

# NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

## C S S E M I N A R

**Title:**        **DeDoS: Defusing DoS with Dispersion-Oriented Software**

**Speaker:**    Professor Boon Thau Loo  
                  Department of Computer and Information Science  
                  University of Pennsylvania

**Date/Time:**  23 June 2017, Friday, 10:30 AM to 12:00 PM

**Venue:**        Video Conference Room, COM1-02-13

**Chaired by:** Dr Tan Kian Lee, Shaw Senior Professor, School of Computing  
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### Abstract:

This talk presents the design and implementation of DeDoS, a platform for mitigating asymmetric DDoS attacks. These attacks are particularly challenging since attackers using limited resources can exhaust the resources of even well-provisioned servers. DeDoS resolves this by splitting monolithic software stacks into separable components called minimum splittable units (MSUs). If part of the application stack is experiencing a DDoS attack, DeDoS can massively replicate only the affected MSUs, potentially across many machines. This allows scaling of the impacted resource separately from the rest of the application stack so that resources can be precisely added where needed to combat the attack. Our evaluation results show that DeDoS incurs reasonable overheads in normal operations and that it significantly outperforms naive replication when defending against a range of asymmetric attacks.

### Biodata:

Boon Thau Loo is a Professor in the Computer and Information Science (CIS) department at the University of Pennsylvania. He holds a secondary appointment in the Electrical and Systems Engineering (ESE) department. He is also the CIS Masters Chair, overseeing all masters programs within the CIS department, and Director of the Master of Science in Engineering in CIS program. He received his Ph.D. degree in Computer Science from the University of California at Berkeley in 2006. Prior to his Ph.D, he received his M.S. degree from Stanford University in 2000, and his B.S. degree with highest honors from UC Berkeley in 1999. His research focuses on distributed data management systems, Internet-scale query processing, and the application of data-centric techniques and formal methods to the design, analysis and implementation of networked systems. He was awarded the 2006

David J. Sakrison Memorial Prize for the most outstanding dissertation research in the Department of EECS at UC Berkeley, and the 2007 ACM SIGMOD Dissertation Award. He is a recipient of the NSF CAREER award (2009) and the Air Force Office of Scientific Research (AFOSR) Young Investigator Award (2012). He has published 100+ peer reviewed publications and has supervised twelve Ph.D dissertations. His graduated Ph.D. students include 3 tenure-track faculty members and winners of 3 dissertation awards. He is also co-founder and Chief Scientist at Termaxia, a big data storage startup.