Performance Of ATM Networks Under Hybrid ARQ/FEC Error Controlscheme

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Summary

In ATM networks, fixed-length cells are transmitted. A cell may be discarded during the transmission due to buffer overflow or detection of errors. Cell discarding seriously degrades transmission quality. This paper analyzes a hybrid automatic repeat request/forward error control (ARQ/FEC) cell-loss recovery scheme that is applied to virtual circuits (VCs) of ATM networks. FEC is performed based on a simple single-parity code, while a Go-Back-N ARQ is employed on top of that. Both throughput efficiency and reliability analysis of the hybrid scheme are presented. In the process we investigate the interactive effects of the network parameters (number of transit nodes, traffic intensity, ARQ packet length,) on the performance. The analysis provides a method for optimizing the FEC code size for a given network specification