

CLOUD-CENTRIC ASSURED INFORMATION SHARING FOR SECURE SOCIAL NETWORKING AND INTERNET OF THINGS

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ABSTRACT OF PRESENTATION

This presentation will describe our research and development efforts in assured cloud computing for the Air Force Office of Scientific Research. We have developed a secure cloud computing



framework as well as multiple secure cloud query processing systems. Our framework uses Hadoop to store and retrieve large numbers of RDF triples by exploiting the cloud computing paradigm and we have developed a scheme to store RDF data in a Hadoop Distributed File System. We implemented XACML-based policy management and integrated it with our query processing strategies. For secure query processing with relational data we utilized the HIVE framework. More recently we have developed strategies for secure storage and query processing in a hybrid cloud. In particular, we have developed algorithms for query processing wherein user's local computing capability is exploited alongside public cloud services to deliver an efficient and secure data management solution. We have also developed techniques for secure virtualization using the XEN hypervisor to host our cloud data managers as well as an RDF-based policy engine hosted on our cloud computing framework. Finally we have developed a secure social media framework hosted on our secure cloud computing framework.

The presentation will discuss our secure cloud computing framework for assured information sharing and discuss the secure social media framework. We will then discuss the relationship to big data security and privacy aspects and connect our research to Secure Internet of Things with a special emphasis on data privacy.

Biography: **Dr. Bhavani Thuraisingham** is the Louis A. Beecherl, Jr. Distinguished Professor of Computer Science and the Executive Director of the Cyber Security Research and Education Institute (CSI) at The University of Texas at Dallas. She is an elected Fellow of IEEE, the AAAS, the British Computer Society, and the SPDS (Society for Design and Process Science). She received several prestigious award including IEEE Computer Society's 1997 Technical Achievement Award for "outstanding and innovative contributions to secure data management", the 2010 ACM SIGSAC (Association for Computing Machinery, Special Interest Group on Security, Audit and Control) Outstanding Contributions Award for "seminal research contributions and leadership in data and applications security for over 25 years" and the SDPS Transformative Achievement Gold Medal for her contributions to interdisciplinary research. She has unique experience working in the commercial industry (Honeywell), federal research laboratory (MITRE), US government (NSF) and academia and her 35 year career includes research and development, technology transfer, product development, program management, and consulting for the federal government. Her work has resulted in 100+ journal articles, 200+ conference papers, 100+ keynote and featured addresses, eight US patents (three pending) and fifteen books (two pending). She received the prestigious earned higher doctorate degree (DEng) from the University of Bristol England in 2011 for her published work in secure data management since her PhD. She has been a strong advocate for women in computing and has delivered featured addresses at events organized by the CRA-W (Computing Research Association) and SWE (Society for Women Engineers).