

Bially, T., McLaughlin, A. J., and Weinstein, C. J., **Voice Communication in Integrated Digital Voice and Data Networks**, IEEE Trans. on Communications, Vol. COM-28, No. 9, September 1980, pp. 1478-1490.

Abstract

Voice communication networks have traditionally been designed to provide either analog signal paths or fixed-rate synchronous digital connections between individual subscribers. These designs were aimed at accommodating the "streamlike" character of speech, which has traditionally been considered to flow from source to destination at a more or less constant rate. By way of contrast, interactive and computer-to-computer data transactions tend to be "bursty" in nature, and this has given rise to the development of packet-switching methods for data communications. The dichotomous nature of these two major traffic classes and the apparent conflict between the types of network services they require has resulted in the deployment of separate military communications facilities for voice and data. A challenge in the design of future systems is to achieve overall economy and flexibility in the allocation of resources via the efficient integration of both traffic types in common network facilities.

This paper summarizes a number of advanced concepts for switching and flow control of combined voice and data traffic in integrated environments. Performance characteristics are described based on analysis results and computer simulation studies for both multilink terrestrial and broadcast satellite network topologies.