Scope International Journal of Science, Humanities, Management and Technology. ISSN : 2455-068X

Vol.3 Issue 4 (2017) 259 - 263. Submitted 25/11/2017. Published 30/12/2017

PKC-DOS ATTACKS RESISTANT SCHEME IN WIRELESS SENSOR NETWORK

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Abstract:

The future developments of the wireless sensor networks and its applications demands for the efficient and secure communication. For the solution of efficient and reliable security needs cryptography algorithms provides good solutions. For providing reliable security schemes mainly data confidentiality now-a-days key management is used. This paper provides a review over cryptography schemes being used to deal with security issues of wireless sensor networks. The first section of this paper provides the introductory concepts of WSN, security issues and requirements.

Keywords: Solution, Security, Cryptography.

1. INTRODUCTION

A wireless sensor node contains components like storage, processing, sensing and transmission as their main electronic components [1]. The computational power possessed by these electronic components is generally low, but these electronic devices are the main play contributors for computing. The task of these electronic devices is to collect data in a wireless network and pass the collected data by the network between the connecting nodes which work as collective unit [2]. The WSNs are applicable for monitoring human body organs, environmental monitoring, temperature and humidity controlling, vehicle traffic controlling systems (Adhoc), etc.shows the basic scenario of wireless sensor networks application in which a basic network is used to monitor the type of an application whether human body organ monitoring, Adhoc network, temperature control or any other application by using sensor nodes for proving the desired computational demands. During communicating through the network a case arises of failure, which is solved by the use self-configuration and adaptation features of WSNs. With the growth of WSNs now there are mostly no monitoring stations in the networks to monitor nodes working during the working life of the network it is being done by sensor nodes by itself In a WSNs the sensor nodes are deployed not in a confined area but they are spread over a large area, thus their single controlling and monitoring in a network is mostly a not so easy to do task thus allowing the unauthorized users to provides faults and errors in interviewing the security of these sensor nodes without having any physical access to the sensor nodes. Attack on integrity: By integrity attacks the false data packets are continuously communicating between nodes in a network making the network unavailable for communicating useful information and available for attackers to communicate in a network. Availability network Attack/DoS attacks/or Negation of service: By such attacks the networks seems to be unavailable for use instead of being actually free to use.

2. RELATED WORK

A conventional computer network working is the basic working concept for working of WSNs. Additional requirement is basically security of data communication in WSNs as compared to computer network during a working network life cycle. Security requirements are the additional feature of WSNs which included some certain and important terms such as confidentiality, integrity, availability, authenticity and quality of service.

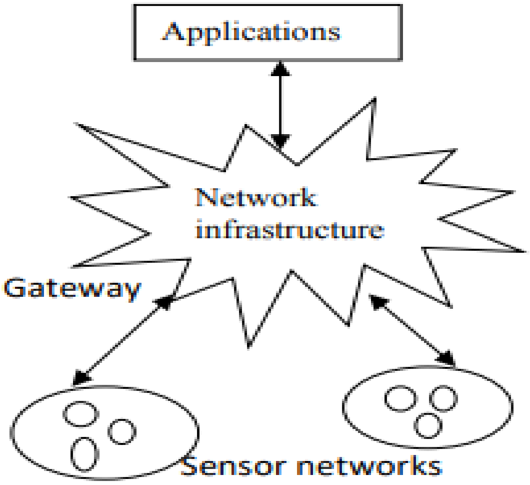

Fig.1.Wireless Network

To avoid above explained attacks and to achieve security of data in WSNs mostly cryptographic techniques are being used as an important part of the WSNs security architecture. Cryptography techniques are basically encryption techniques used to encrypt our basic data packets into some secured data packets of coded data words that are being transferred over the network instead of direct original data packets transmission. During transmission encrypted data is basically a set of some extra bits along with the data bits for securing the original data from being accessed by the attackers which is secured and compatible to the existing protocols over the network operating as a layered model of network. Cryptography schemes are provided to meet the basic security requirements of confidentiality and integrity in networks basically there are 2 cryptography algorithms Symmetric Cryptography Presented being used widely cryptography technique is asymmetrical cryptography uses two keys public and private keys for data encryption and decryption which avoids the treat of key sharing in a network to implement reliable security.

3. PROPOSED SYSTEM

A remote sensor system has a storage facility of capacity, handling, detecting and transmission as principle electronic parts in a conveyed way. It contains countless, self- coordinated and, low controlled gadgets called sensor hubs which are utilized to detect the nearness of wanted application like temperature control, fire cautions, development location, and so forth. In WSNs an extensive number of haphazardly disseminated, battery-worked, inserted gadgets that are utilized to gather, prepare, and pass on information to the clients as a matter of course as its fundamentals of operation [1]. Every hub is intended for performing errands like gathering information, detecting, preparing and speaking with different hubs [2]. For some ongoing applications the sensor hubs are performing distinctive diverse undertakings like distinguishing the neighbor hubs, savvy detecting, putting away of information and handling of put away information, information total, following of target, control and observing, hub restriction. WSNs couldn't give a solid and an effective working model because of the dangers of systems administration.

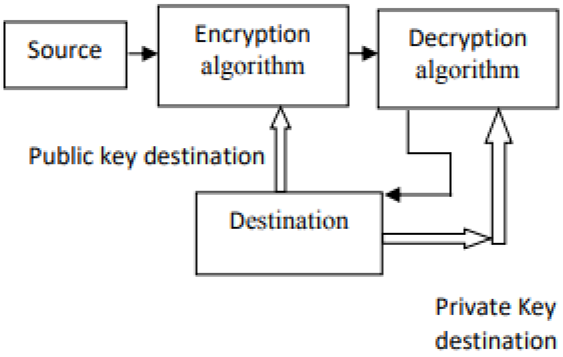

Fig.2.Cryptography

These dangers are influencing distinctive layers of imparting conventions essentially, transport layer, organize layer, session and application layers. Before actualizing information uprightness, information secrecy, and information validation we should manage these dangers and ought to discover some approaches to maintain a strategic distance from them. The following threats in wireless sensor network includes basically security issues of the secure data transmission in WSNs during node communication includes some of the basic communication threats and some advance threats which affects the wireless sensor network’s working model. character over an uncertain system. Cryptography is basically encryption techniques used for encryption of data or information into some secured data packets of coded data words i.e. raw data is converted into a secure coded data packets, which is being transmitted over the network instead of direct original data packets transmission in an insecure format. Encrypted data is basically a set of some extra bits along with the data bits for securing the original data from being accessed by the unauthorized users’ means the original data is encrypted into some data bits in a coded form by changing its actual sequence into some random occurrence. During transmission encrypted data which is secured and compatible to the existing protocols over the network operating as a layered model of network i.e. compatible for transmission over the physical, data link, transport, and network and application layers in a secure way without being affected by threats of protocols layered architecture as original sequence of data is randomized using encryption techniques.

4. ANALYSIS

This technique makes use of only a single key called secret key which is shared between the communicating parties over the network, thus this process of sharing the key is much threat prone. The further classification of Symmetric key algorithms is i) block ciphers for fixed transformations i.e. when data transmission is considered to be of fixed size as every time the sequence of data bits and their size is same with may be same or different content, and ii) stream ciphers for time varying transformations, where size is varied according to the length and type of data being transmitted over the network. The two subdivisions are used for comparing encryption algorithms on plain texts of the algorithm at various levels for example, the levels would be considered as various data types, battery power consumption parameters, various data block sizes, for various key sizes. Being used at present time as cryptography technique in recent years due to its advantages over symmetrical techniques which were used to encrypt and decrypt the data. Asymmetrical cryptography strategy utilizes two keys public and private keys for information encryption and decryption which stays away from the danger of key partaking in a system to execute solid security needs as the general public key just shared over the uncertain system yet the unscrambling should be possible just by utilizing the private key which is accessible just to the decoding hub at goal.

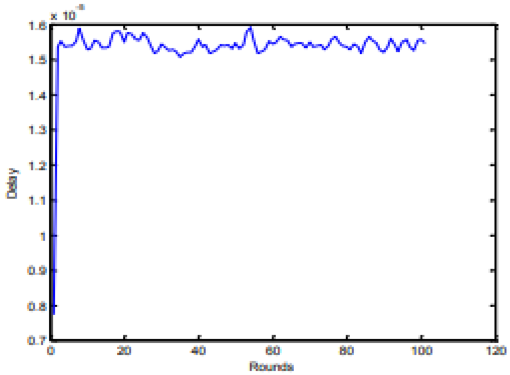

Fig.3.Analysis Graph

The keys are used as two-way security providers as the algorithm uses a pair of keys which are not same and not made for same encryption and decryption purpose, private key never makes the encrypted data publically known to every user it is only provided to the authorized users for accessing the data and by having matched private key a user can decrypt the data at the destination end comparing its public and private key with the sender's public and private key i.e. key sharing of public key could not benefits the attacker to decrypt the data as for decrypting the data private key is required and which is not shared over the network only authorized user is having private key for data decryption. In this way finished up data proposes that the Public key cryptography is more useful as a result of its low memory utilization, low CPU utilization, and little key size over symmetrical plans. These plans give positive vitality benefits than doing irregular drops as in key administration plans. The time calculations are more dependable with variable key administration era procedures giving proficient security objectives as the key size is indistinguishable and differed at each progression without being in need to make them known to all hubs in a system as key calculation for key calculation for computing open key and private key is not same and not indistinguishable keys are utilized for encryption and decryption. The symmetrical cryptography is not appropriate for WSNs when contrasted with asymmetrical cryptography as symmetrical cryptosystems because of maintain a strategic distance.

CONCLUSION

Likewise the public cryptosystems are more proficient in security objectives accomplishment when contrasted with symmetrical ones as symmetrical ones needs to give the connection keys publically which causes unapproved assaults and client's information security absconds while public cryptosystems does not have to publically profit their key era as public key is utilized for encryption is promptly accessible yet the private key utilized for unscrambling is not made accessible in this manner security dangers decreases as assailant have no learning in regards to the private key which can decode the information hence information respectability, information secrecy, and validation could be accomplished which gives the fundamental secure transmission needs achievement.

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