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Dynamic Allocation for Progressive Packet Arrivals in DTNs

Minnu Mathew[#1], T.Anbu Raj[#2]
[#1] *PG Student Dhanalakshmi Srinivasan college of Engineering and Technology Mamallapuram, India*
E-Mail:minnumathew88@gmail.com
[#2] *PG Student Dhanalakshmi Srinivasan college of Engineering and Technology Mamallapuram, India*
E-Mail:tanburaj@gmail.com

Abstract:- *Delay Tolerant Networks (DTNs), also called as intermittently connected mobile networks, are wireless networks in which a fully connected path from source to destination is unlikely to exist. However, effective forwarding based on a limited knowledge of contact behavior of nodes is challenging. When large files need to be transferred from source to destination make all the packets available at the source and transfer the file as small packets. We study the packets arrival at source and analysis their performance. We consider the linear blocks and rateless linear coding to generate redundancy and also for energy constraint .We scheduling the large file into small packets and delivering through multipath to destination, for this we use optimal user centric allocation and scheduling the packets in the receiver side.*

Keywords:- *Delay tolerant networks,network coding, rate less codes,.*

I. INTRODUCTION

Delay Tolerant Networks(DTNs),also called as intermittently connected mobile networks, are wireless networks in which a fully connected path from source to destination is unlikely to exist. In these networks, for message delivery , nodes use store-carry-and-forward paradigm to route the messages. The examples of this networks are wildlife tracking ,military networks etc. However, effective forwarding based on a limited knowledge of contact behavior of nodes is challenging. it becomes crucial to design efficient resource allocation and data storage protocols. Although the connectivity of nodes is not constantly maintained, it is still desirable to allow communication between nodes. Each time the source meats a relay node, it chooses a frame i for transmission with probability u_i. In the basic scenario, the source has initially all the packets .Under this assumption it was shown in [2] that the transmission policy has a threshold structure: it is optimal to use all opportunities to spread packets till some time σ depending on the energy constraint, and then stop. This policy resembles the well-known “Spray-and-Wait” policy [3]. In this work we assume a more general arrival process of packets: they need to be simultaneously available for transmission initially,i.e., when forwarding starts, as assumed in [2]. This is the case when large multimedia files are recorded at the source node that sends them out (in a DTN fashion) after waiting for the whole file reception. This paper focuses on general packet arrivals at the source and two-hop routing. We distinguish two cases: when the source can overwrite its own packets in the relay nodes, and when it cannot.

II. RELATED WORK

In forward error correction (FEC)[5]method Several satellites need to receive several data packets, that may need retransmission due to channel errors .Because many sites may need retransmissions, the problem is to avoid the phenomenon of ACK implosion due to several sites requesting repairs .several works to combine FEC and acknowledgment-based retransmission protocols, such as [6].The effort there was to improve timeliness of packet delivery in multicasting multimedia streams which are subject to hard delay constraints. In DTNs the framework is different since the challenges is to overcome frequent disconnections. Papers [7] and [8] propose a technique to erasure code a file and distribute the generated code-blocks over a large number of relays in DTNs, so as to increase the efficiency of DTNs under uncertain mobility patterns. In [8] the performance gain of the coding scheme is compared with simple replication. The benefit of coding is assessed by extensive simulations and for different routing protocols, including two hop routing.

III. THE MODEL

Consider a network that contains N + 1 mobile nodes. Two nodes are able to communicate when they come within reciprocal radio range and communications are bidirectional .We assume that the duration of such contacts is sufficient to exchange all frames: this let us consider nodes meeting times only, i.e., time instants when a pair of not connected nodes fall within reciprocal radio range. Time between contacts of pairs of nodes are exponentially distributed with given inter-meeting intensity [3]. A file contains K frames. The source of the file receives the frames at some times $t_1 \leq t_2 \leq ... \leq t_K$.$t_i$ are called the arrival times. The transmitted file is relevant during some time τ . By that we mean that all frames should arrive at the destination by time $t_1+\tau$. We do not assume any feedback that allows the source or other mobiles to know whether the file has made it successfully to the destination within time τ.If at time t the source encounters a mobile which does not have any frame, it gives it frame i with probability $u_i(t)$. Consider two-hop routing In this we used two concept overwrite case and non-overwriting case .In the existing concept non-overwriting case are highly efficient but overwriting case without constraints are not efficient, so in this work we use rateless code and block code for removing the overwriting case due to the transmission of packet .

Rateless code and block code is used for share the information sequence to the receiver without data loss,overwriting and delay. In this work due to the data transmission the multi path can be create using optimal user centric algorithm in the source side. Using the multi path the data can split into packet and assign packet to each node due to the transmission then packet are schedule using decentralized routing process based on the integer linear programming in the receiver side In the scheduling packet the packet can schedule and receive to the client side.We use erasure coding technique to increase the reliability and to further decrease the cost of routing. For a given desired delivery rate and deadline for delivery, we find the optimum parameters to obtain the smallest cost both in single period and two period erasure coding based routing. We also analyze the effects of message distribution algorithms on the cost of routing both in replication based (i.e. spray and wait) and erasure coding based algorithms. We analyze real DTN traces and detect the correlations between the movements of different nodes using a new metric called conditional intermeeting time. We then use the correlations between the meetings of a node with other nodes for making the existing single-copy based routing algorithms more cost efficient.

IV.ARCHITECTURE

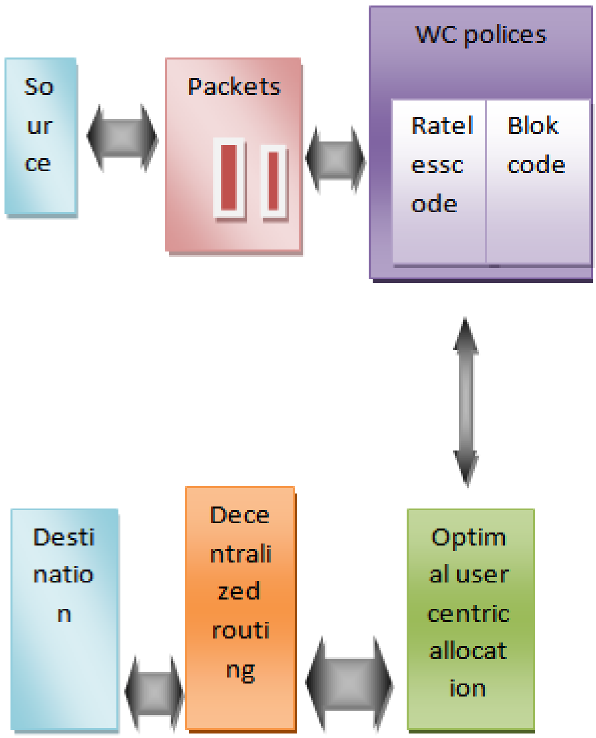

Fig1.Packets arrivals

V. ENERGY CONSTRAINTS

Denote by E(t) the energy consumed by the whole network for transmitting and receiving a file during the time interval [0, t]. It is proportional to X(t)−X(0) since we assume that the file is transmitted only to mobiles that do not have the file, and thus the number of transmissions of the file during [0, t] plus the number of mobiles that had it at time zero equals to the number of mobiles that have it. Also, let □ > 0 be the energy spent to forward a frame during a contact(notice that it includes also the energy spent to receive the file at the receiver side). We thus have □ (t) = □ (X(t) − X(0)).

VI.PERFORMANCE MEASURE

Consider time t sampled over the discrete domain, i.e., t ∈. For our case, the drift defined in [10] is$f^{(N,i)}$(m) = E(X□$_i^{(N)}$ (t + 1) − X□$_i^{(N)}{}_i$ (t)|X□$^{(N)}$ (t)= m)Owing to the model, we have $f^{(N,i)}$ (m) = u_i(t)β(1 −□$^K{}_k$=1m_i) in the non-overwriting case, and $f^{(N,i)}$ (m) =βu_i (t)(1 −m_i) – βm_i (u(t) – u_i (t)) in the overwriting case.

VII. RATELESS CODES

In this section, we want to identify the possible rateless codes and quantify the gains brought by coding. Rateless erasure codes are a classof erasure codes with the property that a potentially limitlesssequence ofcoded packets can be generated from a given setofinformation packets. Information packets, in turn, canberecovered from any subset of the coded packets ofsize equalto or only slightly larger than *K* (theamount of additionalneeded packets for decoding is named “overhead”).

Information frames are the K frames received at the source at $t_1 \leq t_2 \leq \cdot\cdot\cdot \leq t_K$.The encoding frames (also called coded frames) are linear combinations of some information frames, and will be created according to the chosen coding scheme. From t = t_K to t = τ, use all transmission opportunities to send a random linear combination of information frames,with coefficients picked uniformly at random. when all information frames are available. The case when coding is started before receiving all information frames is postponed to the next section. For a discussion on the different rateless codes for both cases, the reader is referred to [6]. In this section we provide the analysis of the optimal control with random linear network coding [8]. Note that, in our case, the coding is performed only by the source since the relay nodes cannot store more than one frame. For each generated encoding frame, the coefficients are chosen uniformly at random for each information frame.

VIII. CONCLUSION

Information are send to the destination after available of entire data at the source side. We use two concepts overwriting and non-overwriting cases non-overwriting case are highly efficient but overwriting case without constraints are not efficient, so we use rateless code and block code for removing the overwriting case for the transmission of packet . Rateless code and block code is used for share the information sequence to the receiver without data loss,overwritting and delay.For data transmission the multi path is created using optimal user centric algorithm in the source side. Using the multi path the data can split into packet and assign packet to each node for the transmission, then packet are schedule using decentralized routing process based on the integer linear programming in the receiver side In the scheduling packet the packet can schedule and receive to the client side. This process can used to effeciently send the data from source side to the destination side using delay tolerant network.

REFERENCES

[1] E. Altman, F. De Pellegrini, and L. Sassatelli, “Dynamic control of coding in delay tolerant networks,” in Proc. 2010 IEEE INFOCOM
[2] E. Altman and F. De Pellegrini, “Forward correction and Fountain codes in delay tolerant networks,” in Proc. 2009 IEEE INFOCOM
[3] T. Spyropoulos, K. Psounis, and C. Raghavendra, “Efficient routing in intermittently connected mobile networks: the multi-copy case,” ACM/IEEE Trans. .
[4] E. Altman, T. Bas¸ar, and F. De Pellegrini, “Optimal monotone forwarding policies in delay tolerant mobile ad-hoc networks,” in Proc. 2008ACM/ICST Inter-Perf.
[5] J. Metzner, “An improved broadcast retransmission protocol,” IEEETrans. Commun.,
[6] J. Nonnenmacher, E. Biersack, and D. Towsley, “Parity-based loss recovery for reliable multicast transmission,” IEEE/ACM Trans. Netw.,
[7] S. Jain, M. Demmer, R. Patra, and K. Fall, “Using redundancy to cope with failures in a delay tolerant network,” SIGCOMM Comput.Commun.
[8] Y. Wang, S. Jain, M. Martonosi, and K. Fall, “Erasure-coding based routing for opportunistic networks,” in Proc. 2000