

An Efficient Scheme for Traffic Management in ATM Networks

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Abstract— As ATM network is designed for broad band transmission that is high data rate (25 Mbps to 2.5 Gbps) and supports the transmission of every kind of data, congestion control and delay have been important issues for ATM networks. Data transmission is done in the form of cell (53 bytes) relay. Hence, cell sequence and the error control have to be carried out properly. ATM networks presents difficulties in effectively controlling congestion not found in other types of networks, including frame relay networks. In this paper, we present an efficient methodology for traffic management. The simulation results suggest that the proposed solution is effective for both slow and high data rate transmission.

Keywords— ATM network, broad band transmission, congestion control, transmission delay

I. INTRODUCTION

International Telecommunication Union (ITU) has defined a restricted initial set of traffic and congestion control capacities aiming at simple mechanisms and network efficiency as follow. That sets the upper bound to the traffic, variability in the pattern of cell arrival and average rate of ATM connection.

1. Connection Admission Control.
2. Usage Parameter Control.
3. Priority Control.
4. Fast Resource Management.
5. Selective Cell Discarding.

Apart from that, ATM switch is important network device in ATM network for congestion and traffic control. That switches virtual circuit identifier (VCI) from left to right. It contains buffers and switching circuits to guide the connections.

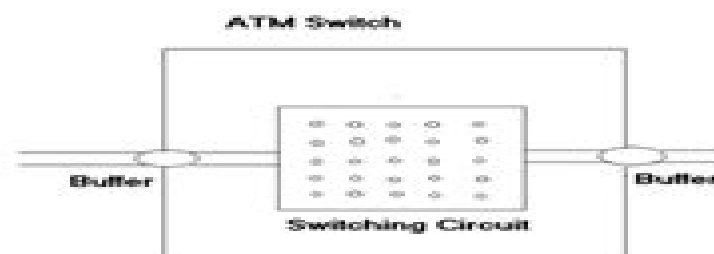


Fig. 1. Switching Architecture

A. Problem Statement

Traffic from user nodes can exceed the capacity of the network, which causes memory buffer of ATM switches to overflow and data loses. As per high data rate of transmission, cell storage and traffic management is required in ATM switches.

The restrictions of ITU-T can be managed by upgrading the performance of ATM switches. ATM switches takes a time to process each cell's VCI through switching circuit and referring to the routing table instead of no time. That affects the continuity of the cell transmission.

ATM switches do outgoing buffering if more than one cells have same VCI, which leads to defer in transmission and affect the CBR (Constant bit rate). That results in retransmission or poor performance at receiver side especially in case of video-audio data.

II. PROPOSED SOLUTION FOR AN EFFICIENT TRAFFIC MANAGEMENT IN ATM NETWORKS

Small buffers of ATM switches can be replaced with large memory blocks.

Quality Of Service In Atm Networks State Of The Art Traffic Management

**Serpanos, Dimitrios N.,Theoharakis,
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