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Self-Adaptive Contention Aware Routing Protocol for Intermittently Connected Mobile Network

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ABSTRACT: Most of the existing research work in mobile ad hoc networking is based on the assumption that a path exists between the sender and the receiver. On the other hand, applications of decentralized mobile systems are often characterized by network partitions. As a consequence, delay-tolerant networking research has received considerable attention in the recent years as a means to obviate to the gap between ad hoc network research and real applications.

In this paper, we present the design, implementation, and evaluation of the Context-aware Adaptive Routing (CAR) protocol for delay-tolerant unicast communication in intermittently connected mobile ad hoc networksThe protocol is based on the idea of exploiting nodes as carriers of messages
among network partitions to achieve delivery.

KEYWORDS: Context-aware Adaptive routing ,DTN.

I.INTRODUCTION

Mobile ad hoc network research has often assumed that a connected path exists between a sender and a receiver node at any point in time. This assumption reveals itself unrealistic in many decentralized mobile network applications such as vehicular networks, wildlife monitoring sensor networks, deep space communication systems, and emergency operation networks. To answer this dichotomy, delay-tolerant networking (DTN) has received considerable attention from the research community in recent years as a means of addressing exactly the issue of routing messages in partitioned networks present the Context-aware Adaptive Routing (CAR) protocol, an approach to delay-tolerant mobile ad hoc network routing that uses prediction to allow the efficient routing ofmessages to the recipient. A host willing to send a message to a recipient or any host. to choose the best next hop (or carrier) for the message. The decision is based on the mobility of the host (a highly mobile host is a good carrier as it meets many hosts) and its past colocation with the recipient.

DTN:DTN works in heterogeneous system. It works on extreme distance due to the intermittent connections in DTNs, a node is allowed to buffer a message. It uses store and forward mechanism for message

II..RELETED WORK

In early days encounter based routing is used which is basedon nodal mobility for message forwarding decision. In DTN routing the decision of message forwarding is based on probability of path between nodes.Balasubramanian et al. in [22] introduced a routing scheme as resource allocation . The statistics of available bandwidth and the number of message replicas currently in the network are considered in the derivation of therouting metric to decide which message to replicate first among all the buffered messages in the custodian node insaurp it is depending upon network behaviour for which we develop following modules.

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III.MODULE DESCRIPTION

The key problem solved by the protocol is the selection of the carrier.
CAR is able to deliver messages synchronously (i.e., without storing them in buffers of intermediate nodes when there are no network partitions between the sender and the receiver) and asynchronously (i.e., by means of a store-and-forward mechanism when there are partitions).

1.**Partitioned Network Construction**:
This scheme has proven to significantly reduce the required number of transmissions, while achieving a competitive delay with respect to network contentions such as buffers space and bandwidth.
However, in the scenario that the nodal encounter frequency is largeand each node has many choices for message forwarding in a short time, the network resource availability is envisioned to serve as acritical factor for performance improvement and should be utilized in the derivation of utility functions.

2. **Synchronous Delivery Message**:
When you execute something synchronously, you wait for it to finish before moving on to another task. It may no longer be the case that nodal contact frequency serves as the only dominant factor for the message delivery performance as that assumed by most existing DTN literature. Therefore, limitations on power consumption, buffer spaces,and user preferences should be jointly considered in the message forwarding process. The class of schemes generates only a small number of copies to ensure that the network is not overloaded with the launched messages. Although being able to effectively reduce the message delivery delay and the number of transmissions, most of the utility-based controlled flooding routing schemes in literature assume that each node has sufficient resources for message buffering and forwarding.

3Asynchronous Delivery Message:
After construct the partitioned network login the hosts in the two networks. Select the destination hostname from source hostname. And select which message wants to send the message from source to destination. It will check that destination is available in the same network or Not. Suppose destination is not available in the same network send the request to another server that destination is available in that network or not. That destination is not available that server send the response to requested server the destination is not available. That destination is available in that network that server send the response to requested server the destination is available. That delivery message to destination is asynchronous delivery. Then choose the best carrier host for send the message to destination.The term asynchronous is usually used to describecommunication in which data can be transmitted intermittently rather than in a steady stream.

4. **Select Best Carrier Host:**
In this Module select the best carrier host for asynchronous delivery message. For hat calculate the delivery probability in the between networks using utility function. Based on highest delivery probability selects the best carrier host from between networks. Selecting best carrier host that message is sent from source to best carrier host and that message stored in that buffer of best carrier host. And select the best carrier host from another network. That disconnects the best carrier host in that network. And connect that host in another network based on highest delivery probability. And find the possible path between best carrier hosts to destination. In that possible path choose the best path from source to destination. In that best path deliver the message to destination.A network host may offer information resources, services, and applications to users or other nodes on the network.A network host is a network node that is assigned a network layer host address.
Host is act as a mediator between source and destination. It receives the messages from the data base which was send by source and it transfers received message to the destination.

IV. WHAT IS CAR

The design goal of CAR is to support communication in intermittently connected mobile ad hoc networks. The key problem solved by the protocol is the selection of the carrier. Our solution is based on the application of forecasting techniques and utility theory for the evaluation of different aspects of the system that are relevant for taking routing

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decisions. Let us now consider the key aspects of the protocol. CAR is able to deliver messages synchronously (i.e., without storing them in buffers of intermediate nodes when there are no network partitions between the sender and the receiver) and asynchronously (i.e., by means of a store-andforward mechanism when there are partitions). The delivery process depends on whether or not the recipient is present in the same connected region of the network (cloud) as the sender. If both are currently in the same connected portion of the network, the message is delivered using an underlying synchronous routing protocol to determine a forwarding path. If a message cannot be delivered synchronously,1 the best carriers for a message are those that have the highest chance of successful delivery, i.e., the highest delivery probabilities.

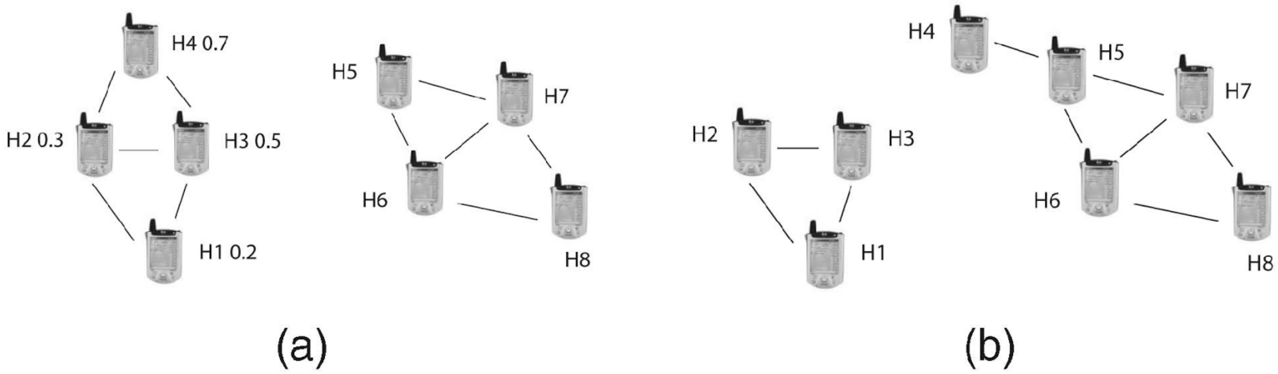

Fig.(a) Two connected clouds, with associated delivery probabilities for message transmission between H1 and H8. (b) Then, H4, carrying the message, joins the second cloud.

The message is sent to the host with the highest one using the underlying synchronous protocol. In order to understand the operation of the CAR protocol, consider the following scenario in which two groups of nodes are connected as in Fig.(a) As in our implementation, let us assume that the Dynamic Destination-Sequenced Distance Vector (DSDV) is used to support synchronous routing. Host H1 wishes to send a message to H8. This following scenario in which two groups of nodes are connected as in Fig.(b). As in our implementation. Let us assume that the Dynamic Destination-Sequenced Distance Vector (DSDV) is used to support synchronous routing. Host H1 wishes to send a message to H8. This cannot be done synchronously, because there is no connected path between the two. Suppose the delivery probabilities for H8 are as shown in Fig. (b) In this case, the host possessing the best delivery probability to host H8 is H4. Consequently, the message is sent to H4, which stores it. After a certain period of time, H4 moves to the other cloud (as in Fig. b). Since a connected path between H4 and H8 now exists, the message is delivered to its intended recipient. Using DSDV, for example, H4 is able to send the message shortly after joining the cloud, since this is when it will receive the routing information relating to H8.

V. SURVEY ON

We have presented the design, the evaluation, and the implementation of the CAR protocol that supports communication in delay-tolerant mobile ad hoc networks. We have shown that prediction techniques can be used to design store-and-forward mechanisms to deliver messages in intermittently connected mobile ad hoc networks, where a connected path between the sender and the receiver may not exist. We have designed a generic framework for the evaluation of multiple dimensions of the mobile context in order to select the best message carrier.

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