Chapter 8

Conclusion

In this thesis, extensive simulations were developed to examine the effectiveness of the VP-Based ATM Network for supporting multimedia applications. We have adopted discrete event driven simulation methodology to evaluate the performance of integrated video, voice, and data traffics on the VP-Based ATM Ring Network. The study confirms that, the system parameters (e.g., number of video/voice sources, and data message size) have sensitive effects on the performance characteristics of the network. These parameters can be adapted to enable the ATM ring networks to support multimedia applications with acceptable performance. Using the data obtained through simulations, the following issues were examined:

I) The Mean Waiting Time (MWT) for video, voice, and data cells;

II) The Maximum Buffer Size (MBS) (queue length) for video, voice, and data cells;

III) The maximum number of video/voice sources can be supported with the network while satisfying the real-time constraints of both video and voice; and

IV) The achievable throughput and utilization of each traffic.

The simulation results confirm that, the VP-Based ATM ring networks can effectively handle video, voice, and data traffic in real-world network environments.

In this thesis, we have also proposed a control mechanism method to provide the fairness among the traffics to maximize the guaranteed throughput for asynchronous traffic. Though the video and voice traffics remain having higher priority than data traffic. In the proposed control mechanism method, the

numbers of cells to be picked up from each queue depending upon its offered load for completing the transmission frame.

The simulation results have proved that, the proposed method, which we have called as *Control Mechanism Method*, can derive optimal control method renders the highest guaranteed throughput for asynchronous cells.

Our future work will focus on the generalization of the model to include different types of time constrained cells (e.g., cells with different delay requirements) and applications to real-life problems.