

**School of Computer Science**

**PhD Final Defense**

**By Md Shohrab Hossain**

## **Survivability, Scalability and Security of Mobility Protocols**

### **ABSTRACT**

Today mobile computing has become a necessity and we are witnessing explosive growth in the number of mobile devices accessing the Internet. To facilitate continuous Internet connectivity for nodes and networks in motion, mobility protocols are required and they exchange various signaling messages with the mobility infrastructure for protocol operation. Proliferation in mobile computing has raised several research issues for the mobility protocols. First, it is essential to perform cost and scalability analysis of mobility protocols to find out their resource requirement to cope with future expansion. Secondly, mobility protocols have survivability issues and are vulnerable to security threats, since wireless communication media can be easily accessible to intruders. The third challenge in mobile computing is the protection of signaling messages against losses due to high bandwidth requirement of multimedia in mobile environments. However, there is lack of existing works that focus on the quantitative analysis of cost, scalability, survivability and security of mobility protocols.

In this dissertation, we have performed comprehensive evaluation of mobility protocols. We have presented tools and methodologies required for the cost, scalability, survivability and security analysis of mobility protocols. We have proposed a dynamic scheduling algorithm to protect mobility signaling message against losses due to increased multimedia traffic in mobile environments and have also proposed a mobile network architecture that aims at maximizing bandwidth utilization. The analysis

presented in this work can help network engineers compare different mobility protocols quantitatively, thereby choose one that is reliable, secure, survivable and scalable.

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Room: DEH 220

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Reading copy of the dissertation is available in the Computer Science office

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