Progress Report in 2004

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1 Purpose of Research

Nowadays, the real-time information networks (such as telephone) and non real-time data networks (such as Internet) exist separately for respective specific functions. This situation obviously results in huge wastage of network equipment resources. To improve the economical efficiency, deploying an integrated digital network to replace current separate networks has become the dream of all network users and service providers. However, the key problem to set up integrated network is how to guarantee the QoS for the time-sensitive application traffics and how to maintain the utilization of network equipments simultaneously. Up to now the development in this field is not satisfactory. Therefore, our purpose of research is to find a forwarding scheme which can guarantee the quality of services to special applications and guarantee high utilization of equipments simultaneously.

2 Main Idea

we propose a scheme to forward the data in integrated data network: MPsLS, which combines the advantages of synchronization transfer mode and MPLS technology. Namely, in the MPsLS network, data are transferred in cyclic mode with a constant period. The data transmitted in a cycle is called a frame. Each frame is divided into a number of slots with same size. And all time-sensitive application data are transmitted in synchronous mode with several position-fixed appointed slots (also called channels), while non time-sensitive application data are transmitted in pseudo asynchronous mode with position-free filler channels. The channels transmitting real-time traffics are preserved from begining to end for the application, naturely, the QoS can be guaranteed. On the other hand, when some appointed slots have not data

to transfer, they can be used to transmit no real-time data as filler channels temporarily. Thus the utilization of resources can be improved remarkably.

3 Progress and Future Works

In 2004, at first we extensively investigated many kinds of current QoS schemes which are used in non real-time data networks, at the same time we also carefully investigated transmission characteristic of synchronous real-time data networks.

Then we proposed a novel scheme MPsLS, and gave necessary researches to feasibility of the system.

In addition to developing MPsLS scheme system, we also finished the program used to simulate MPsLS forwarding scheme, recently, we also did further analysis in theory. Now,we are arranging the related data and prepare to submit an article to a journal in April or May.

In the future, we will continue to improve our simulation environment, and make it be close to real network, then obtain more valuable simulating data to test our conclusions.

4 List of Publication and System Development

1. Jun Yang and Yasushi Hibino "MPsLS: A Forwarding Scheme of Guatanteeing QoS in Integrated Services Networks",IEICE Technical Report,Japan, page 21-26, 2004.12

2. A paper is in submission to "IEEE High Performance Switching and Routing Conference(HPSR 2005,HongKong)"

3. we also prepare to contribute an article to a journal in May.