementary throughout simulation time domain, occasionally AODV has in height load and earlier DSR has great load.



5 Comparison of AODV, DSR and TORA

At this time is the overall judgment of AODV, DSR and TORA with admiration to delay, throughput, load, and traffic sent, traffic received, Upload reply time and download response time.

S.No	Parameters	DSR	AODV	TORA
1	Throughput (bits/sec)	2850	3460	2605
2	Delay (sec)	0.0050	0.0019	0.0026
3	Load (bits/sec)	2800	2663	2260
4	FTP Traffic sent (bytes/sec)	53	50	39
5	FTP Traffic received (bytes/sec)	53	50	39
6	Download response time (sec)	0.12	0.70	1.30

6 ad hoc on demand distance vector

In mobile ad hoc networks, the working group is the IEFT that has developing different routing protocol as the AODV routing protocol also, is first version of the protocol, published in November 2001.AODV is appropriate to the class of Distance Vector Routing Protocols that shortly called DV. The Popular DV protocol has each node knows its neighbors and the costs to influence them. A node preserves its personal routing table, keeping completely nodes in the network, the distance and the next hop to them. Uncertainty a node is not accessible the distance to it is fixed to infinity. Each node directs its neighbors periodically its complete routing table.

7 DSR

The Dynamic Source Routing protocol is anunpretentious and well-organized routing protocol intended exactly for practice in multi-hop wireless ad hoc networks of mobile nodes. By means of DSR, the network is entirely self-organizing and self-configuring, necessitating not at all current network organization or administration. Network nodes collaborate to onward packets for every other to permit announcement over numerous "hops" among nodes not straight within wireless broadcast range of one extra. By means of nodes in the network transfer approximately or connection or dispensation the network, and as wireless transmission circumstances such as sources of interfering modification, altogether routing is mechanically unwavering and sustained by the DSR routing protocol. Meanwhile the number or arrangement of in-between hops needed to reach any destination may change at any time; the resulting network topology may be quite rich and rapidly changing.

8 Temporally Ordered Routing Algorithm

This is a reactive routing protocol which is likewise acknowledged as link reversal protocol. The aforementioned is operative in answering the current limitations in mobile ad-hoc networks. Outstanding to the high flexibility of nodes, mobbing is one of the main difficulties in MANETs. Outdated shortest path algorithm, adaptive shortest path algorithm, and link state routing cannot effort correctly in mobile networks.

9 CONCLUSIONS

Firstly we did relative study of dissimilar routing protocol (AODV, DSR and TORA); secondly we also implement security threats inside MANET network similar to intruder performance, tapping and integrity; thirdly we also implemented MANET link layer and network layer operations with respect to information security. This report also discusses dissimilar number of scenario of MANET network which we put into practice in our simulation. In our simulation we bring into play to put into practice dissimilar routing protocols and as well did proportional study, that which one is enhanced with respect to dissimilar aspect of security. This thesis has in addition use to implements mechanism of intruder performance, MANET connection layer and network layer operation with respect to in sequence security.

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