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Efficient and Secure Resource Allocation and Data Forwarding in Cellular Network

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ABSTRACT

Data sharing in networks are now days a challenging one where the source is sending a file to destination, major problem is interference. Once the router is set to search for a path takes too time for identifying a better path to transmit data. The performance is affected due to the time delay of searching path and the interference cause data loss or interruption of transmission. We proposed an overlay router which search better path in short period of time with the help of BJP router. When a sender sends the data, the overlay router contact with BJP router to analyze existing path used to transmit. To ensure a better path and low travelling time will be an efficient way to share the data between source and destination without any interference, low performance and time delay. BJP searches the existing routes that will be low processing time to forward the data sent by the source and received on time by the destination. Whenever a data is been shared between these two: source and destination, overlaying protocol is user to find the shortest path among the existing path search. By using overlay router and BJP router the performance is increased, avoid interference, path identification is solved within short time and provide a better solution for the current environment.

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1. INTRODUCTION

Cellular network contain been a marvelous commercial achievement through far the most efficient way to improve overall system capacity has been to enhance spatial reuse by making cells as small as achievable [1]-[2]. Deploy more operator-owned base stations (BSs) is one approach to reducing cell sizes, but it comes at a high rate. Another approach to improving the capacity and indoor coverage of a cellular system is by introducing small overlay cells, called femtocells into larger coverage area macrocells.

A femtocell BS (fBS) is a small and inexpensive cellular BS with backhaul provided by a broadband access network, such as DSL or cable modem. Femtocells allow the cellular operators to improve indoor service coverage without much additional cost [3]-[4]. Despite the advantages of femtocells, there are some challenges associated with them. One issue is interference management. The microcell BS is operator-owned and maintained while the fBS may be customer-owned and is usually deployed in an ad-hoc fashion [5]. In some areas, hundreds of fBSs may be deployed within the coverage zone of a single macro cell. Such deployment makes interference scenarios complicated. Femtocells need either coordination with surrounding macrocells.

2. RESEARCH METHOD

The system concentrates 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. We define a general optimization problem called the Overlay Routing Resource Allocation (ORRA) problem and study its complexity. It turns out that the problem is NP-hard, and we present a nontrivial approximation algorithm for it. We develop a general algorithmic framework that can be used in order to deal with efficient resource allocation in overlay routing as shown in Figure 1. The computational complexity is reduced and the performance is increased, interference is avoided. Analyzing existing paths minimizes the actual path identification and reduces the time taken for path search.

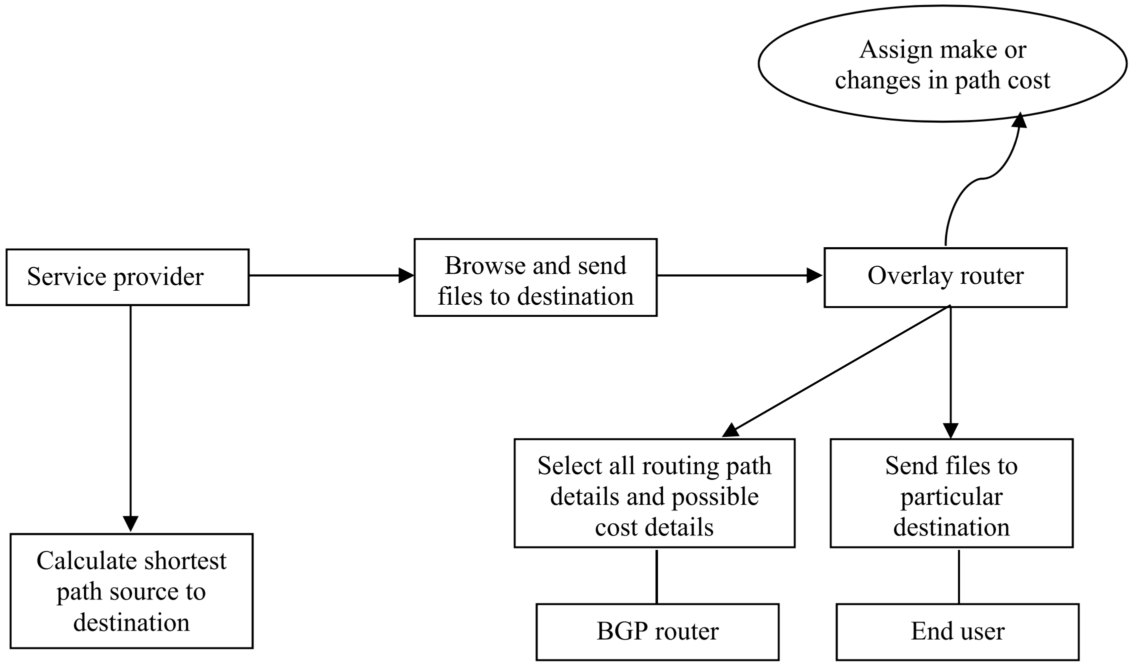

Figure 1. Architecture Diagram of the proposed system

3. RESULTS AND ANALYSIS

The computational complexity is reduced and the performance is increased, interference is avoided. Analyzing existing paths minimizes the actual path identification and reduces the time taken for path search.

4. CONCLUSION

We have discussed some of the challenges of introducing femtocells coexistent with current cellular network. We have used a protocol model and a random conflict graph to describe the spectrum reuse problem. We then applied random graph theory to analyze the problem, deriving upper and lower bounds on the number of resource blocks required to satisfy minimal assignment requirements for the network. We developed a heuristic algorithm to generate numerical results to compare against the theoretic bounds. For split reuse, the upper bound gives a good estimate on the number of resource blocks required.

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