

## **Performance of a Centrally Directed Hierarchical Routing Strategy with Distance Based and Traffic Based Partitioning of Network**

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### **Abstract**

Routing procedures are those decision rules in which the choice as to which node is to be visited next is made according to some strategy over the set of neighboring nodes. There is obviously no unique way of establishing message routes and work has been carried out by many investigators in an attempt to develop optimum routing strategies. In this paper first an adaptive routing algorithm is proposed for large and dynamic networks exploiting the capabilities of Delta Routing given by Harry Rudin and Hierarchical routing. A network is divided into clusters and a routing control center (RCC) within each cluster is responsible for making routing decisions on obtaining global information from all the nodes within that cluster. The parameter used here for making routing decisions is the traffic load at each node instead of delay information as in the case of Delta Routing.

The second part of the study focuses on the clustering structure of the network. An attempt has been made to optimally partition the network by a heuristic algorithm considering distances between nodes and then clustering the network by the same algorithm considering distribution of traffic load between various nodes. The performance of the algorithm is then observed under both the clustering structures. The analysis carried out relies on delay calculations obtained from queuing theory.