7. Conclusions

In this chapter, a summary of the work presented in this thesis is presented, and also what has been achieved is identified. A conclusion is given with an account of future work resulting from the evaluation of the framework is also presented.

7.1 Review and Discussion of Achievements

The work presented helps in building a policy based provisioning model for wireless differentiated service networks. A comprehensive survey of policy-based models and policies, policy specification approaches, policy-based management architectures and platforms were presented, and the need for a generic service level agreement mechanism is also acknowledged.

A graph coloring approach to the policy provisioning was discussed. A policy based SLA architecture for both wired and wireless environments for trading the QoS performance metrics were identified and models were build to support trading in real-time. Storage of policies in directory and its retrieval and revival framework were also policy based.

Implementation of policy provisioning in routers pose challenges on the efficiency of the router and its capacity to handle user initiated actions, an efficient hashing scheme along with handling priority data by pseudo embedding are novel approaches.

Authentication using distributed substrings is new and efficient in distributed networks. Policy provisioning in real-time can be realized only with practical
hardware, that support network functionalities and not on simulations, such an attempt using network processors have been explored in this thesis.

7.2 Future Work

Future work could be directed towards:

- Enforcement of delegation policies and refinement policies
- Evaluating more closely the degree to which the same authorization policy can be enforced on a variety of security architectures and platforms.
- Designing a policy framework that the system administrator can use to provide various levels of security in DSAP, depending on sensitivity of data, and to generate new CINs every time the user logs on to the CAS.
- Implementation of DSAP in Network Processor is another frontier that can be explored.
- Achieving QoS guarantees, by using admission control. When admission control is exercised, wireless service provider can choose the traffic attributes that can be negotiated with the mobile end-user, and must also implement traffic policing so that the actual traffic offered by the user is within the negotiated profile.
- Examining the use of network processors for further possible extensions in policy provisioning.

This thesis does not cover issues relating to refinement of high-level enterprise goals or trust specifications. Research is needed on defining interfaces for the exchange of policies across organizational networks.
The current implementation using a single LDAP server is centralized and needs to be extended with multiple servers, and better fault-tolerance and replication of data. Tools for policy analysis and reasoning also need to be developed. Finally, integrating all management tools around a generic domain browser to give a common 'look and feel' to the approach.

7.3 Concluding Remarks

In this thesis, the aspects of deploying a policy framework for differentiated wireless service networks were successfully attempted. Test results conducted with the above architectures and algorithms, show significant insight into design requirements, architectural support, mechanisms for resource allocation, efficient authentication schemes, and also judges real-time implementation of edge routers using network processors, the speedup achieved.

This thesis also opens up a whole new area of research domains based on reductionism where the aim is to reduce complexity and find structures and patterns by the use of policy based approaches. The dynamically changing environments provoke the need for building a completely policy based architecture that can quickly adapt to these changes and act accordingly. Since multiple disciplines are represented in this work, dissemination of results will reach a wider dispersion of professional insight for further researchers.