IEEE Okanagan Subsection Presents

Dr. Di Niu
Assistant Professor
Department of Electrical and Computer Engineering
University of Alberta

Reducing Access Latency in Erasure Coded Cloud Storage with Local Block Migration

Time & Date: 5:30 pm - 6:30 pm, August 19th, 2015
Location: EME 1151, UBC, Okanagan Campus, Kelowna, BC

Talk Abstract: Erasure coding has been applied in many cloud storage systems to enhance reliability at lower storage cost than replication. While a large amount of prior work aims to enhance recovery performance and reliability, the overall access delay in coded storage still needs to be optimized. As most production systems adopt a systematic code and places an uncoded block on only one server to be read normally, it is harder to balance server loads and more likely to incur latency tails than in 3-way replication, where a block can be retrieved from any of the 3 servers storing the block. In this talk, I will describe our recent work to reduce access latency in coded storage systems by moving blocks with anti-correlated demands onto same servers to statistically balance the load. We formulate the optimal block placement as a problem similar to Min-k-Partition and propose a local block migration scheme to reduce the overall access latency without globally shuffling the blocks. We derive a worst-case approximation ratio as a function of some demand statistics, such as the demand variation across different blocks. Based on request traces from Windows Azure Storage, we demonstrate that our scheme can significantly reduce access latency with only a few block moves, especially when the request demand is skewed.

Speaker Biography: Di Niu received the B.Engr. degree from the Department of Electronics and Communications Engineering, Sun Yat-sen University, China, in 2005 and the M.A.Sc. and Ph.D. degrees from the Department of Electrical and Computer Engineering, University of Toronto, in 2009 and 2013. Since September, 2012, he has been with the Department of Electrical and Computer Engineering at the University of Alberta, where he is currently an Assistant Professor. His research interests include cloud computing and storage, computer networking, data mining and statistical machine learning for social economic computing, distributed optimization, and network coding.

Refreshments will be provided. For further information please contact:
Youry Khmelevsky (email: youry at ieee.org) and to Chen Feng (chen.feng at ubc.ca).
Registration Page: **https://meetings.vtools.ieee.org/m/35621**