CHAPTER 7

CONCLUSIONS AND FUTURE WORK

In this chapter, research outcomes are summarized. Also included are the limitations and specific directions for future work.

7.1 Summary of research outcomes

In this work, two elements, namely THLR and AHLR were introduced into the GSM architecture.

The significance of THLR is that, due to its presence, a call from a fixed line or a MS to another MS which is in roaming mode in the same network as that of the caller will be setup without contacting HLR of the callee MS. So, if the caller and callee MS are present in the same network, the call can be treated as a local call due to the presence of THLR. This directly leads to better network resource utilization due to the reduced number of queries to HLR. Also, the call setup time also reduces as there is no query to HLR of the callee MS.

The significance of AHLR is that, due to its presence, a call from a fixed line or a MS to another MS which is in roaming mode in an adjacent network of the caller will be setup without contacting HLR of the callee MS. This will reduce the call setup time as there is no query to HLR of the callee MS. It also leads to better network resource utilization as number of queries to HLR are reduced in the case of all calls where the callee MS is in adjacent network of the caller.

Algorithms were proposed for mobile call termination for the following cases which are efficient that the existing algorithms for the corresponding scenarios:
(a) A call setup request from a fixed line to a MS which is in roaming mode in the same network as that of fixed line. The meaning of the word “same network” is that they are in the same circle (Algorithm-2, Page no.84).

(b) A call setup request from a fixed line to a MS which is in roaming mode in an adjacent network to the fixed line. The meaning of the word “adjacent network” is that both the respective circles border each other (Algorithm-3, Page no.87).

(c) A call setup request from a MS to another MS which is in roaming mode in the same network as that of caller MS (Algorithm-9, Page no.106).

(d) A call setup request from a MS to another MS which is in roaming mode in an adjacent network to the caller MS (Algorithm-11, Page no.109).

(e) A call setup request from a MS to another MS where both the MSs are in roaming mode in the same network (Algorithm-13, Page no.120).

(f) A call setup request from a MS to another MS where both the MSs are in roaming mode, but in adjacent networks (Algorithm-15, Page no.123).

All proposed algorithms were followed by implementation diagrams. In the case of (a) and (b), location update procedures were also given. The location update procedures are same for the remaining cases. Hence, they are not repeated.

7.2 Limitations

The limitations of the current work are that it considered only two cases for all call setup requests from a fixed line or MS to another MS, specifically, where the callee MS is in the same network as that of caller or the callee MS is in an adjacent network to that of caller. Other cases were not dealt with. In all the cases, callee is MS.

The structures of THLR and AHLR were same as that of HLR. It leads to redundancy which is a limitation of the current work. In the cases, where the callee
MS is not present in the same network or in the adjacent network, the call setup path will increase as HLR of the callee MS is contacted after contacting THLR and AHLR.

7.3 Future Work

The future work can consider the case of callee being a fixed line. It may also focus on reducing the redundancy by limiting the fields of THLR and AHLR so that they don’t have all the fields of HLR. The future work may also consider merging both THLR and AHLR to the HLR of the network in which they are present. The option of having common THLR and AHLR for all mobile service providers can also be explored as part of the future work.