

Avoiding Brute Force attack in MANET using Honey Encryption

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Abstract: Mobile adhoc network includes wireless mobile nodes that are capable of communicating with each other without the use of a network infrastructure. This MANET is vulnerable to different types of attacks due to the certain features of network. Lot of attacks are there in MANET. Brute forcing is one of the attack that can create problem in communication in a MANET network. Mainly focusing on single hoc MANET Honey encryption can prevent such attacks during the normal encrypted data transmission. This is new type of encryption in which when an attacker tries to brute force by different keys different decrypted data will be got, thus the brute forcer will be confused totally about the actual content. A new type of randomized message encoding scheme called a distribution-transforming encoder (DTE).

Keywords: MANET, One-Time Pad, Honey Encryption, DTE, attack.

1. Introduction

This paper gives an idea of implementing a new encryption schema that will prevent a change of brute forcing in simple MANET single hock network. MANET network is having two types of structure one is single hop and multi-hope. A lot of security vulnerabilities are there in MANET, this is due to the peer to peer architecture, highly dynamic network topology and nodes openness to physical capture. There are a lot of attacks normally seen in MANET, and here we are focusing on a type of attack called brute forcing. Brute forcing is a process to decode the data which is in encrypted form by providing different keys.

Normal encryption has lot of drawback as comparing the new one, if an attacker tries a key to decrypt the data in a normal encryption error symbols will be displays and thus the attacker will tries to brute force and create problem. Normally in MANET a lot of attacks has been detected but a change of brute forcing is also there. Real world system replies for encryption in very low entropy. The existing password based encryption(PBE) was developed for increasing the strength of the password with the help of salting, in cryptography salt means it is a random data that is used as an additional input to a one way function that will hashes a password. Main peculiarity of the salt is for each password a new random salt is generated, then the salt and password are concatenated and processed with a hash function and so. Hash functions are represented by H and with respect to password it is $h(p)$ and with respect to the salt it is $h(p,s)$. The basic PBE will slow the attack by the multiple users and so. More over to avoid the recovery of the encrypts messages by trying different passwords or keys we developed the new encryption schema called Honey Encryption.” Honey Encryption is a security tool that makes it difficult for an attacker who is carrying out a brute force attack to know if he has correctly guessed a password or an encrypted key.

2. Related Work

Different attacks where taken into concern in Manet network and it solution to avoid for the type of attack was discovered in earlier. The attacks in Manet can be classified into mainly tow types one is passive and active attacks.

Table 1: Types of attacks

Blackhole Attack	Active Attack
Denial of service	Active Attack
Rushing Attack	Active Attack
Sinkhole Attack	Active Attack
Sybil Attack	Active Attack
Traffic Analysis	Passive Attack
Wormhole Attack	Active Attack

The data that is transmitted from a sender node to the receiver node in Manet network will be in encrypted form and if an attacker id present in between and if he tries to decrypt the data by trying different keys has change to get the data to be decrypted ie Via brute force attack. This chance of attacker is not taken into the consideration. To avoid the chance of this attack our proposed encryption scheme is useful. To brute force the key of password attacker can use sophisticated tools such as John the Ripper and so, this tools can easily crack the hashes when the underlining passwords are weak.

2.1 Development of Password-Based Encryption

This encryption schema is also vulnerable to brute force attack. PBE consist of two main function such as enc and dec function. To encrypt a message such as L, the working is like first L is encrypted with a password P and the corresponding cipher text C is produces ie $L=dec(C)$. If the password or key which is used to decrypt the encrypted message id wrong an error message will be produced. Mostly the error message will be of symbols mostly seen symbol is “| “. The security of the PBE is fully depended on the attacker’s ability to guessing ability of the password. By using the hacking tools

$S=C\oplus S'=10\oplus 11=01$ and the ecode(01)=Grape and the message is successfully recovered by the Roopa. Suppose an attacker C tries to decrypt it .He doesn't know the key that is used so he assumes key such that of 1432, $H=(R, 1432)=00$ and then $S''=C\oplus S'=10$, and by decoding it he will get decode(10)=pineapple. Thus the attacker is fooled by this new type of encryption and so.

4. Conclusion

Here it is clear that by using this type of encryption it is clear that an attacker can be fooled easily by this new technique called honey encryption that is the brute force attacker cannot gain the correct message when they try to decrypt it with their keys. This technique can be used in MANET network and so.

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