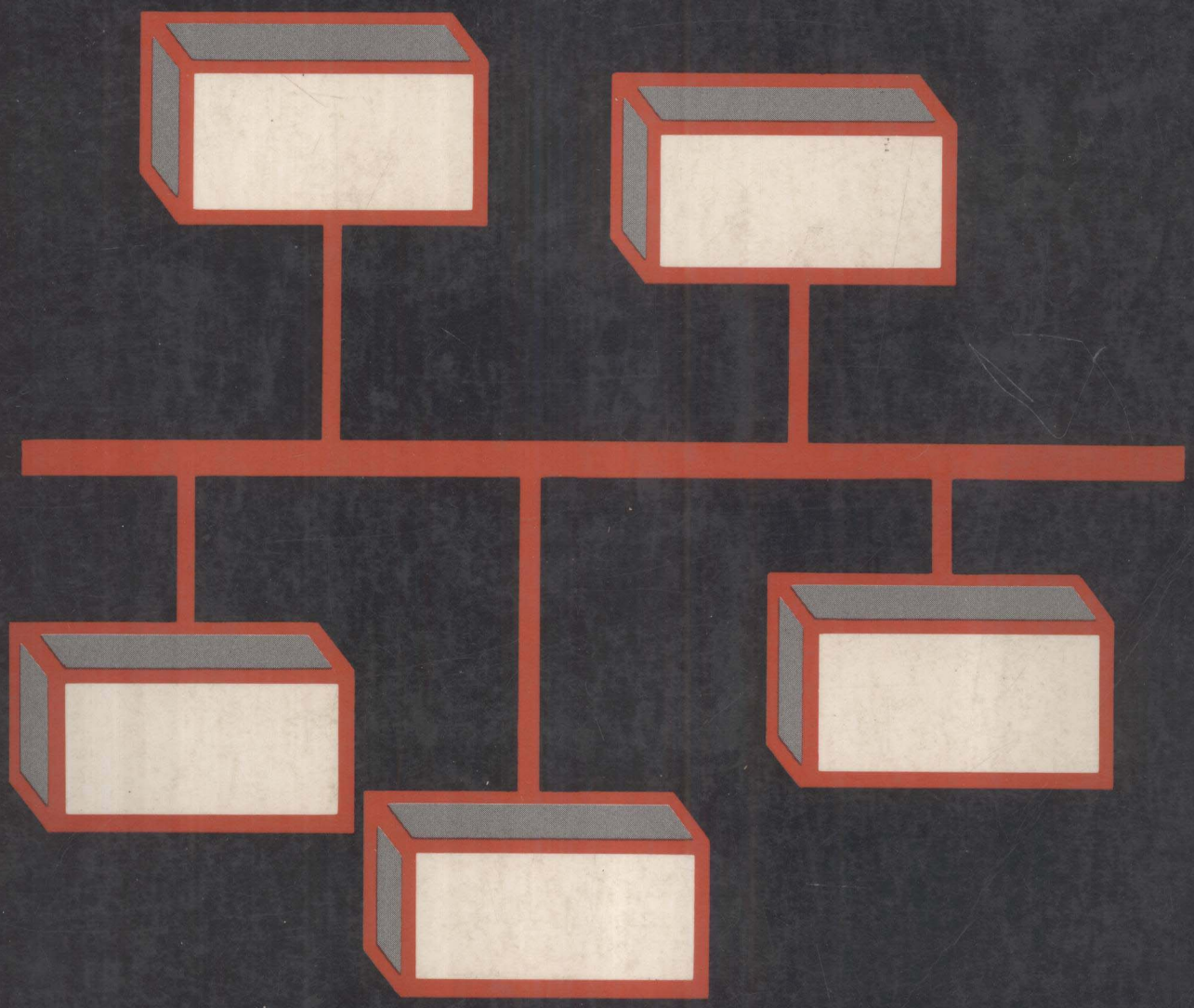
LOCAL NETWORKS

Distributed Office & Factory Systems



Proceedings of Localnet '83, New York

LOCAL NETWORKS

Distributed Office & Factory Systems

ISBN O 86353 OOl X

Published by Online Publications Ltd., Pinner, UK.

Introduction

Local network systems are now developing at a rate which clearly signals an important future for the technology. The capability of extending high capacity communications throughout the office and factory floor promises productivity advances long overdue. At the same time the need to make more efficient use of all types of office equipment is rapidly creating a large and expanding market for local area networks.

However as the technology proliferates so do the problems and issues which must be resolved before they constrain progress further. This collection of papers presented at Localnet '83 New York, 1983 examines the design, selection, installation and application of local network based systems.

The papers examine all the key developments in local network systems. There is a particularly important section which examines local area networks from the managers point of view. On the more technical side this book examines a full range of subjects from fiber optic systems to integration, network interconnection, performance evaluation and security. Technical specialists and all managers involved in installing local area networks will find this book to be a source of practical and valuable information, as well as the most up-to-date review of this rapidly developing subject currently available.

Localnet '83 is organized and controlled by London Online Inc. The conference and exhibition continue the highly successful series of events which have been held annually in London since 1981.

London Online Inc. is an associate company of Online Conferences Ltd. which has established a unique reputation over the last 12 years as the world's premier organizer of significant and prestigious events concerned with the business implications of leading-edge technology. During the last 12 years it has coordinated over 300 highly respected events in the UK, on the Continent of Europe and in North America.

London Online Inc.
1133 Avenue of the Americas, Suite 3314, New York, NY 10036
Phone: (212) 398-1177 Fax: (212)398-1392

Contents

Distributed office systems & voice/data integration

System selection & installation

Baseband systems: user experiences

Broadband systems: user experiences

American Bell LAN developments

IBM/TI token passing developments

Personal computer networks

Baseband developments

Broadband developments

Developments in fiber optic systems

Integration with large heterogeneous & metropolitan networks

Developments in high level protocols

Network interconnection & gateways

Network performance evaluation

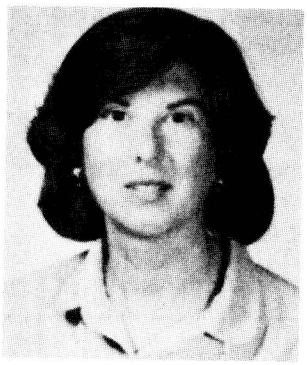
Network security

Author

WHERE HAVE ALL THE INTEGRATED PBXs GONE?

Pamela B Roberts
Consultant
Arthur D Little Inc
USA

The status of integrated voice/data PBXs is reviewed in terms of what systems are available and which vendors have customers using data communications on the PBX. Reasons for the slow market development are explored as well as factors for success and the outlook for the key participants.



Pamela Roberts is a Consultant in the Technology Management Practice of Arthur D. Little, Inc. in San Francisco. She specializes in strategic planning and marketing strategy for technology based products and services including integrated voice/data PBXs and network services. Prior to joining Arthur D. Little in 1977, she was with McKinsey & Company in Los Angeles.

INTRODUCTION

What is an integrated voice/data PBX? Why is it important? Who offers integrated voice/data PBX's? What has been the acceptance of integrated voice/data PBX's? Where? What applications? What is the outlook for integrated voice/data PBX's? And which suppliers are most likely to succeed? These are the issues that I will address with you today.

But first, what is an integrated voice/data PBX? An integrated voice/data PBX allows voice and data communications to be simultaneously switched through the PBX without the use of modems. In any switching system the flow of goods, or information, passes from the originating point to any of the potential destinations via a clearing house (switch), and the total number of paths required is significantly reduced.

Several options exist today to accomplish data communications switching as opposed to dedicated point-to-point data communications connections. These options include:

- Multidrop computer terminal to host connections
- Bus-type local area networks (Ethernet, etc.)
- PBX-type local area networks.

Each of these options may consist of different architectures, media, speeds, bandwidths, protocols, and formats. The objective of each type of switch is to accomplish data communications between terminals and host processors, or between host processors, or between terminals.

A PBX has traditionally functioned to connect a number of telephone lines supporting telephone sets (telsets) to each other and to a lesser number of trunks which connect the PBX to the outside telephone world. Each telephone line and trunk typically requires one port or time slot on the system to operate.

As the PBX evolved from an electromechanical device to a computer based and stored program control system using digital technology internal to the switch, it became evident that the PBX could become a vehicle for switching digital data between processors and peripherals without the use of modems. The potential benefits

included removing the cost of the modem, increasing the speed of the transmission, and improving the quality and reliability of the transmission. In addition, the user would be able to work on a terminal and use the telephone at the same time. Also, employees not currently accessing the company computers (via a directly-connected terminal or via a terminal with a modem) would have an opportunity to gain access to the data processing environment without additional wiring and hardware.

Ideally, the voice and data transmissions would be multiplexed over a single twisted pair of wires and require only one port at the PBX. With that solution the data communication capability would be perceived as an added feature/function at little incremental cost, since at least one twisted pair and one port is required on the system for the voice communication.

In fact, the implementation of integrated voice/data transmission varies in terms of the number of channels and type of media needed from each telset or data device to the switch, the number of ports used at the switch, and the additional hardware needed in the system and at the telset or data device to accomplish integrated voice/data communications.

These differences are often defined in terms of second, third, and fourth generation PBXs. Second generation PBXs are digital stored program control switches designed for voice communications. Adding the capability for data communications was an afterthought. An example of a second generation PBX is the Northern Telecom SL-1. Data communications is accomplished over the same two twisted pair in place for voice communications by adding a line card to the PBX for each data terminal and a data interface device at the terminal site. An additional port is used for each data device. Data transmission speeds supported are currently up to 9.6 kbps and may be up to 56 kbps in the future.

Third generation PBXs were designed to support the simultaneous transmission of voice and data, either over the same twisted pair, or over parallel twisted pair, without consuming an additional port. An example of a third generation PBX is the InteCom IBX system. The system requires two twisted pair but only uses one port on the PBX. Additional hardware in the form of a circuit board is added at the switch and in the telset. Speeds supported are up to 19.2 kpbs and are expected to be available up to 56 kpbs.

A fourth generation switch is promised in the announcements by ZTEL and CXC, both of which are designing a system which is a combination of PBX-type and a bus-type local area network.