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PROBABILISTIC SOURCE LOCATION PRIVACY PROTECTION SCHEME IN WIRELESS SENSOR NETWORKS

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ABSTRACT

In this project, we concentrate on this point and study the minimum number of infrastructure nodes that need to be added in order to maintain a specific property in the overlay routing. In the proposed system, as we use BGP protocol for communication, this will identify any node or topology changes immediately and inform the same to other nodes so that there will be no need to re-configure the topology after failure. Here by using the BGP protocol, the overlay router can identify the failure node and it will try to arrange an alternate path without re-construction of whole topology once again.

1. INTRODUCTION

Overlay routing for multi-hop wireless ad hoc networks has long been proposed to overcome then deficiencies of conventional routing [1]–[5]. Overlay routing mitigates the impact of poor wireless links by exploiting the broadcast nature of wireless transmissions and the path diversity. More precisely, the opportunistic routing decisions are made in an online manner by choosing the next relay based on the actual transmission outcomes as well as a rank ordering decision theoretic formulation for opportunistic routing and a unified framework for many versions of opportunistic routing n[1]–[3], with the variations due to the authors' choices of costs. In particular, it is shown that for any packet, the optimal routing decision, in the sense of minimum cost or hop-count, is to select the next relay node based on an index. This index is equal to the expected cost or hop-count of relaying the packet along the least costly or the shortest feasible path to the destination. When multiple streams of packets are to traverse the network, however, it might be desirable to route some packets along longer or more costly paths, if these paths eventually lead to links that are less congested. More precisely, as noted in [6], [7], the opportunistic routing schemes in [1]–[5] can potentially cause severe congestion and unbounded delay (see the examples given in [6]).

In contrast, it is known that an opportunistic variant of backpressure [8], diversity backpressure routing (DIVBAR) [7] ensures bounded expected total backlog for all stabilizable arrival rates. To ensure throughput optimality (bounded expected total backlog for all stabilizable arrival rates), backpressure-based algorithms [7], [8] do something very different from [1]–[5]: rather than using any metric of closeness (or cost) to the destination, they choose the receiver with the largest positive differential backlog (routing responsibility is retained by the transmitter if no such receiver exists). This very property of ignoring the cost to the destination, however, becomes the bane of this approach, leading to poor delay performance in low to moderate traffic (see [6]). Other existing provably throughput optimal routing policies [9]–[12] distribute the traffic locally in a manner similar to DIVBAR and hence, result in large delay. Recognizing the shortcomings of the two approaches, researchers have begun to propose solutions which combine elements of shortest path and backpressure computations [7], [13]–[15]. In [7], E-DIVBAR is proposed: when choosing the next relay among the set of potential forwarders, E-DIVBAR considers the sum of the differential backlog and the expected hop-count to the destination (also known as ETX). However, as shown in [6], E-DIVBAR does not necessarily result in a better delay performance than DIVBAR.

PROBLEM STATEMENT

Now a day's overlay routing have achieved more attention of various network users for sending the data through network, this is mainly because there is no need to change the standards of current routing scheme if there was any delay or loss during the data transfer.Eventhough this is very attractive scheme that was opted by various network users, deployment of such a overlay network requires a huge overlay . Firstly we mainly concentrate on Border Gateway Routing Protocol (BGRP) which requires very less relay nodes not greater than 100 in order to enable the routing over shortest path from a single source system to multiple autonomous systems. In this we can able to reduce a maximum path length which is almost less than 50 % on overall routing

PURPOSE

In the proposed system,as we use BGP protocol for communication ,this will identify any node or topology changes immediately and inform the same to other nodes so that there will be no need to re-configure the topology after failure.Here by using the BGp protocol,the overlay router can identify the failure node and it will try to arrange an alternate path without re-construction of whole topology once again.

OBJECTIVE

The main contribution of this paper is to provide a distributed opportunistic routing policy with congestion diversity (D-ORCD) under which, instead of a simple addition used in E-DIVBAR, the congestion information is integrated with the distributed shortest path computations of [4].

2. LITERATURE SURVEY

Literature survey is the most important step in software development process. Before developing the tool, it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, ten next steps are to determine which operating system and language used for developing the tool. Once the programmers start building the tool, the programmers need lot of external support. This support obtained from senior programmers, from book or from websites. Before building the system the above consideration r taken into for developing the proposed system.

1. When Does Opportunistic Routing Make Sense?

Authors: Rahul C. Shah , Sven Wieth¨olter, Adam Wolisz

Different opportunistic routing protocols have been proposed recently for routing in sensor networks. These protocols exploit the redundancy among nodes by using a node that is available for routing at the time of packet transmission. This mitigates the effect of varying channel conditions and duty cycling of nodes that make static selection of routes not viable. However, there is a downside as each hop may provide extremely small progress towards the destination or the signaling overhead for selecting the forwarding node may be too large. In this paper, we provide a systematic performance evaluation, taking into account different node densities, channel qualities and traffic rates to identify the cases when opportunistic routing makes sense. The metrics we use are power consumption at the nodes, average delay suffered by packets and goodput of the protocol. Our baseline for comparison is geographic routing with nodes being duty cycled to conserve energy. The paper also identifies optimal operation points for opportunistic routing that minimizes the power consumption at nodes.

2. J. Doble, Introduction to Radio Propagation for Fixed and Mobile Communications. Boston, MA, USA: Artech House, 1996.

Authors: John S.Seybold

As wireless systems become more ubiquitous, an understanding of radiofrequency (RF) propagation for the purpose of RF planning becomes increasingly important. Most wireless systems must propagate signals through nonideal environments. Thus it is valuable to be able to provide meaningful characterization of the environmental effects on the signal propagation. Since such environments typically include far too many unknown variables for a deterministic analysis, it is often necessary to use statistical methods for modeling the channel. Such models include computation of a mean or median path loss and then a probabilistic model of the additional attenuation that is likely to occur. What is meant by "likely to occur" varies based on application, and in many instances an availability figure is actually specified.

3. P. Larsson, "Selection diversity forwarding in a multihop packet radio network with fading channel and capture," ACM SIGMOBILE Mobile Comput. Commun. Rev., vol. 5, no. 4, pp. 47–54, Oct. 2001.

Authors: Peter LarssonEricsson Research, Stockholm, Sweden

Recent and increased interest of wireless mobile ad hoc networking motivates detailed examination of routing schemes specifically targeted for the demanding constraints that an unreliable, time varying and broadcast like wireless medium imposes. Incorporation and exploitation of radio characteristics are fundamental keys to successful and near optimal operation of routing schemes in a wireless environment. In this paper, forwarding methods for wireless mobile multihop networking in Rayleigh fading and non-fading channels are examined. An adaptive forwarding scheme denoted Selection

Diversity Forwarding (SDF) is introduced and compared with two classical forwarding methods. It is shown that SDF presents significant performance improvements. In particular and in contrast to the reference methods NFP and MFR, the performance of SDF is enhanced under fading channel conditions. It is found that local path adaptation has potential to perform better than routing approaches along a single path.

3. EXISTING SYSTEM

In the existing system the use of overlay network for routing gives some limitations. And there is no concept like overlay routing in the primitive routing methods for sending the data from valid source node to destination node without any packet loss and delay. Hence there are several limitations in the existing networks**.**

LIMITATION OF EXISTING SYSTEM

1. By using the current overlay routing the users failed in achieving data integrity in the form of viewing the data request in plain text only.
2. In the current overlay routing there is no implementation of encryption of data request and response so inturn it leaves vulnerable for the end users who communicate.
3. Also the current overlay network failed in reducing the infrastructure of the relay nodes.
4. In the current overlay networks there was no facility like monitoring and detecting the routing problems the activities of communicating nodes between each other.
5. In the existing BGP protocol, it mainly concentrates only on providing best path for communicating but failed in providing the alternate path at the time of node collision.

4. PROPOSED SYSTEM

In this proposed work, we concentrate on this point and study the minimum number of infrastructure nodes that need to be added in order to maintain a specific property in the overlay routing. In the proposed system, as we use BGP protocol for communication, this will identify any node or topology changes immediately and inform the same to other nodes so that there will be no need to re-configure the topology after failure. Here by using the BGp protocol, the overlay router can identify the failure node and it will try to arrange an alternate path without re-construction of whole topology once again.

ADVANTAGES OF THE PROPOSED SYSTEM

The following are the advantages of the proposed system, they are as follows:

1. This is best in sending packets to the destination node under a best path.

Here we can able to encrypt the data and then we can able to forward the data to the destination node so that data will not be viewed by any one who is present in the intermediate network level.

5. IMPLEMENTATION

Implementation is the stage where the theoretical design is converted into programmatically manner. In this stage we will divide the application into a number of modules and then coded for deployment. We have implemented the proposed concept on Java programming language with JSE as the chosen language in order to show the performance this proposed Mixed Stegnography. The application is divided mainly into following 5 modules. They are as follows:

1 Service provider
2 Overlay router(I.e Adhoc)
3 Network
4 Receiver(End User)
5 Node failure

Now let us discuss about each and every module in detail as follows:

5.1 SERVICE PROVIDER MODULE

In this module, the service provider will browse the data file path and then send to the particular receivers. Service provider will send their data file to Adhoc(Overlay) router and router will connect to networks, in a network smallest distance node will be activated and send to particular receiver (A, B, C…). And if any jammer node will found, then service provider will reassign the energy for node.

5.2 OVERLAY/ADHOC ROUTER MODULE

The **Adhoc** Router manages a multiple networks (network1, network2, network3, and network4) to provide data storage service. In network n-number of nodes (n1, n2, n3, n4…) are present, in networks every node consists of distance and energy. In a network shortest distance node will communicate first. The service provider can assign energy for node, view energy for all networks and node history details (view routing path, view boundary nodes, view jamming nodes & view total time delay) in router. Router will accept the file from the service provider and then it will connect to different networks; the all networks are communicates and then send to particular receiver. In a router we can view time delay, jammed nodes and also routing path.

5.3 NETWORK MODULE

In this module the networks (network 1, network 2, network 3 and network 4) consists of n-number nodes. In networks every node consists of distance and energy. In a network shortest distance node will communicate first. The node consists of lesser energy then that node will be jammed by the jammers. And then it will forward to next lesser distance node within the network. In a network last node will be considered as boundary node.

5.4 RECEIVER MODULE

In this module, the receiver can receive the data file from the service provider via Adhoc router. The receivers receive the file by without changing the File Contents. Users may receive particular data files within the network only.

5.5 NODE FAILURES MODULE

In this system, the lesser energy node will be considered as a failure node. Once the failure became active, affected nodes lost their neighbors partially or completely, lost all of their neighbors and became failure nodes.

6. RESULTS (OUTPUT SCREENS)

1) Router Window

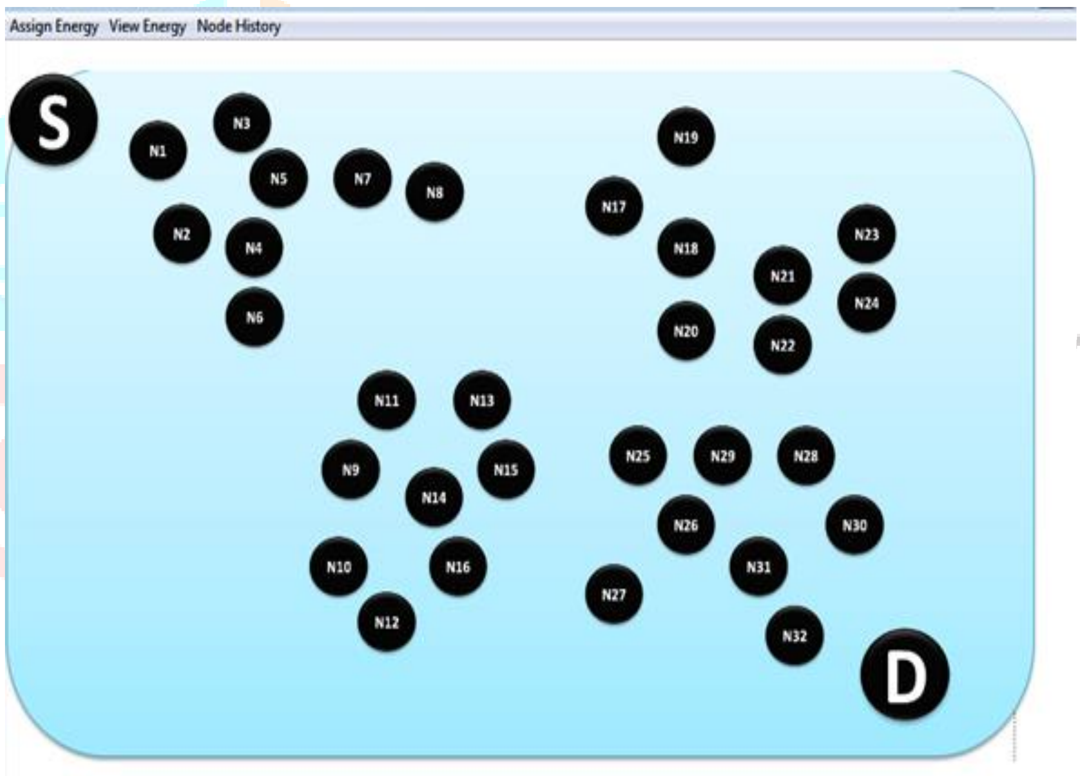


Figure 6. 1 Represents the Router Window for the Proposed Application

SOURCE OR SERVICE PROVIDER

Figure 6.2 Represents the service provider window

3) DESTINATION A WINDOW

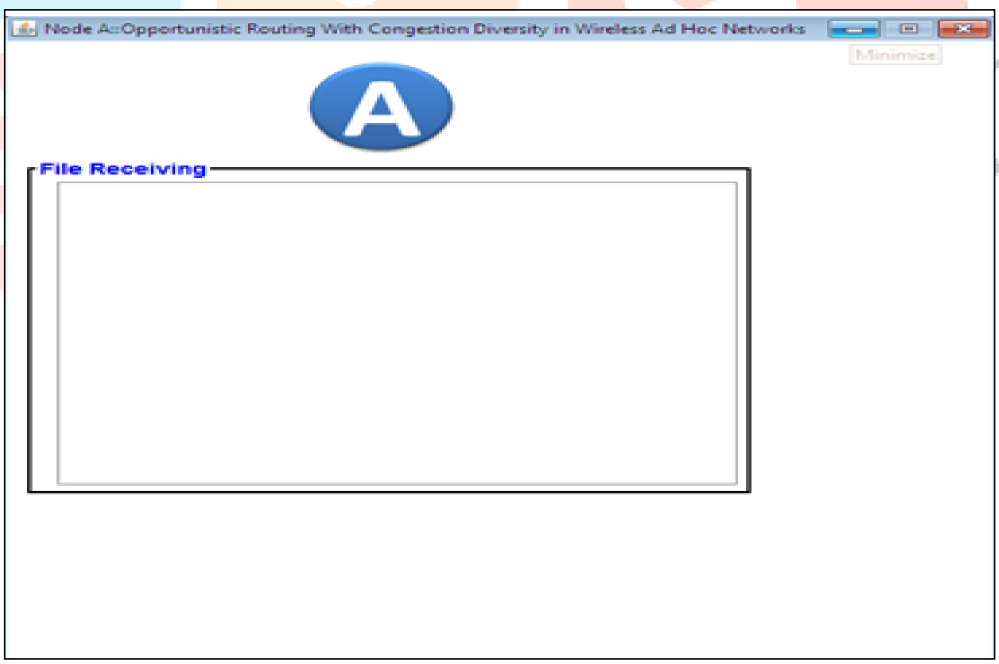


Figure 6.3 Represents the Destination A window

4) SOURCE WINDOW CHOOSE A VALID FILE

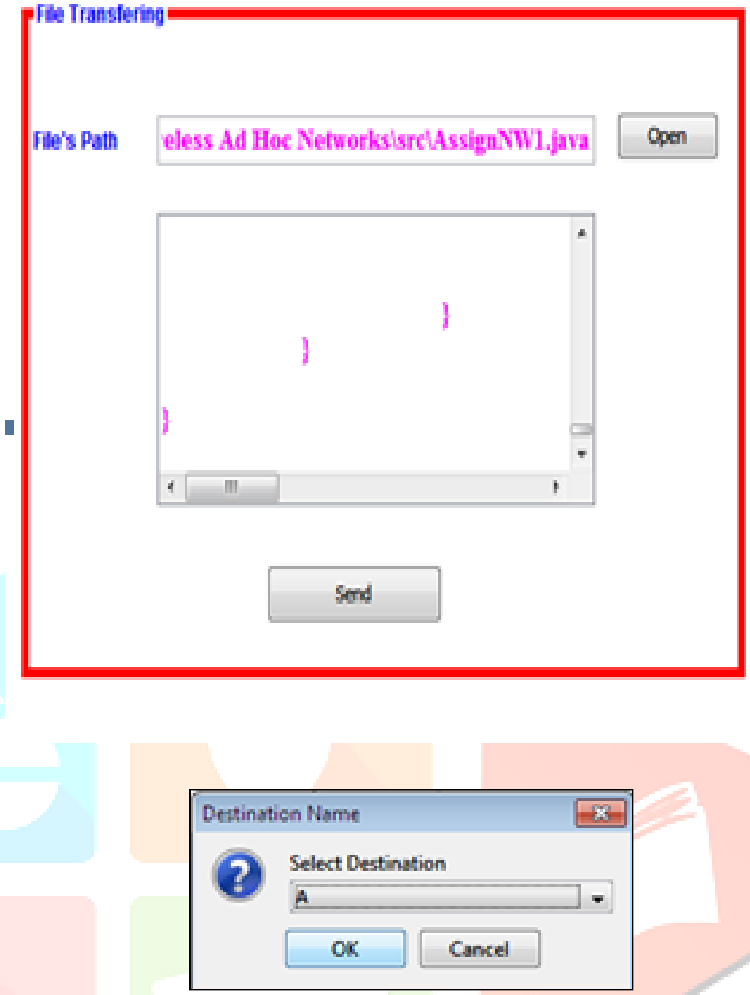
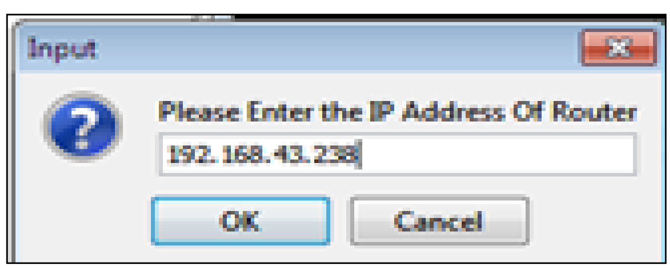


Figure 6.4 Represents the input text file and Destination Selection

5) **SENDER CHOOSE THE IP ADDRESS OF ROUTER**



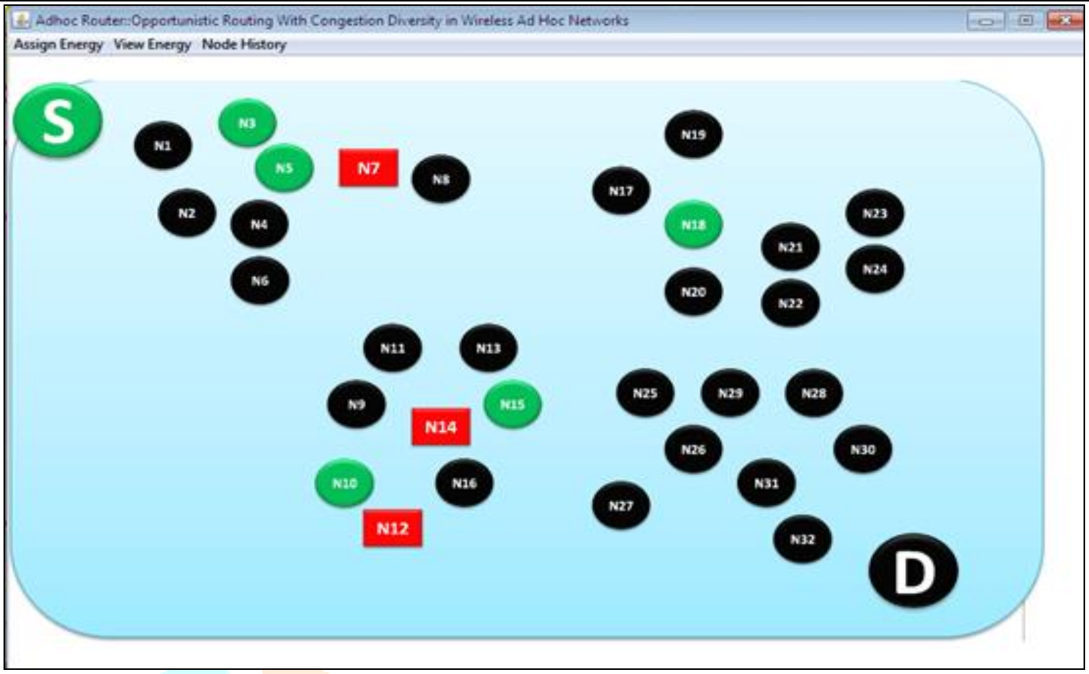


Figure 6.5 Packets are Sending Under Attack Nodes

6) **ROUTER TRY TO IDENTIFY THE CONGESTED NODES**

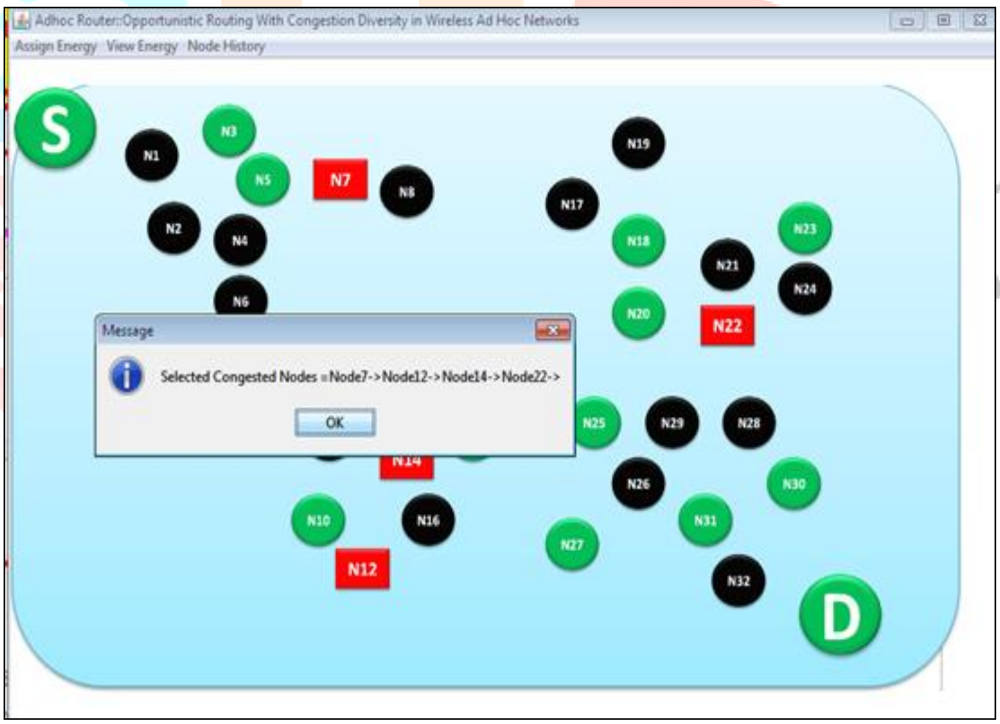


Figure 6.6 Congested path

7) **ROUTER TRY TO DISPLAY THE DELAY TIME**

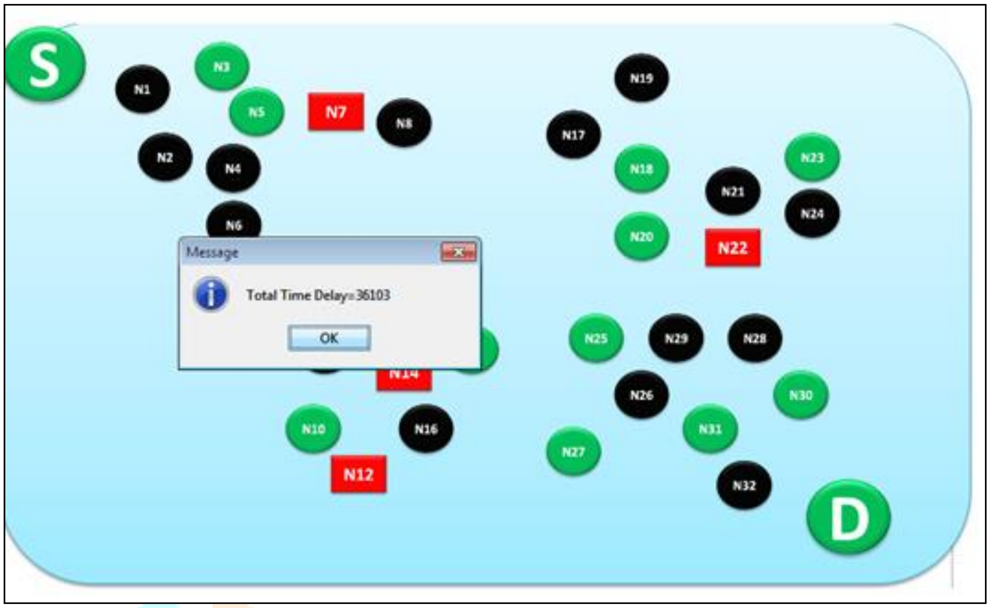


Figure 6.7 Total Delay Time

8) **RECEIVER RECEIVES THE FILE**

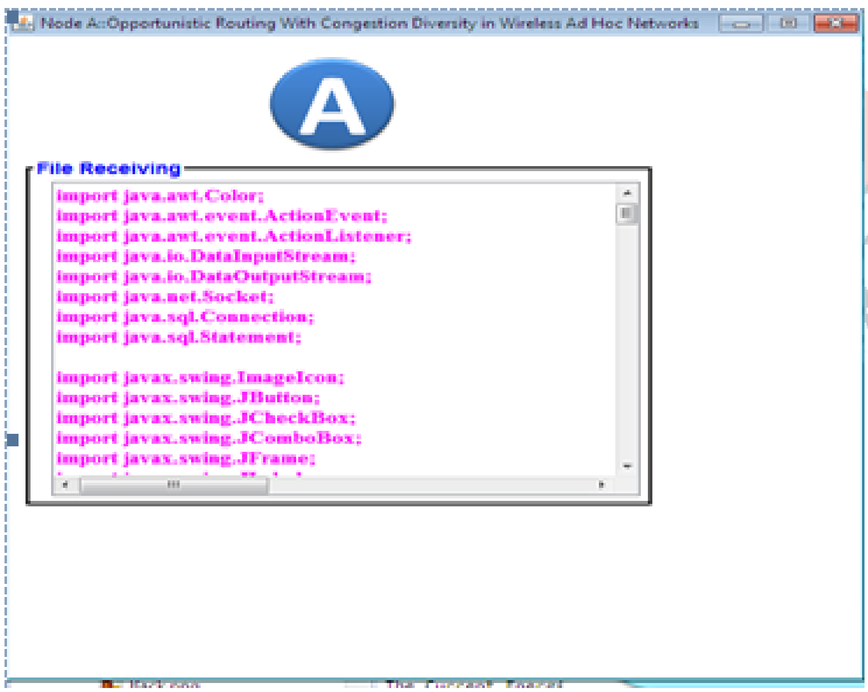


Figure 6.8 Received File

7. CONCLUSION

In this paper, we provided a distributed overlay routing policy with congestion diversity (D-ORCD) by combining the important aspects of shortest path routing with those of backpressure routing. Under this policy packets are routed according to a rank ordering of the nodes based on a congestion measure. Furthermore, we proposed a practical distributed and asynchronous 802.11 compatible implementation of D-ORCD, whose performance was investigated via a detailed set of QualNet simulations for practical and realistic networks. Simulations showed that D-ORCD consistently outperforms existingrouting algorithms. We also provided theoretical throughput optimality proof of D-ORCD.

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