

**PERFORMANCE EVALUATION OF AN FDDI-ATM GATEWAY
BY SIMULATION METHOD**

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ABSTRACT

Local Area Network (LANs) have been designed for communication covering small sites. Besides, a Fiber Distributed Data Interface (FDDI) provides very high speed interconnection to several other LANs using fibre optics as a physical medium. The existence of Asynchronous Transfer Mode (ATM), which is the most promising transmission techniques for Broadband ISDN (B-ISDN) caters for a variety of users services. Examples of these services are video telephony, video conferencing, electronic mail, voice mail and broadcast television.

The aim of this project is to investigate the performance of interconnection between FDDI Metropolitan Area Network (MAN) and ATM-based B-ISDN, through a gateway unit. This project uses a simulation model to evaluate the performance of the FDDI-ATM gateway. The simulation code is written in C and uses a timed token service discipline, which include Token Rotation Time (TRT) and Token Holding Time (THT). The effect of load passing through the FDDI-ATM gateway is investigated, and the performance of interest, Mean Waiting Time (MWT) is noted.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Local Area Network (LANs) have been designed for communication covering small sites. Besides, a Fiber Distributed Data Interface (FDDI) provides very high speed interconnection to several other LANs using fibre optics as a physical medium. Such a LAN-LAN interconnection can be realised through an interface. The existence of Asynchronous Transfer Mode (ATM), which is the most promising transmission techniques for Broadband ISDN (B-ISDN) caters for a variety of users services.

However, previous system designs have not considered the interface between the FDDI-based MAN and the B-ISDN, although performance studies of FDDI ring has been reported since 1982. This interface is very important as it acts as the gateway for information transfer between MAN and B-ISDN. It has been shown that the interconnection of connectionless FDDI and connection-oriented ATM based B-ISDN can be realised through a gateway. This FDDI-ATM gateway is responsible for handling all interconnecting and interworking issues between the networks.

Nevertheless, system performance is one of the key factors that must be taken into account in all different phases, such as design, development, configuration and tuning of the entire life cycle of various system. In this thesis, a simulation model of the