CRYPTOGRAPHY BASED PRIVACY PRESERVING DATACOMMUNICATION IN HYBRID WIRELESS NETWORKS

G APOORVA[1],K SRILATHA[2],G VENKATESH[3],M AHARONU[4]
Department Of CSE, MRCE, Hyderabad, Telangana, India.
Apoorva.g@gmail.com1,Sri.k@gmail.com2,Venky.g@gmail.com3,aharonu_cse@mrce.in4

ABSTRACT

Distributed Three-hop Routing protocol.DTR is used for data transmission in Hybrid wireless network. DTR divide a data into segments and transmits the segment in a distributed way. It uses at most two hops in ad-hoc transmission mode and one hop in cellular transmission mode. However, the selection of trust nodes for data transmission is difficult in DTR which in turn creates security issues. This paper proposes a TEEN APTEEN SPEED (TAS) protocol for conviction node selection. TAS protocol allocate a threshold value to each node in a network. Based on the threshold value, a trust node is selected for efficient data transmission in Hybrid Wireless Network. The threshold value is also to preserve security in the network in order that unauthorized spoofing nodes can't enter the network. Furthermore, this paper implements overhearing technique in which the sending node share the content with one or more other nodes before data transmission with the purpose that failure node can be exposed and replaced.

IndexTerms – Hybrid wireless networks, Cryptography, Trust node, Overhearing

1. INTRODUCTION

Hybrid wireless network merge mobile ad-hoc network and infrastructure wireless network. It is to be an [3]improved network arrangement for the next generation network. According to the environment situation, it can select base station transmission mode or mobile ad-hoc transmission mode. The mobile ad-hoc network is an infrastructure-less network. The devices in a mobile ad-hoc network can shift in any path and the link between the devices can altered regularly. In this network, the data is transmitted from starting place to target in a multi-hop way through in-between nodes. In an infrastructure wireless network (e.g. Cellular network), each device communicates with other device through base stations. Each cell in a cellular network has a base station. These base stations are linked via cable or fiber or wirelessly through switching centers.

If the region has no communication infrastructure or the existing infrastructure, communication between nodes are complex or not suitable to use. In this location [2] hybrid wireless network may still be able to communicate through the construction of an ad-hoc network. In such a network, every mobile node operates as a host and also as a router. Forwarding packets to new mobile nodes in the network may not be within straight wireless transmission range. Each node participates in an ad-hoc routing and infrastructure routing, for this [1] Distributed three hop routing protocol is used. It allows to discovering a "Three-hop" path to any other node during the network is introduced in this effort The first two hops in ad-hoc networking is sometimes called infrastructure-less networking, since the mobile nodes in the network animatedly make routing between themselves to form their personal network. The third hop is created in infrastructure networking. Most Wi-Fi networks task in an infrastructure approach. Devices in this network communicate through a single access point, which is generally the wireless router. For example, consider the two laptops are placed next to each other, each connected to the same wireless network. still the two laptops are

sited next to each other, they're not communicating in a straight line in infrastructure network. Some possible uses of hybrid wireless network consist of students using laptop, computers to participate in an interactive instruct, trade associates and sharing information during a gathering soldiers communicate information about the condition attentiveness on the emergency failure release and personnel coordinating efforts after a storm or shaking Spread Code is normally used for safe data transmission in wireless communication as a way to measure the excellence of wireless connections. In wired networks, the existence of a wired path between the sender and receiver are determining the correct reception of a message. But in wireless networks, path defeat is a main trouble. The wireless communication network has to obtain a lot of environmental parameters to report background noise and interfere power of other simultaneous transmission. SINR attempts to produce a demonstration of this aspect. So the TAS protocol is implemented to keep the details about the dispatcher and receiver and the communication media in the network. This is implemented through overhearing concept. This TAS implements grouping of nodes depending on the threshold value so that the communication will be simple. In overhearing, the data is transferred to many nearby nodes in a cluster . The cluster is a grouping of nodes, which enclose cluster head and gateway. So the fundamental idea is to individually learn unknown and possibly random mobility parameters and to group the mobile node with related mobility prototype to the same cluster. The nodes in a cluster can then interchangeably distribute their resources for load balancing and overhead reduction, aiming to achieve scalable and proficient routing.

In TAS protocol, a secured code called threshold value is used. The nodal contact[7] probability are updating with the help of threshold value, it established to join the true contacts probabilities. Subsequently, a set of functions are devised to form clusters and choose entrance nodes based on nodal contact probabilities. lastly gateway nodes switch the network information and make routing. The result demonstrate that it is get higher delivery ratio and considerably lower overhead and end-to-end wait when compared to non-clustering matching part.

2.EXISTING WORK

The Base stations are coupled by means of a wired backbone, so that there are no power constraints and bandwidth during transmission among BS. The in-between nodes are utilized to indicate convey nodes that task as gateways connecting an infrastructure wireless network and mobile ad hoc network. DTR aims to move the routing load from the ad hoc network to the infrastructure network by taking advantage of extensive base stations in a hybrid wireless network. Rather than using one multi-hop path to forward a message to one BS, DTR uses at most[3] two hops to relay the segments of a message to different BS in a distributed way, and relies on BS to merge the segments. When a source node needs to propose a message stream to a destination node, it partition the message flow into a number of partial streams called segments and spread each segment to a neighbor node. Upon receiving a segment from the source node, a neighbor node decides between direct transmission and relay transmission based on the QoS requirement of the application. The neighbor nodes encourage these segments in a distributed way to nearby BS. Relying on the infrastructure network routing, the BS further transmit the segment to the BS where the destination node resides.

The ending BS reorganizes the segments into the original order and forwards the segments to the destination. It uses the cellular IP transmission method to begin segments to the destination if the destination moves to another BS through segment transmission.DTR works on the Internet layer. It receives packets from the TCP layer and routes it to 1the destination node, where DTR forwards the packet to the TCP layer. The data routing process in DTR can be separated into two processes: uplink from a source node to the first BS and downlink from the last BS to the data's destination. In uplink process, one hop to forward the segments of a message in a distributed way and uses another

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hop to find high-capacity forwarder for high show routing. As a result, DTR restrictions the path length of [8]uplink routing to two hops in order to keep away from the problems of long-path multi-hop routing in the ad-hoc networks. particularly, in the uplink routing, a source node divides its message flow into a number of segments, then transmits the segments to its neighbor nodes. The neighbor nodes promote segments to BS, which will forward the segments to the BS where the destination resides. In this work, throughput and routing speed are taken as a QoS requirement. The bandwidth/queue metric is to reflect node capacity in throughput and fast data forwarding. A larger bandwidth/queue value means higher throughput and message forwarding speed, and vice versa. When selecting neighbors for data forwarding, a node needs the capacity information of its neighbors. Also, a chosen neighbor should have enough storage space for a segment. To find the capacity and storage space of its neighbors, each node periodically interactions its current information with its neighbors. If a node's capacity and storage space are altered, it again sends its present information to the segment forwarder. After that, the segment forwarder will select the maximum capacity nodes in its neighbors based on the updated information. That is, after a neighbor node receives a segment from the source, it uses either direct transmission or convey transmission. If the capacity of each of its neighbors is no greater than itself, relay node make use of direct transmission. If not, it uses convey transmission. In direct transmission, the relay nodes pass on the segment to a BS if it is in a BS's region. Or else, it stores the segment while moving until it goes into a BS's region. In relay transmission, relay node chooses its highest-capacity neighbor as the second relay node based on the QoS requirement. The second relay node will use through transmission to forward the segment directly to a BS. As a result, the number of transmission hops in the ad-hoc network component is confined to no more than two. The small number of hops helps to increase the capacity of the network and reduce channel conflict in ad-hoc transmission. The intention of the second hop choice is to find a higher capacity node as the message forwarder in order to pick up the performance of the QoS requirement.

If a source node has the maximum capability in its region, the segments will be forwarded rear to the source node according to the DTR protocol. The source node then forwards the segments to the BS straight due to the three-hop limit. This case occurs only when the source nodes is the maximum capacity node within its[9] two-hop neighborhood. Since the data transmission rate of the ad hoc interface is more than 10 times earlier than the cellular interface example 3G and GSM. Thus, the transmission wait for sending the data back and forth in the ad-hoc transmission is negligible in the total routing latency. After a BS receives a segment, it needs to forward the segment to the BS, where the destination node resides (i.e., the destination BS)..However, the destination BS recorded in the home BS may not be the most up-to- date destination BS since destination mobile nodes switch between the coverage regions of different BS during data transmission to them. For instance, data is transmitted to BS Bi that has the data's destination, but the destination has moved to the range of BS Bj before the data arrives at BS Bi. To deal with this problem, the[4] Cellular IP protocol is used for tracking node locations. With this protocol, a BS has a home agent and a foreign agent. The foreign agent keeps track of movable nodes moving into the ranges of other BS. The home agent intercepts in-coming segments, reconstructs the original data, and re-routes it to the foreign agent, which then forwards the data to the destination mobile node. After the destination BS receives the segments of a message, it rearranges the segments into the original message and then sends it to the destination mobile node. DTR specify the segment structure format for reschedule message. Each segment contains eight fields, including: (1) source node IP address; (2) destination node IP address; (3) message sequence number; (4) segment sequence number;(5) QoS indication number; (6) data; (7)length of the data; and (8) checksum.

3. PROPOSED WORK

Establishing the Network

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The first step of network establishment is forming the cluster. The cluster is the group of related nodes formed in order to make the data transmission easier. every cluster will have Cluster top, Gateway and other nodes. The first criterion in wireless medium was to discover the available routes and establish them earlier than transmitting. The network consists of n nodes in which two nodes must be source and destination others will be used for data transmission. The path selection for data transmission is based on the availability of the nodes in the area using the ad-hoc on demand distance vector routing algorithm. Using the Ad-hoc on Demand Distance Vector routing protocol, the routes are created on demand as needed.

Threshold allocation

Threshold value distribution is done using TEEN, APTEEN and SPEED protocol. Based on the threshold value, trust node can be chosen also malicious node can be unobserved.

3.2.1 Threshold-sensitive Energy Efficient sensor Network protocol (TEEN)

It is a immediate protocol proposed for time-risky applications. The major idea of this technique is to produce the threshold value to every node in the network. After create the threshold value, the node is set in a hierarchical[6] clustering scheme in which some nodes act as a 1st level and 2nd level cluster heads. After forming the cluster head, the nodes get the data for transmission. Once the data is received the cluster head broadcasts the data to this cluster member.

Adaptive Threshold-sensitive Energy Efficient sensor Network protocol (ATEEN)

APTEEN is a hybrid [10]routing protocol planned for both time cyclic data collection and critical events. The main idea is to keep the statistical information. In this APTEEN method, the threshold value of each node in the cluster will be communicated with other cluster. Each cluster will have an APTEEN values.

SPEED Protocol

SPEED is a stateless protocol which provides real time communication by maintaining preferred release speed across the network. SPEED protocol is to discover geographic location. In this protocol whenever source nodes are[5] transmits a packet, the next hop neighbor is acknowledge using Stateless Non deterministic Geographic Forwarding (SNGF). The SNGF identifies a node as next hop neighbor, if it belongs to neighboring set of nodes, lies within the range of destination area and having speed larger than confident desired speed.

Overhearing Technique

The path selection, preservation and data transmission is repeated process which happens in split seconds in real time transmission. Hence the path allocated priory is used for data transmission. The first path allocated previously is used for data transmission. The data is transferred through the tinted path. But the transmission lane may be unsuccessful some times. At that moment second path is selected for data transmission. It takes additional time to find the second path. In order to deal with these overhearing is used. The overhearing is the idea in which the sending nodes allocate data to more than one node in a network. If the node collapse occurs in a network, that can be substituted by other active node.

Three hop Routing

Three hops are used for data transmission in a network. Two hops at mobile ad-hoc network and one hop at infrastructure network. The usage of this amalgamation will pick up the reliability. In this technique, the network is silent until a connection is needed. The new nodes forwarded this message, and documentation the node that they heard it from, creating an blast of temporary routes is back to the wanted node. while a node receives such a message, it will send the message backwards through a fleeting route to the requesting node. The deprived node then begins using the route that is the least number of hops through other nodes. Idle entries in the routing tables are recycled after a time.

4. CONCLUSION

Distributed Three-hop Routing protocol integrate the features of infrastructure and

ad-hoc network in the data transmission process. In Distributed Three- hop Routing, source node divides a message flow into segments and broadcast them to its mobile neighbors and it further advance the segments to their target via an infrastructure network. Distributed Three-hop Routing restrictions the routing path length to three, and always arranges for high ability nodes to forward data. Distributed Three-hop Routing produces appreciably lower overhead by eliminating route find and maintenance. TAS protocol is implemented in this work which distributes a threshold value to each and every node in a network for the collection of trust nodes. In addition, Overhearing technique is applied to find out and change the failure node in the network. . It has the characteristics of short path length, short- distance transmission, and balanced load distribution provides high routing reliability with high efficiency and also include congestion control algorithm which can avoid load congestion in Bs in the case of unbalanced traffic distributions in networks. Besides the data transmission in hybrid wireless network is highly secure and more efficient.

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