

**THE CONCORDIA INSTITUTE FOR INFORMATION SYSTEMS ENGINEERING  
IS PLEASED TO PRESENT THE FOLLOWING GUEST LECTURE IN  
OUR CIISE SEMINAR SERIES**

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**Tao Long, M.A.Sc.**

Concordia Institute for Information Systems Engineering

**Scaling Attack Graphs to Large Scale Networks Through Lossless  
Compression**

*Abstract:* Attack graph is a useful tool for modeling vulnerabilities and their relationships. However, even an attack graph of a reasonably large network would be incomprehensible to the human eyes. For large networks with tens of thousands of hosts and hundreds of vulnerabilities, even computing the attack graph may become infeasible. In practice, it is common for a network to have a large number of hosts with similar configurations, such as in offices and computer labs. Computing an attack graph for such a network using current presentation would introduce much redundant information into the result. This research will present novel scalable representations of attack Graphs based on reference encoding techniques, which use one host as the reference to other hosts with similar configurations such that details about the latter can be omitted in the resultant attack graph. We present the basic approach to the compression of attack graphs with homogeneous network configurations and then extend it to address more complicated scenarios with incomplete connectivity and multiple subsets. We show experimental results comparing the performance of the proposed approach and that of the original attack graph.

*Biography:* Tao Long is pursuing his Master of Applied Science in Information Systems Security at Concordia University. His current main research interest is attack graph compression. He received his Bachelor Degree in Computer Science from National University of Defence Technology in China.

**Thursday, October 2, 2008**

**16:00 – 17:00  
EV003.309**

***Refreshments will be served***  
**(1515 St. Catherine Street West)**