



Difference between AODV and DSDV Routing Protocols Using NS2 Simulation

Monali P. Khobragade¹
monalikhobragade6@gmail.com

Bharti D. Sayare²
bhartisayare@gmail.com

Dipika B. Channawar³
dipikachannawar143@gmail.com

Department of Computer
Science and Engineering,
Datta Meghe Institute of
Engineering, Technology and
Research, Wardha
Maharashtra, India.

Abstract- Now day while data transmission, security is one of the major issues for data transmission over wireless networks. Existing system utilizes security algorithm for secured data transmission over networks, but in proposed system, security is achieved without any use of security algorithm. Existing work on secure data transmission includes the designs of many security algorithms and system infrastructures. Proposed System will secure data transmission to dynamically route packets between each source and destination. For data transmission, different protocols i.e. Ad-hoc On-Demand Distance Vector (AODV) and Destination Sequence Distance Vector (DSDV) will be utilized which will maintain the routing table of the network. This system will be utilizing 'mobility cluster head' instead of security algorithms for data transmission over wireless networks. 'Mobility Cluster Head' will contain the information of each node within a wireless network and if any unauthorized node will try to hack the information then 'Mobility Cluster Head' or Global Inspector (GI) will try to secure the configured network from the unidentified attackers. Also, we will try to implement different network that uses AODV, and DSDV for wireless network, finally we are conclude which protocol is efficient for secured data transmission without any use of security algorithm.

Index terms- Secured data transmission, Dynamic routing protocol (AODV, DSDV), Mobility Cluster Head or Global Inspector (GI), Mobile Ad-hoc network.

I. INTRODUCTION

In the past years, various security-enhanced measures have been proposed to improve the security for data transmission over the network with the help of crystallographic algorithm. Main purpose of this system is to provide security for data transmission without use of any

crystallographic algorithm. With the help of routing protocol and mobile cluster head or global inspector. We Monitor the network and restrict the unwanted access. This project uses routing protocol for data transmission that is Destination Sequence Distance Vector Routing Protocol (DSDV) and Ad Hoc On-Demand Vector routing protocol (AODV).

This system uses two protocol for data transmission that protocol is Destination Sequence Distance Vector Routing Protocol (DSDV) [4] and Ad Hoc On-Demand Vector routing protocol (AODV). In reality creating such environment is difficult so simulation base software is used to design and perform the operation i.e. Network Simulation (NS2). Dynamic routing protocol, but AODV is reactive in nature and DSDV is proactive in nature. AODV is capable of unicast and multicast.

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II. SYSTEM ARCHITECTURE

This architecture is based on the simulation system. Network information module defined as network. Network is described as a network of devices which communicate by using wired or wireless technologies. The wired network is nothing but the connection of computer device or any node which is connected through a cable i.e. coaxial cable, twisted pair cable, fiber optic cable. And wireless network, Network wireless communication is the transfer of information without the use of wires or any type of cables. For communication through wired and wireless network many type of protocol is used as mention above for data transmission we use two Protocols i.e. AODV and DSDV.

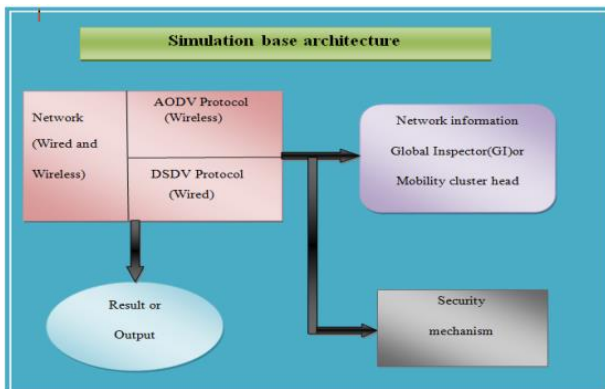


Figure 1. Simulation (ns2) base System design

Simulation is related to the network development, for this NS2 is used. NS2 is simulation software that simulates the performance of network without real network. We create two TCL script for communication through a network by using AODV and DSDV routing protocol. In this script, set the channel for network, MAC type, Radio-propagation model, network interface type, interface queue type, link layer type, and antenna model for network configuration, also define the node configuration. The network area is defined using 'Flat grid' object as 800 by 800m. In that network, a number of nodes are defined like 10 nodes, 20 node or 50 nodes depend upon the size of network. And after creating a node connection can be established and communication can take place within node. Here "Global Inspector" or "Mobility Head Cluster" is

created which is most important part of this project. By using this "Global Inspector (GI)" or "Mobility Head Cluster" security can be provided over the network. This GI is based on the energy of a node.

The third module is for security mechanism which provides the security to authorized user or node. In which GI play an important role when unauthorized user can try to enter into the network and want to access the data from authorized user that time "GI or Mobility Head Cluster" check that the user is authorized or unauthorized. GI contains all the information about the node which place within the network. When user want to transfer any that to destination then first GI take this information and check the destination information like its IP address, node location and send the data to destination if the IP address of the destination is correct otherwise GI consider that node is unauthorized node.

Finally result module, which shows the result in the form of simulated output. And also compare the result of the both the protocols i.e. AODV and DSDV protocols for data transmission over a wireless network. For the AODV protocol data is transfer from source to destination without any loss of packet or data. And for the DSDV there are so many losses. This is done using Network Simulator (NS2). Network simulator is software that simulates the performance of the network without the real network. There are two output of NS2 a nam file and tr file. A nam file is used for graphical representation also provides visualize interpretation of the network topology created. The other file i.e.tr file can be also say as the trace data analyzer shows the information of Xgraph and Tracegraph. Xgraph shows the interactive plotting and graphing. In which graph shows all types of the information delay, data receive, send and drop separately. The file contain the information in the sequence as like it contain information firstly of the event type i.e. send or receive, Event time, current node, current processing layer, packet type, packet size, source ID, destination ID i.e. time to leave, next hop address, TCP sequence no., Acknowledge number.

III. SYSTEM DESIGN NETWORK DSDV AND AODV

The network is for the AODV routing protocol in which the red node is the source node, green node is destination and blue node is GI. The GI is sending the data to the destination with the bandwidth 10mbits/sec and delay 10ms.

The network is for the DSDV routing protocol in which the red node is the source node, green node is destination and blue node is GI. The source is sending the data to the GI with the bandwidth 10mbits/sec and delay 10ms.



Figure 2. Creation of network with AODV protocol

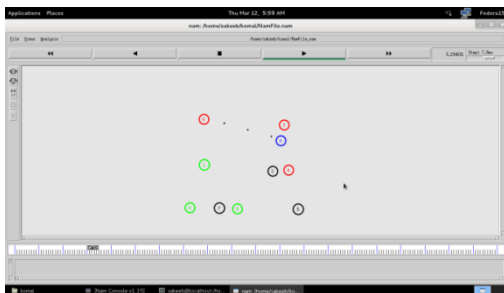


Figure 3. Creation of network with DSDV protocol

IV. THROUGHPUT GRAPH FOR AODV AND DSDV

Throughput is the number of packets that is passing through the channel in a particular unit of time. This performance metric shows the total number of packets that have been successfully delivered from source node to destination node and it can be improved with increasing node density.

It shows the sending throughput for UDP from source node. It is observed that sending throughput is maximum in the AODV routing protocol and it is increased because of node density, less traffics and free channel. In rest of the time sending throughput is almost constant. Here, AODV performance is better than DSDV in terms of sending throughput.

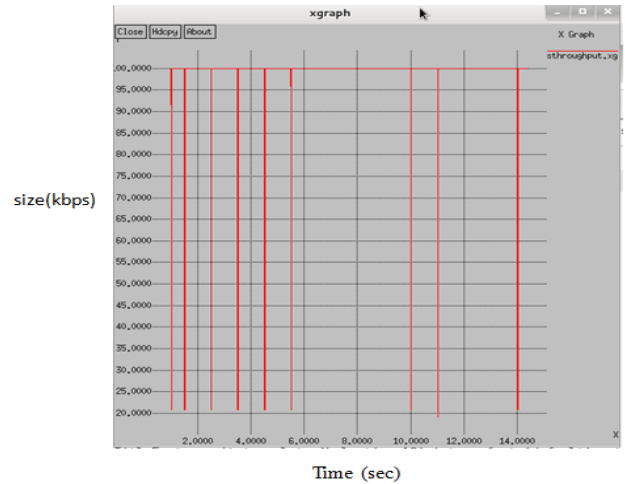


Figure 4. Throughput graph for AODV

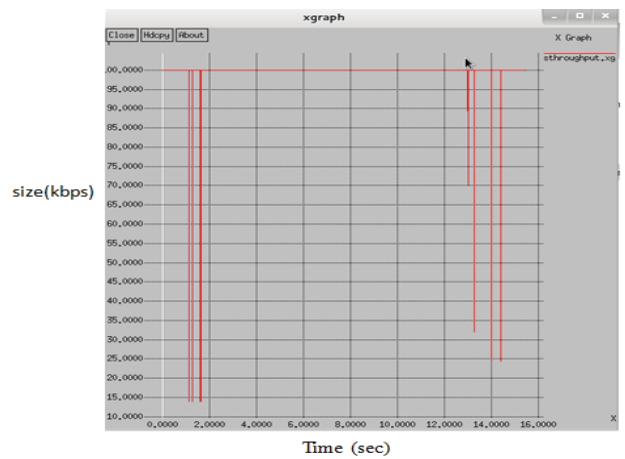


Figure 5. Throughput graph for DSDV

V. SYSTEM DESIGN

This system divided into network information store the information of network, Security Mechanism provide secure the network from unauthorized node with the help of Global Inspector (GI) or Mobile cluster head and Network design is help to define virtual network, simulation base result can be generated from this system. NS2 is simulation software that simulates the performance of network without real network. This system creates two TCL script for routing the path in network i.e. AODV and DSDV routing protocol. Routing protocol defines the path and security is achieving using Global Inspector (GI). This system compares the result of the both the protocols i.e. AODV and DSDV for better data transmission over a network.

VI. CONCLUSION

In present year the use of internet become very popular and more use of internet increase the issue of security, also increase need to develop a system to overcome threats, while data transmission or communicating through a network. The most important concept of this system is “Global Inspector (GI)” or “Mobility Head Cluster” to monitor and maintain the security.

After design this system we conclude that this system is trying to secure data transmitted without any use of security algorithm. For that this project is use “Mobility Cluster Head or Global Inspector” instead of any security algorithm to restricted unauthorized node, and can't access the data. Also, the comparative study of AODV and DSDV for better and efficient data transmission in routing network.

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