

Asynchronous Transfer Mode Networks: Performance Issues

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Publishing of a new book in the field of computer networks has already become common practice. This book is in fact not a common thing.

Asynchronous Transfer Mode (ATM) is the focus of intense interest at a worldwide scale.

The international standards community is working dilligently on creating standards that will facilitate interoperation of ATM-based products.

Companies are announcing new products on essentially a weekly basis. Newspaper articles writing about ATM appear daily.

ATM conferences have grown too numerous for even a dedicated ATM practitioner to attend them all. The ATM Forum, established in 1991 with about six initial companies as primary members, has grown to a membership that includes about 300 companies and is still growing.

As the basis on which B-ISDN services come to be provided, ATM deserves all due attention.

ATM promises technical capability of handling any kind of information, voice, data, image, text and video, in an integrated manner. The unique framework not only covers the transfer mode, but also services, operating environments and transparent interconnection.

The upper layer of services designed, based on a single transfer mechanism, allows the development of integrated applications.

Probably it is not an overestimation if saying that a new science of high bandwidth networking is evolving through the attempts of networking analysts, and meets all challenges associated with providing a variety of services for networks operating at gigabit or higher speed.

The book will help interested readers understand more about the technology that is now associated with B-ISDN.

The book attempts at summarizing the state-of-the-art of what makes ATM networks be a reality and at raising several problems concerned with when intending to attain such a goal. It addresses a broad readership including students and researchers, network designers and network managers and users, eager of being offered such a reference volume. It surveys different design issues and approaches, and assesses capabilities of various products.

Seven chapters addressing various aspects of ATM networks are included. **Chapters 1 and 2**, respectively, introduce the basic concepts of B-ISDNs and ATM as transfer mode. Various characteristics of B-ISDN applications, including information transfer parameters and quality of service requirements, are explored in **Chapter 3**. **Chapter 4** addresses the congestion control problem in ATM networks and presents different approaches proposed for the controlled use of network resources. One area that has, despite its importance, received the least attention in the literature is that of transport protocol(s). **Chapter 5** mainly discusses the underlying concepts that might be considered in the design of transport protocols for high speed networks. The state-of-the-art of routing in ATM networks, including point-to-multipoint connections, is presented in **Chapter 6**. Finally, **Chapter 7** addresses switching in ATM networks that include various switch architectures, and their rather simplistic models to investigate the behaviour of the performance metrics of interest.

The book will be very useful for people who are interested in computer networks, and especially in the approaches of the new science of high-bandwidth networking.

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