# Geometric Graph Access in Network Technology

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## Abstract:

Present decentralized algorithms that Researchers in computer science have successfully developed some network technologies includes secnrity solutions, information qnery protocols, and data management services. Compute minimum-cost subgraphs for establishing multicast connections in networks that use coding. Two classic categories ofmodels existfor computer net- ing network information flow and network of queues, each works. network information flow and network of queues. has its advantages and disadvantages, as explained below. The network information flow model appropriately cap- We wish to combine attractive features from both models tures the multi-hop flow routing nature in general network to better represent a computer network. Consider a point-to-point communication network on which a number of information sources are to be mulitcast to certain sets of destinations. Network nodes independently and randomly select linear mappings from inputs onto output links over some field.

**Keywords:** ***Ad-hoc, Geometric, Graph Access.***

## I. INTRODUCTION

The short messages are transmitted in communicational channel of digital mobile network. End users can edit and send short messages information according to a kind of standard, which are converted digital signals and issued by a communication channel. Depending on the application, performance object-infinitely powerful.

While such assumptions may be actives may include high throughput, or quality of ceptable in commodity networks, where flows simply pass service objectives such as loss and delay through joints of pipes, it is less desirable in communicate, we develop a new model for routing infor-tion networks. From the information-theoretic point of view, there is no reason to restrict the function of a node to that of a switch. Rather, a node can function as an encoder in the sense that it receives information from all the input links, encodes, and sends information to all the output links.

This information can be sent with each transmission block or packet as a vector of coefficients corresponding to each of the source processes, and updated at each coding node by applying the same linear mappings to the coefficient vectors as to the information signals. showed that for the single-source multiple-terminal case, the information rate to each terminal is the minimum of the individual max-flow bounds over all source terminal pairs under consideration and that in

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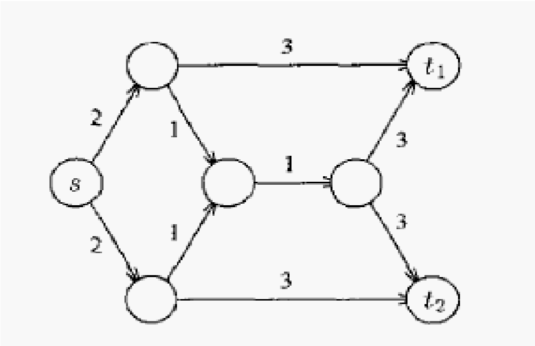
General we need to code over the links in the network to achieve this capacity.

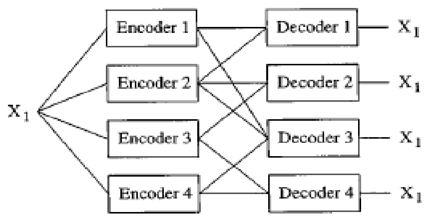
The optimal solution to problem is, unfortunately, in general only asymptotically achievable using arbitrarily long *codes.* If we wish to restrict the maximum link delay to be




**1.1. Weighted random geometric graph model:**

At first, one might consider network coding inappropriate for a distributed wireless network because transmissions from relatively simple distributed wireless nodes such as wireless sensor networks are typically unidirectional, precluding the transmission of different bits from the same node to different links at the same instant of time and in the same frequency band. However, communication has been shown to dominate all other sources of energy consumption in a sensor network. So, in order to save power, wireless sensor nodes typically will go into a sleep mode from which they periodically awaken to listen for transmissions.

A major finding in this paper is that, contrary to one's intuition, it is in general not optimal to consider the information to be multicast in a network as a "fluid" which can simply be routed or replicated at the intermediate nodes. Rather, network coding has to be employed to achieve optimality. This fact is illustrated by examples in the next section. In the rest of the paper, we focus our discussion on problems with, which we collectively refer to as the single-source problem. For problems with, we refer to them collectively as the multisource problem. The rest of the paper is organized as follows.

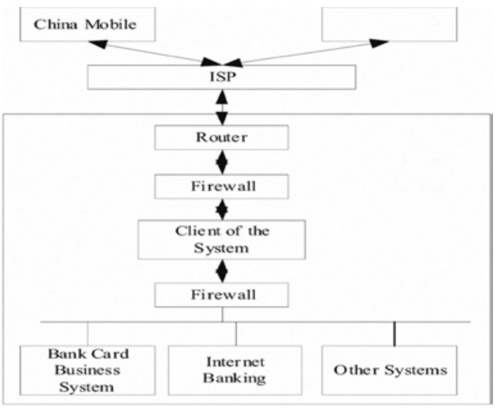



## II. SYSTEM ARCHITECTURE

The short messages system is kind of service channel. The bank can provide a unified platform with this system. The bank card business system can be connected with the message gateway of telecom operators, for example, China mobile, China Unicorn.

### 2.1. Main Short Messages Business:

This application system based on various applications and business requirements of




Bank Card control centre can provide services such issuing, collection, customer service, and information related to the messages platform.

### 2.2. Business Management of the System

Systems management includes user management, template customization, report management. Based on the nature of managing the content, the users can be divided into two categories: system administrators and business managers. System Management user is only allowed to use the system monitoring functions, and messaging applications offered by other systems administrator functions, such as system parameter configuration management. Business Manager is only allowed to use the system management functions, including user management, template customization, report Management, and "SMS Network Application System" provides the administrator other business functions.

### 2.3.Business requirements of Reports

Pursuant to sub-organizations, systems, operations, statistics given in a different time, the reports which are generated from the system are divided into billing reports and business reports.

These simulations do not attempt to quantify precisely the differences in performance and overhead of random linear coding and online routing, but are useful as a preliminary indication. With regard to throughput and blocking probability, the simulations show that random linear network coding outperforms the Steiner tree heuristic on a non-negligible set of randomly constructed graphs, indicating that when connections vary dynamic.

In the real-time messaging communication control logic of agreement, the banks internal needs different applications with different user logging on in order to ensure the safety of sending text messages. SMS Gateway platform ensure the overall effectiveness, the need to limit the maximum for each connecting with user numbers of concurrent connection is currently.

If the concurrent connection exceeds the limit, the subsequent connection request will fail. In the ISP gateway and the application of SMS text messages are sent between the responses to the request, by the implementation of banking applications to determine whether to accept. If no real-time receiver, but the need for mass acceptance, you need to set in accordance with regulations. Once configured correctly, SMS, ISP will form a batch file every day, and sent to the requester in accordance with convention.

### *2.4. Distributed Settings*

In networks with large numbers of nodes and changing topologies, it may be expensive or infeasible to reliably maintain routing state at network nodes. Distributed randomized routing schemes have been proposed which address this kind of issue. However, not allowing different signals to be combined can impose intrinsic penalties in efficiency compared to using network coding.

### *2.5. Dynamically Varying Connections*

Another scenario in which random linear network coding can be advantageous is for multisource multicast with dynamically varying connections. We compare distributed randomized coding to an approximate online Steiner tree routing approach from in which, for each transmitter, a tree is selected in a centralized fashion.

**III. GRAPH LINK SECTION:**

A unique characteristic of our model is that we consider timely. We select this graph because of the bottleneck link queuing delays on nodes instead of links in the network. That may be shared by all three sessions. The bottleneck. In this section we compare our node based approach to a consists of I link but 2 nodes. Intuitively, this bottleneck traditional link-delay based model, and show that they are will have a higher cost for the node based model than it different. Will for the link based model.

**IV. MULTIPLE SOURCES**

In the classical information theory for point-to-point communication, if two information sources are independent, optimality can be achieved asymptotically by coding the sources separately. This coding method is referred to as coding by superposition. If this coding method is always optimal for multisource network information flow problems, then in order to solve the problem, we only need to solve the sub problems for the individual information sources separately, where each of these sub problems is a single-source problem. However, as we will see shortly, the multisource problem is not a trivial extension of the single-source problem, and it is extremely difficult in general.

In it was found that coding by superposition is optimal for 86 out of all 100 configurations of multilevel diversity coding systems with three encoders. In and it was shown that coding by superposition is optimal for all symmetrical multilevel diversity coding systems. However, how to characterize multilevel diversity coding systems for which coding by superposition is always optimal is still an open problem.

Although the multisource problem in general is extremely difficult, there exist special cases which can be readily solved by the results for the single-source problem.

**4.1. Random Geometric Graph Model**

The weighted random graph model of Section II is not a realistic model for a wireless *ad-hoc* network or sensor network because it places edges between nodes independent of the distance between them. In fact, distance is a critical factor in determining the connectivity properties of a wireless network since propagation losses cause the power of the signal

The usefulness of this result is in making apparent various characteristics of the transfer matrix determinant polynomial that are obscured in the original transfer matrix by the matrix products and inverse. For instance, the maximum exponent of a variable, the total degree of the polynomial, and its form for linearly correlated sources are easily deduced, leading to Theorems 1 and 2. For the acyclic delay-free case, Lemma 2 below is another alternative formulation of the same transfer matrix condition which illuminates similar properties of the transfer matrix determinant as Lemma 1. Furthermore, by considering network coding as a superposition of flow solutions, Lemma 2 allows us to tighten, in Theorem 3, the bound of Theorem 2 for random network coding on given acyclic networks in terms of the number of links in a flow solution for an individual receiver.

## V. CONCLUSIONS

High-probability results for the capacity of network coding for two different classes of random networks, namely, the weighted random graph model modelling wired networks and the weighted random geometric graph model modelling wireless networks. For the case of wired networks with a dense collection of relay nodes, the network coding capacity is dominated by the number of nearest neighbours of the source and terminal nodes. In the wireless case, boundary effects cause the nodes near the boundary to have fewer neighbours.

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