Chapter 5
Conclusion

We have presented in this thesis a model of budget allocation that estimates the quality of service in terms of bandwidth on All-IP networks under QoS requirements. By two distinct criteria, MCM may minimize the cost in which a *Q*% of total bandwidth requirement is satisfied. In contrast, a model of MSM assists the system manager to maximize the satisfaction with a total budget.

When the number of guaranteed-performance sessions becomes large, the congestion that the guaranteed-performance sessions experience results in an increased rejection probability of new guaranteed-performance sessions, which may be hard to estimate in general. We adopt numerical examples in simulation to illustrate a possible overall statistical behavior on the network and showed depending on the network's and traffic's parameters, how different objectives, namely minimizing cost and maximizing satisfaction are obtained by MCM and MSM. Algorithmically, we take a two-phase approach. The first phase is focused on path selection by a maximum flow scheme which decides all possible end-to-end paths as well as the total bandwidth for users' requirements. The second phase then is programmed to conduct a bandwidth allocation under a *Q*% of total bandwidth requirement over different classes.

A basic postulate of the present model is that the percentage of cost increment is not necessarily proportional to the percentage of satisfaction increased. In other words, there is no guaranteed bandwidth that is brought up to increase the level of service provided on the network. Depending on the criteria, a two-phase approach gives the system manager a model to analyze it with *Q*% of total budget requirements. It is important to note that the main results and conclusions of this thesis do not depend on the specific

statistical patterns of traffics, but rather on its general properties, e.g., a network topology.

The investigation of such system behavior may provide an interesting topic for future research. The two-phase model proposed in this thesis seems to be an appropriate and useful tool for analyzing phenomena that arise due to interaction mechanisms in multiclass systems. Future research should address extensions to complete network topologies.