

ATM NETWORKS FOR MULTIMEDIA

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SYAM ZAKIRIL IKMAR BIN KHISHAM
(95033279)
Faculty of Electrical Engineering
MARA Institute of Technology
40450 Shah Alam
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ABSTRACT

This paper is a project report on the introduction of ATM technology application in networked multimedia environment. For this paper, the concepts of ATM technology, ATM networking for multimedia and networked multimedia applications will be described.

ATM is a set of international standards for high-speed digital networks. With ATM, massive amounts of multimedia applications such as data, voice, image and video information can be send simultaneously over a single network with a speed up to a thousand times faster than is possible today.

For the purpose of performance evaluation, a simulation model of a typical ATM networked multimedia and its analysis will be presented. This network consists of real-time and non real-time multimedia applications that will be conveyed either as CBR or VBR traffic. The simulation software to be used for modelling and analysis is COMNET III Release 1.1i.

ATM ACRONYMS

AAL	ATM Adaptation Layer
ABR	Available Bit Rate
ACR	Allowed Cell Rate
AIP	ATM Interface Processor for the Cisco 7000 families
ANSI	American National Standards Institute
API	Application Program Interface
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
BECN	Backward Explicit Congestion Notification
B-ICI	Broadband Inter-Carrier Interface
B-ISDN	Broadband Integrated Services Digital Network
BT	Burst Tolerance
BUS	Broadcast and Unknown Server in LAN Emulation
CAC	Connection Admission Control
CBR	Constant Bit Rate
CER	Cell Error Ratio
CDV	Cell Delay Variation (a.k.a. jitter)
CDVT	Cell Delay Variation Tolerance
Cisco IOS(TM)	Cisco Internetworking Operating System
CLP	Cell Loss Priority

Chapter 1

INTRODUCTION TO ATM TECHNOLOGY

Communication networks tend to grow over time, both in number of users and in required bandwidth per user. For this reason networks have to provide an increasing amount of total bandwidth. Also new types of applications are being developed and come into use, requiring the network to provide different types of service than before. Multimedia type applications are an example of this. These applications need to transport streams of audio and video over the network, with particular real-time and loss requirements. Current computer networks were originally not designed to cope with these kind of requirements.

In an effort to create a network technology providing not only the traditional type of service but also the earlier mentioned multimedia types of service, and at the same time supporting very high bandwidths, the Asynchronous Transfer Mode (ATM) was designed. ATM networks will be able to carry traffic like audio and video together with conventional network traffic over a single network. It is clear that in order to meet these different and partly conflicting requirements some compromises had to be made in the design of ATM.