

ATM NETWORKS FOR NARROW BAND COMMUNICATIONS

Abstract

Pulse Code Modulation (PCM) signal streams are converted into Asynchronous Transfer Mode (ATM) cells for switching and transmission across a telecommunications network. Each cell carries one PCM sample of up to 48 different voice connections, the voice connections being selected from the PCM data streams because they have a common destination. The cells are transmitted over ATM virtual paths, each path transmitting one cell every 125 μ s. The ATM signals are switched by units for switching cells (cell switching), while keeping their payload contents intact, and by units for switching the signals for individual voice connections between cells of an ATM signal (cell remapping). Advantageously, ATM transmission systems interface with PCM systems without adding appreciable delay and without requiring additional buffering. Advantageously, new voice paths can be established most of the time by using available slots in the cells of existing virtual paths. Advantageously, large telecommunication networks can be implemented using a small number of switching units.

Advantageously, a central communications network comprising stages of cell remapping interconnected by one or more stages of cell switching provides flexibility for interconnecting large access switches; the cell remapping stage may be made part of the access switch. Advantageously, an access switch comprising a cell mapping or distribution stage for assembling cells comprising PCM samples headed for a common output of the access switch are switched in a cell switch to a cell remap unit for collecting PCM samples headed for a common destination into individual cells of an ATM output stream, provides output signals that can be readily and efficiently switched by a transit network for distribution to other access switches of a large network. Advantageously, such a cell remap unit provides a key element to the implementation of an efficient large ATM voice network.

For use with PCM switches, it is desirable to provide supervisory signals accompanying the PCM data. Advantageously, this arrangement permits supervisory signals to be passed within an access switch thus simplifying compatibility with existing switching systems.

This Sheet Has Been Replaced

