

An efficient innovative method to decrease routing table size in packet switched networks

ABSTRACT

Appropriate routing for supporting the requirements of various high quality applications emerged in current communication networks is a challenging problem that can lead to improved routing algorithms. Taking into consideration the highly distributed character of networks, numerous multi-agent based algorithms, and particularly ant colony based algorithms, have been proposed in recent years. However, considering the need for decreasing overhead and increasing the scalability of these algorithms remains an elusive challenge. Our goal here is to reduce the overhead and the process complexity in nodes by decreasing the size of routing tables of network nodes in an innovative manner. More specifically, data routing tables which are established in the AntNet algorithm and keep the information of all destination nodes in network convert to tables that only keep the information of popular destinations of network. The resulting algorithm, the “D-T-SAntNet,” is then simulated via Omnet++ on UUNET network topology. The network performance is evaluated under various node-failure and node added conditions. Statistical analysis of results confirms that the new method can significantly reduce the average packet delivery time and rate of convergence to the optimal route when compared with standard AntNet.

Keyword: Routing; AntNet; Routing table size; Packet switched networks