A fuzzy channel allocation scheme for the WDM hierarchical all-optical network

ABSTRACT

The fuzzy means of allocating WDM channels in a hierarchical all-optical network (AON) for the modified token medium access protocol is addressed. The goal is to minimise the average delay of local subnet and global bound traffic, and to maximise the number of nodes that can be supported by the network. This is achieved by allotting a minimum number of spatially-reuse channels to the subnets, which can accommodate a certain maximum number of nodes. Actually the minimum number of nodes that are sought for each subnet in terms of cost. By working out the maximum number of nodes for each subnet and the total subnets that can be supported, the optimum number of global channels and the overall total number of nodes for the entire network, can hence be determined. The packet generation rate and average delay in slot time are used to gauge the performance of the fuzzy channel allocation model.