

ABSTRACT

There is growing interest in the support applications which lends themselves to stream-type traffic such as packetised, voice, facsimile, and video data for remote conferencing and which may also require real-time communications service. The development of powerful microcomputers, makes possible a totally new approach to distributed information systems. Instead of many users sharing one machine, it has become practical to build a computer as a network of PCs to access shared data-bases and tap other communication resources.

Gaining widespread use, particularly for shared satellite or local area communications, are the contention oriented "multi-access protocols" which can provide all the capabilities and features required for integration. Although attempts have been made to render the presentation complete, it is by no means exhaustive of all existing schemes. This field is still so widely open, that new schemes are constantly being introduced

This project entailed the design of a Local Area Network for microcomputers, which was tailored to meet the demands of specific applications and limited distances. The network incorporated features of existing standard networks, and as much as possible was designed according to the specifications as outlined by IEEE Project 802 Committee, extending only over the first two layers of the OSI Model. Other objectives achieved, were the provision of machine independent standards for information exchange, and at a comparatively lower cost than the average PC.

Another important aspect, was the design of the LLC layer which was based on the chosen methodology for the MAC technique. Consideration was also given to the impact of this design on the utilisation of resources and on the design of the upper layers.

Since resources were restricted, this project also entailed the design of adequate testing procedures. The simulators designed for this purpose achieved the various objectives set out for this procedure. However, testing was not as thorough as the process involved in protocol validation, since there were limited resources available.

In cases where major objectives of this network were not achieved, the design facilitated for the simple implementation of appropriate features which would accomplish the associated tasks.