

THE SUMMARY OF Ph . D . DISSERTATION

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<p>Title</p> <p style="text-align: center;">A study of efficient switching systems and network control scheme considering node mobility in multimedia communications</p>		
<p>Abstract</p> <p>Recently, with the rapid advance of mobile Internet technology, the necessity to construct broadband, high speed and QoS-based network under the environment in consideration of node mobility is increasing. In case of data traffic, packet loss or delay in switching systems degrades throughput performance because of data retransmission by higher layer. In case of real-time traffic without retransmission by higher layer, since packet losses have an impact on communications quality, it is important to decrease packet losses during handoff period of mobile node, as well as decreasing packet losses on switching systems.</p> <p>In this study, to realize multimedia communications networks, novel switching systems by using ATM and WDM techniques and a network control scheme by means of Mobile IP are proposed, respectively.</p> <p>In chapter 1, the background of this paper is summarized. And the purpose of this study is clarified.</p> <p>In chapter 2, we propose an input and output queueing ATM switch model with two speedup factors to decrease the cell loss probability. We evaluate the mean waiting time and the cell loss probability by means of theoretical analysis and computer simulations. As the results, it is shown that the proposed model is useful to decrease the cell loss probability without degrading the mean waiting time excessively.</p> <p>In chapter 3, to handle multicast traffic in WDM-based networks, we propose a medium access control protocol in which a part of control channel is used as contention-less minislots. We evaluate the performance of the proposed scheme under multicast traffic by theoretical analysis and computer simulations. As the result, we show that the proposed protocol is useful to improve the throughput and system delay performance under the multicast traffic.</p> <p>In chapter 4, to realize low handoff latency without increasing overhead, we propose a handoff scheme using positional information of mobile node and foreign agent for Mobile IP based networks. By performance evaluation using theoretical analysis and computer simulations, we show that the proposed scheme can realize low handoff latency without increasing overhead in both wired and wireless channel.</p> <p>In chapter 5, conclusion of this paper is denoted.</p>		