WIDEBAND Communications

Proceedings of the international conference held in London, October 1986

Computer Communications Series: 5

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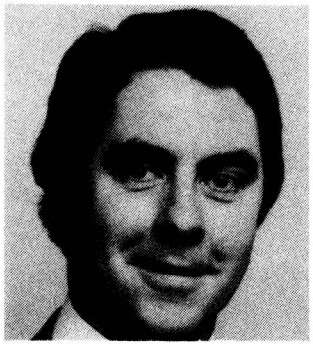
Introduction

The spread of digital transmission in public networks has made possible the use of high speed end-to-end digital circuits to link PBXs and to interconnect computers. In the local area network sector, high speed and optical fibre developments point the way ahead.

This book provides an overview of the whole area of wideband communications from a group of highly experienced contributors. They cover the different technologies for delivery of wideband, and the different carriers; the progress being made in standards for high speed optical fibre LANs and broadband ISDN; the Research for Advanced Communications in Europe (RACE) project being sponsored by the European Community; and the uses and benefits of wideband networks in the longer term.

The technical and economic challenges of wideband services, provision and use, raise strategic issues which are highlighted in this book.

Session Chairmen



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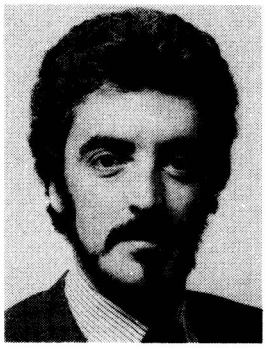

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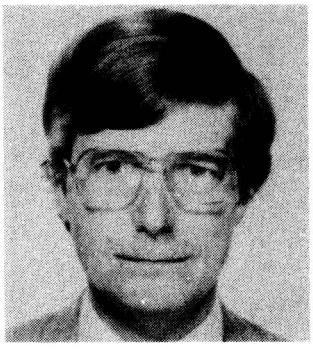

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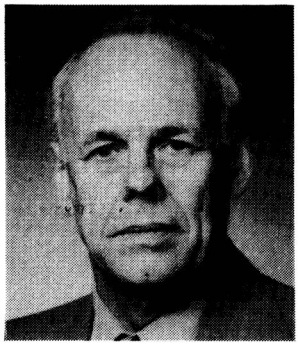

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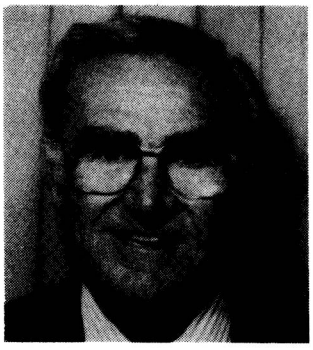

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Authors

Brant G	PA Computers & Telecommunications	UK	37
Buckley J V	PA Computers & Telecommunications	UK	149
Caves K	STC Technology	UK	81
Clark P F	Logica Communications & Electronic Systems	UK	189
Fisher D G	STC Telecommunications	UK	45
Flatman A V	STC Network Systems	UK	81
Gleen K	British Telecom Research Labs	UK	57
Händel R	Siemens AG	FRG	93
Harrison J	Focom Systems	UK	17
Holland P M	ICL Network Systems	UK	113
Howard J R	Plessey Major Systems	UK	71
Hüber R P O	Commission of the European Communities	Belgium	163
Kenyon N D	British Telecom Research Labs	UK	187
Kerr G W	British Telecom Research Labs	UK	127
Kleyn H	Mercury Communications	UK	29
Matson M J	National TeleCable Management	UK	177
Medlam J W N	Pirelli General plc	UK	17
Morris W G	British Telecom Private Circuit Services	UK	1
Rose S C	Network Systems	UK	135
Rumble D	PA Computers & Telecommunications	UK	105
Stevens R	GEC Cable Systems	UK	193

Contents

Providing wideband - complementary and competitive systems

MegaStream & the move to optical fibres	William Morris British Telecom Private Circuit Services UK	1
The importance of optical fibre in local wideband communications	Nick Medlam Pirelli General plc & John Harrison Focom Systems UK	17
Wideband networking	Howard Kleyn Mercury Communications UK	29
Wideband: the role of satellites	Graham Brant PA Computers & Telecommunications UK	37
Broadband metropolitan networks: more than CATV	Richard Stevens GEC Cable Systems UK	193*

Key technologies - progress and prospects

Asynchronous time division techniques in broadband communications	David Fisher STC Telecommunications UK	45
The Alvey High Speed Network	Keith Gleen British Telecom Research Laboratories UK	57
Perspectives on coding, switching & transmission in a broadband context	John Howard Plessey Major Systems UK	71

Standards for wideband

FDDI-II: a new standard for integrated services high speed LANs	Keith Caves & Alan Flatman STC UK	81
ISDN getting broader: inclusion of wideband capabilities lies ahead	Rainer Händel Siemens AG FRG	93

Using wideband - burning up the bandwidth

The world market for wideband applications	David Rumble PA Computers & Telecommunications UK	105
The impact of reconfigurable networks	Peter Holland ICL Network Systems UK	113
On-demand interactive video on British Telecom's switched-star network	Gordon Kerr British Telecom Research Laboratories UK	127
High speed data communications: applications & trends	Steven Rose Network Systems UK	135

Strategic issues: beyond 1990 and getting there

Development of a broadband communications strategy for Belgium	John Buckley PA Computers & Telecommunications UK	149
Europe's cooperation towards integrated broadband communications: the programme RACE	Roland Hüber Commission of the European Communities Belgium	163
Broadband ISDN: this year, next year, sometime, never?	Malcolm Matson National TeleCable Management UK	177

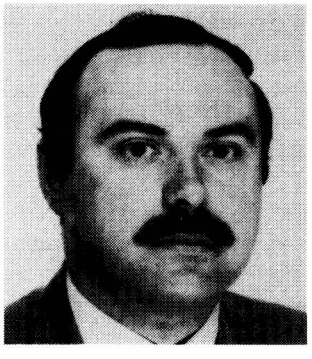
The need for wideband (discussion notes)	N D Kenyon British Telecom Reseach Laboratories UK	187
Using wideband (discussion notes)	Peter Clark Logica Communications & Electronic Systems UK	189

* To incorporate the most recent material available, this paper is included out of sequence.

MegaStream & the move to optical fibres

William G Morris
Head of MegaStream Product Development
British Telecom Private Circuit Services
UK

MegaStream services at 2Mbit/s have been offered within the UK for 5 years. The operational experience gained with existing copper cable-based systems and the developing technology of optical fibre transmission have produced a strategy and enabled work to proceed on the developing range of MegaStream services. The requirements of these services, facilities, techniques and problems are explained.



William Morris is currently leading a team defining and developing methods of providing the serving section of MegaStream circuits, undertaking special network projects, network synchronisation and short distance optical fibre services. Previously he has worked on the planning and implementation of the KiloStream network as well as consultancy tasks and data network studies. He holds a Bachelor of Science degree in Electronics and is a Member of the Institution of Electrical Engineers.

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Origins of MegaStream

The need for private circuits to produce the facilities that private networks require is well-established. For many years, analogue private circuits had met this need, the volume end of the market being serviced by FDM widebands providing 12 or 60 analogue channels for voice/data use or a 48 KHz groupband data circuit. In the early 1980's, with digital transmission penetrating the national network, some companies wanted to use 2Mbit/s transmission for the advantages of performance and flexibility that digital transmission offers.

When the engineering aspects of how to extend digital service to a customer's premises were examined in detail, some of the difficulties which became apparent were:

a) BT itself had been operating digital links for a relatively short time compared with the time it had been operating analogue transmission; the problems of maintaining such a digital service or even specifying the performance were therefore unknown.

b) The equipment for use on digital private circuits would have to come mainly from that purchased for within-network use as that was all that was immediately available.

c) The need to provide alarm facilities on the circuits in order to assist BT in maintaining the service and/or prevent the customers equipment from causing false alarm indications to the BT network.

d) The method of providing service was to install a specially-provided local cable from the customer's premises to a BT exchange and then connect this onwards to the distant end using transmission systems provided for inter-exchange telephony needs. This led to the engineering of a new local cable network, taking special account of crosstalk and arranging for both power feeding and local powering of the line terminating equipment in the customers premises.

e) Each circuit would be provided on demand because the digital transmission bearer network at 2Mbit/s was not mature enough to pre-provide exchanges with spare capacity pending customer demand (c.f. KiloStream where demand is easier to deal with by pre-provided capacity).

These considerations led to the evolvement of the MegaStream circuit architecture as shown in Figure 1, with the division into serving sections and main section.