

COMPUTER SCIENCE COLLOQUIUM

Department of Computer Science
City University of Hong Kong

Towards Data Storage Security in Cloud Computing

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Date :

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Time :

10.30am - 11:30am (Refreshment will be served at 10:15am)

Venue :

CS Seminar Room, Room Y6405, 6th Floor, Yellow Zone, Academic Building, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong

Abstract

Cloud Computing is the long dreamed vision of computing as a utility, where clients can remotely store their data into the cloud so as to enjoy the on-demand high quality applications and services from a shared pool of configurable computing resources. By data outsourcing, clients can be relieved from the burden of local data storage and maintenance. However, the fact that clients no longer have physical possession of the possibly large size of outsourced data makes the data integrity protection in Cloud Computing a very challenging and potentially formidable task, especially when data dynamics is a must to be supported.

In this seminar, two different protocol designs of securing the cloud data storage will be presented. The first one is a distributed scheme based on utilizing the symmetric key based homomorphic token with verification of erasure-coded data. The design achieves the integration of storage correctness insurance and data error localization, i.e., the identification of misbehaving server(s). In addition, the scheme further supports secure and efficient dynamic operations on data blocks, including: data update, delete and append. In order to make one-step closer towards practical integrity mechanism for data outsourcing, a public key based solution utilizing the BLS signature and Merkle Hash Tree primitives is then presented. The second design supports not only fully data dynamics, including data insertion, but also public verifiability, where clients can efficiently and reliably delegate their data auditing tasks to a trusted Third Party Auditor (TPA). The introduction of TPA eliminates the involvement of client through the data auditing and meanwhile provides ways for clients to assess risk and gain trust in Cloud.

Biography

Wenjing Lou earned a BS and an MS in Computer Science and Engineering at Xi'an Jiaotong University in China, an MASc in Computer Communications at the Nanyang Technological University in Singapore, and a PhD in Electrical and Computer Engineering at the University of Florida. From December 1997 to July 1999, she worked as a Research Engineer at Network Technology Research Center, Nanyang Technological University. She joined the Electrical and Computer Engineering department at Worcester Polytechnic Institute as an assistant professor in 2003, where she is now an associate professor. Her research interests are in the areas of ad hoc, sensor, and mesh networks, with emphases on network security and routing issues.

She has been an editor for IEEE Transactions on Wireless Communications since 2007. She served as a TPC co-chair for the General Symposium, IEEE Globecom 2007, a TPC co-chair for the Network Security and Privacy Track, IEEE ICCCN 2009, and a TPC co-chair for the Security Symposium, IEEE ICC 2010. She serves as TPC member regularly for IEEE INFOCOM, ACM MobiHoc, and ICDCS, etc. She was named Joseph Samuel Satin Distinguished fellow in 2006 by WPI. She is a recipient of the U.S. National Science Foundation Faculty Early Career Development (CAREER) award in 2008.

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All are welcome!

*In case of questions, please contact Prof Weijia Jia at Tel: 2788 9701, E-mail: wei.jia@cityu.edu.hk,
or visit the CS Departmental Seminar Web at <http://www.cs.cityu.edu.hk>*