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CONTEXT BASED STRATEGY FOR MULTICASTING IN MOBILE AD HOC NETWORKS

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Abstract

In the performance estimation of a protocol for an ad hoc network, Context awareness along with validation facilitates major functionality toward pervasive computing applications, users, and resources with the behaviours they interact. Much of this functionality depends on validating context Information and using it for granting access to data or resources. In this paper introduce three different strategies to evaluate this application and also describe publishing/subscribing environment. The first, Message centric, strategy distributes messages to their neighbours in sender group called as gossiping. The Second, Query centric, strategy distributes queries to their neighbours in receiver group. The third, Hybrid strategy used to find the best of both messages, queries and then distributed through multicast and also one more new feature is implemented for creating context awareness among mobile network to analyze how many users are currently stay back in location, how many of them discarded.

Keywords: - Publish/Subscribe, Context-Awareness

1. INTRODUCTION

Mobile ad hoc network examine has frequently assumed that a connected path exists between a sender and a receiver node at any point in time. This statement expose itself idealistic in many decentralized mobile network applications such as vehicular networks, wildlife monitoring sensor networks, outer space contact systems and emergency operations networks. A multitude eager to send a message to a receiver, or any host in the multi hop pathway to it, then decision stands under the mobility of the host and its previous collocation with the receiver (unconditionally believe that past collocation specify that the host resolve meet the receiver over in the future). Every node is known its locality-support key and its geographic location is used as its character while communicating with adjacent nodes. In contrast use a node's location to authorize access to a resource. Assume that a user or node's location is dynamic. Administrative nodes within an active space use the location-based keys to perform cryptographic functions on the behalf of the user.

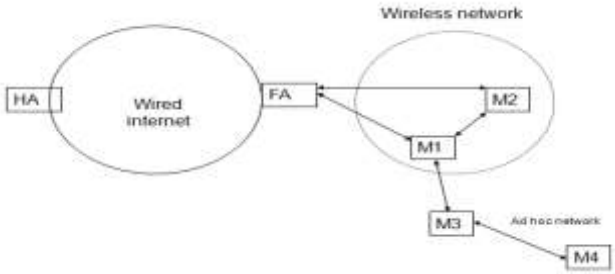

Fig. 1 Model of MANET Structure with Context Aware communication

In geographic dependency include a notion of location context capture closeness of senders and receivers. Temporal dependency concentrates on life time through messages multicast. The Location Based Multicast Addressing (LMA) is a specific abstraction in context aware group communication. Message-centric strategy employ geographically scoped rumor to spread messages inside a distinct geographical range around the sender (message space). Query centric, strategy perform message matching and restricted to a geographical range around the receiver (query space). Hybrid strategy partition the range of the particular spaces between message distribution and query transmission, by half of the range for each. To facilitate deliver messages to receivers in the message space but exterior of the distribution range, intermediate nodes are responsible of matching and routing. The context aware strategy is used to get information about users currently located in the network location and identify how many users discard from that range. After receiving user updates and then confirm no of users interested to receive message in particular location. So it is easy to reduce interference among network.

1.1 Related work

Explicitly correlate determination with messages is in some way different to various publish/subscribe-stands messaging schemes in wired sites, which propose several concept of strong involvement for receivers to be inform of messages published as they exist out of range. Persistent messages permit scheme to capture real life events that are indeed not instantaneous, such as traffic jams, concerts, etc. So it is important to distinguish between the duration of an event, which could be quite long, and the duration of its delivery to the application at a given receiver, which can be assumed to be instantaneous. In this sense, the notion of persistent message makes it possible to capture the semantics of MANET-based applications that would otherwise be difficult to express.

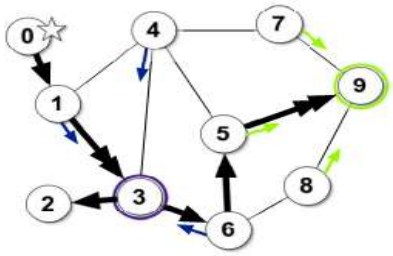

Fig. 2 Wired settings with upstream, downstream route messages

2. Proposed work

Context-aware systems offer completely latest visions for client by collect context data and adjusting systems performance consequently. Especially in arrangement with mobile devices these methods are used to increase necessity extremely. Highly dynamic computing setting like ubiquitous and pervasive computing, involve regular adaptation of applications. Operations for capturing, collating, storing, and disseminating

relative information at the bottom level and combining it into increasingly more conceptual representations qualify the context aware systems. This system depends on particular requirements and conditions such as the locality of sensors, the number of probable users (one user or many), the obtainable resources of the used plans or the ability of an additional extension of the system.

2.1 Context Aware Approach

The context aware approach is used to get information about users currently located in the network location and identify users discard from that range. The bandwidth of each node was traced for identifying the energy level of nodes. In the time of multicasting, there is a possibility for packet dropping as the energy level of nodes dismount. After dismounting the user nodes get discarded from the network. The Source node multicasts messages to destinations based on receiver's request (also called queries). Content matching operation was performed between both messages and queries, based on three conditions logical space, physical space, time. Logical space matching in terms of logical space means matching on message content. Physical space matching in terms of physical space depends on location match based on the sender space and the receiver space. Matching in terms of time means matching based on communication determination, which is defined as the duration determined by the application inside which a message is applicable for an interested receiver.

2.2 Protocol Implementation

The Ad hoc On Demand Distance Vector (AODV) is a routing protocol deliberated for ad hoc mobile networks. It builds routes between nodes only as preferred by source nodes. It preserved these routes as long as they are wanted by the sources. Furthermore, AODV outline trees which attach multicast group members. The trees are collected of the group members and the nodes desired to unite the members. AODV uses series numbers to make sure the originality of routes. It is loop-free, self-starting, and scales to huge numbers of mobile nodes. Routes stay dynamic only if data packets are roaming along the routes from the source to the destination. Once the source stops transferring packets, the path will die and close. AODV construct routes by a route request / route reply query progression .When a source node desires a direction to a destination. Nodes receiving this packet alert their information for the source node and locate backward pointers toward the source node in the route tables. Additionally to the source node's IP address, present sequence number, the RREQ also include the almost all latest sequence number used for the destination of which the source node is awake. Nodes remain method of the RREQ's source IP address and broadcast ID.

2.3 Input Configuration

The general parameters are thus defined and set as follows: For this system 1000 meter-wide geographical field is used on which nodes developed. The field is occupied by 100 nodes which contain receivers, senders, and passive nodes that are Executing the application. Each node contains Wi-Fi capability with a communication range of 100 meters. To create a mobility so as to apply the Random Waypoint (RWP) mobility model with walking speed (1-2 m/s). In this simulations are ran for duration of 10,000 seconds.

3 Conclusions

Location based Multicast Addressing model was compared with three different strategies and three strategies were analyzed in order to choose the best one among these strategies for context aware group communication. The performance evaluation metrics, the comparison of the Strategies and results have been described through the NS2 Simulator. NS2 is constantly maintained and updated by its large user base and a small group of developers at ISI Above Fig. 4 shows the bandwidth of each node was traced to know about the energy level up to limit or not. If it exceeds user node get discarded from the network. Two metrics, Message load and Delivery ratio, to evaluate the performance of the proposed protocol have been given. Message load is nothing but packet size used for transmission and also capability of a single user node. The Delivery ratio is defined as delivery of message by sender per second.

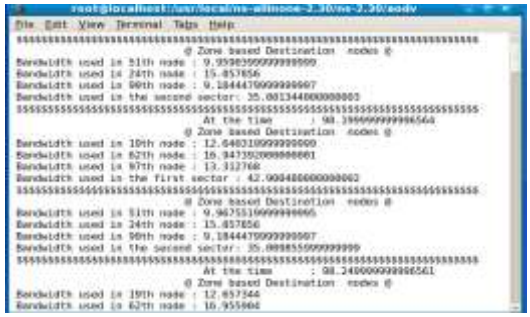

Fig. 4 Bandwidth Tracing

Above Fig. 5 shows packet dropping occurs due to low energy level of nodes and it get discard from mobile network.

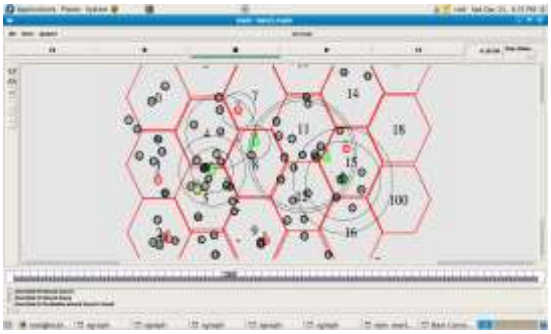

Fig. 5 Context Aware Multicasting

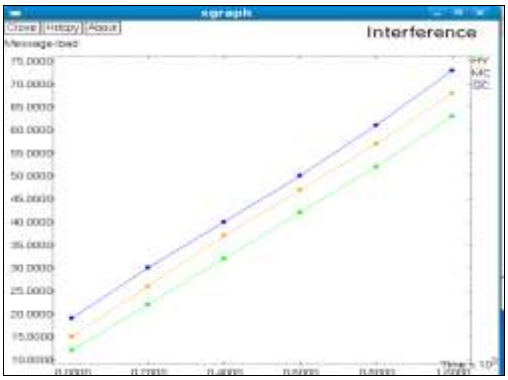

Fig. 6 Network Interference

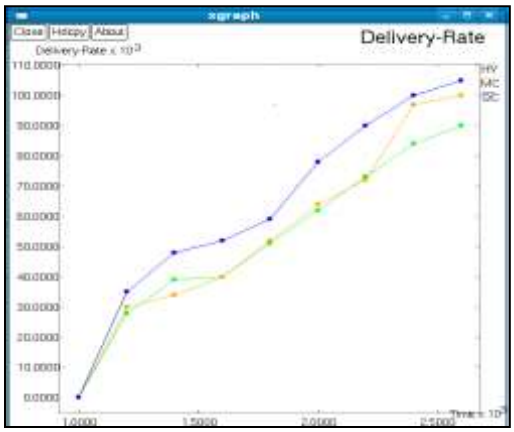

Fig. 8 Delivery Rate

Analyzed and compared the performance of three different implementation strategies for location-based multicast addressing under varying application workloads. The results show break even points that allow selecting the optimal implementation strategy for an expected ratio of query versus messages. Over three times as many queries as messages, the message-centric strategy is the best choice. Conversely, three times as many messages as queries, the query centric strategy are the winning strategy. For scenarios in between, the hybrid strategy is preferable. The context aware approach is used to get information about users currently located in the network location and identify users discard from that range. After receiving user updates and then confirm number of users interested to receive message in particular location.

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A Brief Author Biography

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