Effective integration for the multimedia communication by fixed-length packet

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February 14, 2001

Keywords: fixed-length packet, packet synchronous transmission, delay, jitter.

Abstract

This paper presents a synchronous packet transfer system with fixed-length packets. This transmission system can guarantee QoS completely and achieves efficient utilization of lines. The packet transmission system gains high utilization ratio, using priority queue, introducing both synchronous packet transfer and asynchronous packet transfer. While, it is difficult to guarantee the delay and jitter completely if a packet is variable-length, the proposed system is able to guarantee QoS completely, which reserved time slots at the time when connection admission control performs before starting transmission. In this paper, describes proposed transmission system, and presents performance by the results of simulation.

1 Introduction

In recent years, demand for data communications, represented by the Internet not only voice communication but also video is increased. Therefore, technology of network that can transmit to integrate these traffics is expected. Today, it has been proposed that priority queue control for different demand of traffics using variable-length packet. However it is difficult to guarantee delay and jitter.

The purpose this paper is to guarantee permissible delay and jitter completely, and to achieve high live utilization rate, and evaluate performance of the system by simulation.

2 Synchronous Packet Transmission

The synchronous packet transmission is a method that synchronize a fixed-length packet time slot occupied by a packet transfer time. A packet can be also identified by header, so that it can be able to transfered in asynchronous manner. Furthermore, if a buffer for a packet is provided, it is able to scale up to the wide area network without synchronizing. In order to the reserve required band-width, a time slot scheduling table is made. The table has the same number of entries as the value counted total band-width by unit band-width.

And it is checked the entries according to reservation cycles, so that be able to be reserve various kind of requested band.

A synchronous packet is transferred, referring to the scheduling table. Best-effort type traffics are always put into a single queue, and be transferred using slots which are not reserved slots and idle slots which is although reserved by synchronous channels.

In this proposal, if remainder band-width is insufficient at the time of Connection Admission Control(CAC),nearly required slots collide with the reserved ones, the new connection request is refused, and it is dealt with a call loss. Since, the packet size is fixed-length. and the appropriate scheduling is performed at CAC, probability of slot collision can be kept low.

3 Simulation

In this study, the service class is divided into two, the connection oriented class CBR for the synchronous data traffic, and the connection less class ABR for the asynchronous data traffic, and three simulation were done, evaluation performance. The first simulation is call level. The second is the same as the first level the multi-stage, and presesnts the applicable network scale. The third is packet level simulation, evaluation CBR and ABR class traffic throughput.

4 Conclusion

The packet synchronous transfer system can guarantee CBR class QoS completely a although ABR class traffic was in, but ABR class traffic were bad influences, it is that the influence of CBR class reservation band-width variation. Furthermore, possibility for the multimedia communication which is demanded QoS guarantee.