Abstract

Single way delays across specific paths in commutations networks are changeable and not stable. Some of these changes are to be expected as they are due to changes in network loading. Other changes are anomalous and reflect some change in the network behavior. We define these changes as Delay Data Exceptions. These Exceptions are a useful summary of performance information that can assist network operators in their management tasks.

In a typical monitoring process, usually only some paths of the communication network are monitored. The performance of the monitored paths can be determined by the Delay Data Exceptions in those paths or links. However, the performance of some of the non monitored paths can be determined by collecting and correlating the available anomalous monitored data from the monitored paths.

In this paper, a neural network approach was used to correlate Delay Data Exceptions detected on some paths across a communication network in order to predict in which link of the network an event was happened which cause these Exceptions.

This approach was evaluated by using Delay Data Exceptions generated from two experimental test networks built in the laboratory. The output performance of the neural network showed good results and is able to identify the location of the underlying cause of the Exceptions even when these are seen on different sections of the network from that on which the underlying event occurred. Initial work concentrated on loss of connectivity as the underlying event. However, the approach has been shown to be applicable for other types of event such as changes in bandwidth of a communication link in the network.