www.ijecs.in
International Journal Of Engineering And Computer Science ISSN: 2319-7242
Volume 5 Issue 10 Oct. 2016, Page No. 18726-18729

Time Sequence Scheme for Ideal Transmit In Remote Systems

K. Surekha[1], N. Padmaja[2]

[1]Sri Padmavati Mahila Visvavidyalayam, School of Engineering and Technology,
Padmavati Nagar, Tirupati, Andhra Pradesh,INDIA
jhansimurari@gmail.com

[2]Sri Padmavati Mahila Visvavidyalayam, School of Engineering and Technology,
Padmavati Nagar, Tirupati, Andhra Pradesh,INDIA
venkatspmvv@gmail.com

Abstract: ***In the paper work scheme, particularly in reconfigurable wireless ad hoc networks is a fundamental operation , For example, By all on-demand mobile network routing protocols, some form of broadcasting is used . In case of any uncertainty to the location of the destination node, or for service discovery. Inside work, with dynamic topologies we present a new approach to efficient broadcast in networks and we proposed a new online local broadcasting algorithm called time sequence scheme (TSS), for such networking environments. TSS ranks by priority, in a sequence, applicant broadcasting nodes to the total number of re-broadcasts in the network is reduced. as evaluating TSS, showing that its performance comes remarkably close to the equivalent theoretical performance boundaries, during in the packet loss, example, to MAC-layer collisions.In addition, compare our algorithm along with a recently developed schemes considering the performance in various sensible network mobility scenarios. To demonstrate that TSS performance is robust in the background of mobility induced topology reconfigurations—together with temporal network partitioni—through propagation of the broadcast message***

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Keywords: networks, MAC-Layer, Time Sequence Scheme**.**

1. Introduction

The fundamental operation of a network allowing nodes to reach message from source to destination in the network. To the context of networks all communications are carried over a wireless medium and network nodes are limited in energy and computational power (e.g., sensor and mesh networks), an efficient broadcast mechanism is remarkably important for the whole network performance. Likewise, network require robust solution broadcast .Here topology changes rapidly due to nodes' mobility e.g., networks of unmanned a aerial vehicles UAVs or interconnected devices attached to people),In case among the various proposed wireless net-work routing protocols (e.g., AODV, DSR, OLSR, TRBF, ZRP (zone routing protocol)), an important sub-group, referred to as on-demand or reactive routing protocols, designed based on the philosophy that the discovery of a route in the network should be done . To the actual need of route traffic. The route discovery mechanism protocols relies on some variant of broadcasting to locate a path between the source and the destination nodes. Also, in highly reconfigurable topologies, to the lifetime of network routes may be shorter than the duration of a communication especially in connection-oriented communication broadcast, by itself, could be used as a routing mechanism. Yet in other scenarios, data distributes for every nodes in a sensor network is essential and broadcast is an noticeable solution. Being as an essential network operation, it is not unexpected. The importance of an efficient broadcast implementation has been widely accepted by the networking community. provides more details and references to a number of related works in the technical literature

2. Existing System

The major contributions of this paper contain the design of the time sequence scheme (TSS), a novel broadcasting algorithm that ranks and orders in time of the transmissions of broadcasting nodes, so that the over all re-broadcasts in the network is minimized.TSS use only one-hop topology information simultaneously achieving full coverage of the network with close to optimal number of broadcast messages and with low delay. moreover, the algorithm is robust to rapid topological changes and network partitions. It retains its performance in a full network stack implementation, The packet loss at network and MAC layers, for instance the model, simulate, evaluate, and compare the proposed broadcast scheme with the most efficient schemes to-date in the technical literature. We demonstrate that the proposed scheme outperforms them in the metrics considered. Also, TSS does not require positional information, as the latter is infeasible or costly to get in many network settings. The algorithm discussed in this paper is efficient, distributed, performs well in highly dynamic network scenarios, and relies only on local coverage information. To the best of our knowledge, previously suggested schemes have not satisfied all these desiderata for practical broadcast. the broadcast problem we tackle and the related challenges to its solution. provides the system model and assumptions. explains the basic intuition behind the TSS broadcast solution. More details and an execution example of TSS are provided in studies comparatively the performance of TSS in various networking scenarios, including realistic mobility models (e.g., both the Gauss-Markov and the selfsimilar least action model (SLAW) mobility models are considered.

3.Disadvantages of Existing System

- ✓ Relies on some variant of broadcasting to locate path between source and the destination nodes.
- ✓ There is uncertainty as to the location of the destination node, or for service discovery**.**

4. Proposed System

<u>Network deployment:</u> We consider a adhoc network with N nodes. Let N denote the set of all nodes in the network. Upon network deployment, each node runs algorithm1 to construct the vector set T. The input to this structure is parameter u, is fixed and set up administratively and network-wide at the time of deployment.

<u>Node scheduling:</u> The source node broadcasts the message at the beginning of the first TS(Time Sequence). As the broadcast propagates throughout the network, any node upon receiving the broadcast message for the first time determines the current TS level and the current time-slot within the TS. This is achieved by subtracting the initial broadcast timestamp from the node's current local time, and by dividing the difference by the duration of a time-slot. Knowing the generic TS structure and the number of time-slots that passed since the beginning of the TS, a node is able to determine the middle and lower values of the current time-slot.

<u>Residual coverage computation</u>**:** The RC value of a node is needed prior to the node scheduling or rescheduling itself for transmission. To compute RC value, node i broadcasts a Coverage Request packet, CReq, to all its 1-hop neighbors. The CReq packet contains i's ID. Upon receiving the CReq packet, each one of i's uncovered neighbors replies with a Coverage Reply packet, CRep, which contains the neighbor's ID and i's ID. Node i then counts the number of such replies (identified by its own ID in the CRep packets) during a time approximately equal to the duration of the Preamble.

<u>ALGORITHM</u>
<u>1. CONSTRUCTING VECTOR SET (T).</u>

<u>Input</u>: u

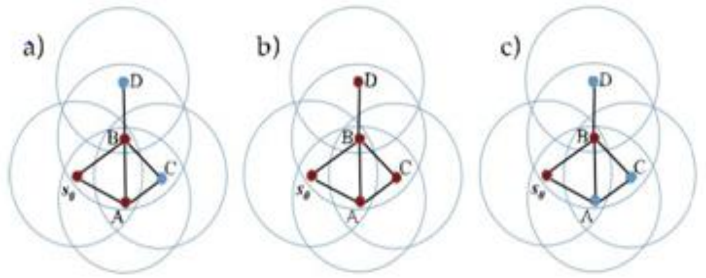
<u>Output</u>: ordered collection of vectors T = (Tu, Tu-1; . . . T1)

<u>Algorithm:</u>

1:T ←empty
2:upper← u
3:middle← u
4:lower← u
5:T1← (upper, middle, lower)
6:T ←T 1
7: while middle > 1 do
8: if middle == lower
9: lower ← lower -1
10: middle ←upper
11: else
12: if middle > lower
13: middle ←middle -1
14: T next ←(upper,middle,lower)
15: T ← T U Tnext

5. Advantages of Proposed System

- ✓ The overall number of rebroadcasts in the network is reduced
- ✓ TSS does not require positional information.
- ✓ The algorithm is robust to rapid topological changes and network partitions



output of four algorithms given a sample network on five nodes, where the source node is s_0. The broadcast nodes in the output CDS are in red

a) RBS and CCS output broadcast nodes s_0, A, and B;

b) Funke et al.'s algorithm outputs s_0, A, B, C, and D;

c) TSS outputs the optimum solution in this case which is s_0 and B.

1) Reach all the network nodes;
2) Transmit the broadcast message as few times as possible (or, equivalently, reduce the number of times that the broadcast message is received by a network node, optimally to only once);
3) Minimize delay (i.e., the time needed for the broad-cast message to be received by the entire network);
4) require only locally available information (e.g., only knowledge of the one-hop neighborhood topology);
5) Minimize the effects, on (1), (2), and (3) above, of topological changes during a broadcast propagation caused by mobility, and due to packet loss.

ALGORITHM
2.NODE (J) SELF SCHEDULING:

<u>Input</u>: RCðjÞ; Tct ¼ ðuct; mct; lctÞ //vector associated with the current time- slot

<u>Output:</u> transmission time-slot Tb $ tb

<u>Algorithm:</u>

1:rc ←RCj
2:upper ←u ct
3:middle ←m ct
4:lower ←lct

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/* if RC(j) is larger than the current value of middle, j transmits in the next time-slot*/
if rc > middle
Tb ←Tct+1
else
/* if RC(j) is larger than lower, Tb is in the current level depending on the value of RC(j) */
if rc >= = middle and rc >= = lower
if (uct; mct; lct) is edge_slot
if lower > 1
Tb ←(upper; rc; lower -1)
else
Tb (upper, rc,1)
else
Tb (upper; rc; lower)
 / if RC(j) is even less than the value of lower, Tb is in a later level of the TS, the level depends on RC(j) /
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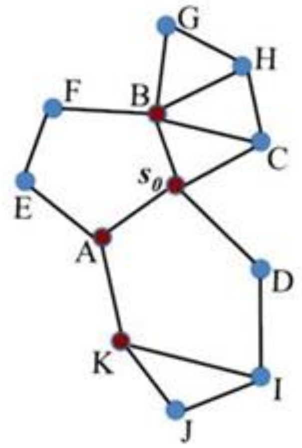
6. Structure, schedule , sequence scheme

The timing of nodes' transmissions is enforced by the particular structure of the time sequence T of time-slots. Each time-slot x, , is associated with a specific RC threshold t_x. Only nodes with RC values greater or equal to t_x are allowed to transmit in time-slot x.

What is the rationale for determining the RC threshold $\mathbf{t}_x$ at each time-slot x? Consider the following na€ıve scheme, which attempts to order the transmissions of the nodes, so that nodes with larger RC transmit first. Let T be a sequence of time-slots and assume $\mathbf{t}_x < \mathbf{t}_{x\text{þ}k}$; 0 < k jT j x.

Time sequence T: output of Algorithm 1 with input u, arranged in epochs to implement threshold resets required for node scheduling .Namely, each subsequent time-slot is associated with a strictly lower threshold value of RC than the previous time-slot's threshold. Upon receiving a broadcast message, node i marks itself as covered, determines RC(i), and schedules itself to transmit in a future time-slot T_b. Since i can only schedule itself for a time-slot T_b such that $\mathbf{t}_b$ RCðiÞ, the higher RCðiÞ the earlier the scheduled T_b. That is, nodes with higher RC would tend to broadcast earlier than nodes with lower RC. This simple scheme does not take into account the fact that as scheduled nodes transmit, for instance in time-slot T_b, the set of newly covered nodes may contain nodes with RC values larger than $\mathbf{t}_b$. In other words, the time-slots following T_b cannot be used to time-order the transmissions of such newly covered nodes, since these nodes' RC values are greater than the thresholds of all time-slots following T_b.

To address this problem, we modify the time sequence T utilizing Algorithm 1, so that T contains repeated reorder-ing of time-slots within epochs (also referred to as levels). Each epoch now contains a sequence of time-slots, and each subsequent time-slot within an epoch has RC threshold strictly lower than the previous time-slot's threshold. How-ever, at the beginning of each epoch, the RC threshold is reset: the first time-slot in each epoch has RC threshold equal to the RC threshold $\mathbf{t}_1$ of the first time-slot in T. Sup-pose $\mathbf{t}_1$ ¼ u. Fig. 2 shows the structure of the resulting time-sequence (TS) T, which is the output of Algorithm 1 with input u.For example, consider the case of u ¼ 4. At the top level of T (level 4) only nodes with RC 4 are allowed to trans-mit. In the next level (level 3), first nodes with RC 4 and then nodes with RC 3 will be allowed to transmit. In level 2, first nodes with RC 4, then nodes with RC 3, and finally nodes with RC 2 will transmit. In the last level, first nodes with RC 4, then nodes with RC 3, then nodes with RC 2, and finally nodes with RC 1 (all nodes with at least one uncovered neighbor) will be allowed to transmit



A network topology example, where the TS-based scheme picks {s_0,B,A,K} for broadcast and forms a MCDS of the particular network graph. All nodes are covered after the broadcast session completes

7. Conclusion

In this paper, we introduced a novel scheme for broadcasting in wireless networks that mimics in performance of the centralized greedy algorithm. This is accomplished through distributive prioritization of transmissions based on nodes' residual coverage (*RC*) and the particularly designed Time Sequence (*TS*) to schedule the nodes' transmissions. The basic NTSS scheme was improved to eliminate a major source of inefficiency - multiple coverage of nodes by more than one transmission - which resulted in the TSS-1Hop and the TSS-2Hop schemes. We proved the schemes' correctness (i.e., guaranteeing full coverage in finite time).

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Authors Profile:

K. Surekha received the B.Tech Degree in Computer Science and Engineering from Swetha Institute of Technology and Science , JNTUA in 2014. She is currently pursuing towards the Master's Degree in Computer Science and Engineering, School of Engineering and Technology, SPMVV. She interest lies in the areas of Networks, Web Technologies, SQL, Data Mining.

N.Padmaja Assistant Professor, School of Engineering and Technology, SPMVV. She interest lies in the areas of Network Security, Computer Networks,Web Technologies, SQL, Data Mining.