

## Cloud Computing: A Silver Lining, or Security Nightmare? An Overview of Key Research Problems in Cloud Security

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### **Abstract:**

Cloud computing has become the dominant computing model in recent years. The flexibility and cost savings made possible through migration to a cloud have encouraged many companies to use clouds for their critical applications. Unfortunately, today's clouds have major security issues related to the confidentiality, integrity, availability, and privacy of the data and applications outsourced to the cloud. Multi-tenancy and other inherent properties of the cloud computing model have introduced novel attack surfaces and threats. Clouds and their clients are also the target of new types of attacks that threaten their trustworthiness, reliability, and economic sustainability. Unless these issues are resolved, clouds cannot and should not be used for sensitive data such as financial transactions or medical records.

In this talk, I will discuss the major security issues in cloud computing, and present an overview of open problems. By systematically exploring the state of the art in cloud computing security, I will formulate the key security research questions that we need to resolve before cloud computing can become mainstream. Finally, I will highlight some unexplored research areas in cloud security and also discuss some fundamental shortcomings of current approaches to cloud security research.

### **Biography:**

Dr. Ragib Hasan is a tenure-track Assistant Professor at the Department of Computer and Information Sciences at the University of Alabama at Birmingham. With a key focus on practical computer security problems, Dr. Hasan is the founder of the SECuRE and Trustworthy Computing Lab (SECRETLab) at UAB. He is also a member of the UAB Center for Information Assurance and Joint Forensics Research. Prior to joining UAB in Fall 2011, Dr. Hasan was an NSF/CRA Computing Innovation Fellow and Assistant Research Scientist at the Department of Computer Science, Johns Hopkins University. He received his Ph.D. and M.S. in Computer Science from the University of Illinois at Urbana Champaign in October, 2009, and December, 2005, respectively. Before that, he received a B.Sc. in Computer Science and Engineering and graduated *summa cum laude* from Bangladesh University of Engineering and Technology in 2003. He is a recipient of the 2009 NSF Computing Innovation Fellowship and the 2003 Chancellor Award and Gold Medal from Bangladesh University of Engineering and Technology.