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Plenum based Location Services in Wireless Sensor Networks

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Abstract: Security is the main aspect in wireless sensors networks because nodes are dynamically moved through network. We design two in network location anonymization algorithms, namely, resource- and quality-aware algorithms that aim to enable the system to provide high quality location monitoring services for system users, while preserving personal location privacy. Both algorithms rely on the well established k-anonymity privacy concept, that is, a person is indistinguishable among k persons, to enable trusted sensor nodes to provide the aggregate location information of monitored persons for our system. But quality is the main discussion in providing security using privacy preserving based on monitoring locations systems. In this paper we propose to extend the above quality aware algorithms with same resources and low power consumption for dynamic relocations between nodes present in wireless sensor network. We apply anonymization aggregation in quality aware algorithms for providing high quality assurance. We propose Quorum based location service. The main idea of this technique is destination node register its location along with column to form a update quorum. The source node makes query along a row to form a search column. To guarantee the success of location retrieval for both search and update quorums are extended by face routing for transfer outer network boundary.

Index Terms: ***Wireless sensor networks, telecommunication network routing, Location privacy, aggregate query processing, scalable quorum based location service.***

I. INTRODUCTION

We consider the basic wireless sensor networks consists of wireless nodes that communicate with each other. In wireless sensor networks, sensor nodes are static and route reports on event discovery to a special node that can be in wireless sensor network. The task of finding and maintaining routes in the network is nontrivial since node mobility causes frequent unpredictable topological changes. Location based routing is therefore introduced to reduce the communication overhead imposed by flooding based solutions. Each node operates autonomously with no central control.

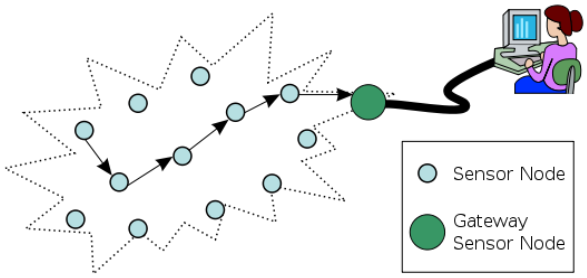

Figure 1: Wireless sensor network with gateway interface.

As mention in the above diagram we are assigning different sensor nodes with connection of special node connection present in wireless sensor networks. That node can be act as gateway interface for performing efficient results in data sharing process between each node present in wireless sensor network. Many cases of these applications rely on the information of personal locations, for example, surveillance and location systems. These location-dependent systems are realized by using either identity sensors or counting sensors. Previously our proposed work avoids privacy leakage with low quality assurances. Privacy is major in our traditional technologies. For privacy preserving traditionally we was developed resource-Quality based algorithms. The basic idea was aim to enable the system to provide high quality location monitoring services for users, while preserving personal location privacy. The major issue in the above discussion is providing security with high quality results and power consumption for providing equal communication in wireless sensor networks. So, in this paper we propose to extend our existing architecture with quorum based location services. By using same resources we are developing quality communication in wireless sensor networks. Our experimental results give most efficient processing results in data sharing with aggregation functions can be developed in wireless sensor networks.

II. RELATED WORK

Main focusing problem in wireless sensor networks was preserving user location privacy that includes enforcing privacy policies to restrict the use of collected information and Anonymizing the stored data before any disclosure in wireless sensor networks. For this concept previously many applications were proposed to develop above considerations in wireless sensor networks. Recently, location anonymization techniques have been widely used to Anonymizing personal location information before any server gathers the location information, in order to preserve personal location privacy in location-based services. These techniques can be developed only false locations and spatial cloaking; these two operations give efficient results in blurs the user's location into special area for satisfying user's specified privacy requirements. They concluded experimentally that the best strategy is to update when a certain pre-specified number of links incident on a node have been established or broken since the last update. The Quorum applied in this paper refer the nodes currently form a source to destination.

The main idea in is that each server (or node) selects one of quorums at random, to increase the chance of obtaining relatively up to date information in several 'columns'.

III. EXISTING APPROACH

In an identity-sensor location monitoring System, since each sensor node reports the exact location information of each 0monitored object to the server, the adversary can pinpoint each object's exact location. On the other hand, in a counting-sensor location monitoring system, each sensor node reports the number of objects in its sensing area to the server. The adversary can map the monitored areas of the sensor nodes to the system layout. Our system relies on the well established k-anonymity privacy concept, which requires each person is indistinguishable among k persons. In our system, each sensor node

blurs its sensing area into a cloaked area, in which at least k persons are residing. Each sensor node reports only aggregate location information; we propose two in-network aggregate location anonymization algorithms, namely, resource- and quality-aware algorithms. Both algorithms require the sensor nodes to collaborate with each other to blur their sensing areas into cloaked areas, such that each cloaked area contains at least k persons to constitute a k-anonymous cloaked area. The resource-aware algorithm aims to minimize communication and computational cost, while the quality-aware algorithm aims to minimize the size of the cloaked areas, in order to maximize the accuracy of the aggregate locations reported to the server.

IV. PROPOSED APPROACH

To enable an efficient quorum based locations service, mobile nodes should occasionally intelligently update current locations to a subset of nodes in the network to form an updated quorum.

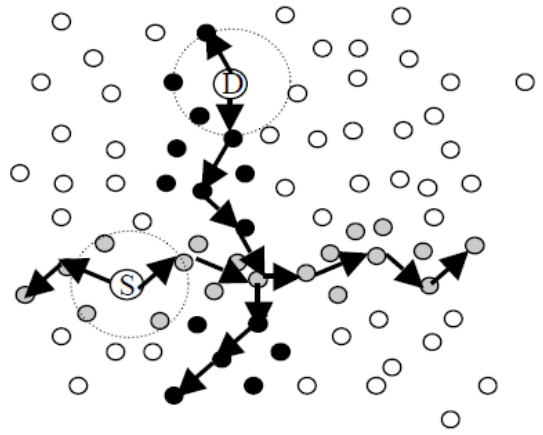

Figure 2: Quorum Based architecture.

We propose a novel quorum-based location service for mobile ad hoc networks, and for sensor networks with mobile sinks. The basic idea is that when a node needs to update its location information, it propagates its location information in both north and south directions to reach the north and south boundaries of the network. All nodes that receive the update packet form a north-south column. When a querying node wants the position of the destination node, it first checks whether the location recorded in its database is outdated. The advantage of this method compared to existing solutions is that nodes can announce and find their locations without any sort of flooding or broadcasting throughout the whole network. Also, the method uses relative positions of nodes and thus is suitable for use when all nodes move in the same direction.

V. ANALYSIS RESULTS

We will study the performance evaluation of quorum based location service through simulation. The simulation compares their performances to show the different tradeoff results. Communication overhead is the main aspect in number of nodes is required to forward update or research packet information when extremes points of the network arrived. We first studied the case of static networks, in order to verify the methods effectiveness under ideal circumstances.

The overhead can be reduced if only one of destination searches or location update follows the outer boundary, while the other will stop when it reaches the first such node.

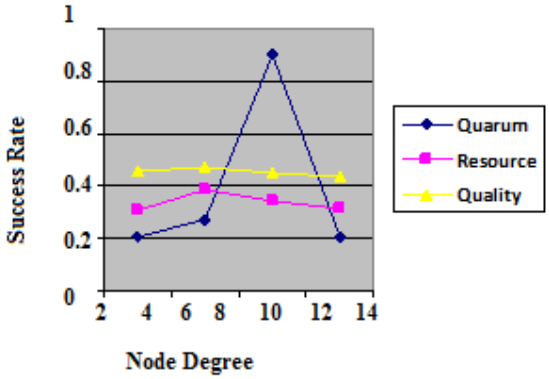

Figure 3: Simulation results with comparison of quorum with resource quality algorithms.

The protocol needs also to handle node mobility between two location updates. The destination search will reach the area where node was located when it last initiated 'column' location update. The above figure shows increasing the number of nodes presented in the same cropper and user's locations in wireless sensor networks.

VI. CONCLUSION

In this paper we propose to extend the above quality aware algorithms with same resources and low power consumption for dynamic relocations between nodes present in wireless sensor network. We apply anonymization aggregation in quality aware algorithms for providing high quality assurance. We propose Quorum based location service. The main idea of this technique is destination node register its location along with column to form a update quorum. The source node makes query along a row to form a search column. To guarantee the success of location retrieval for both search and update quorums are extended by face routing for transfer outer network boundary.

VII.REFERENCES

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