

# **Controlling Write Congestion inside the Virtual Memory System**

**Speaker: Sumantra Kundu, CReWMaN Researcher**

**Date: Friday, Oct 27, 2006**

**Time: 10 am - 12 noon**

**Venue: WH 413 (CReWMaN Lab)**

## **Abstract:**

Write congestion is a phenomenon when the effective transactions per second (TPS) of latency sensitive systems, such as streaming multimedia servers and back-end database systems, starts decreasing in the presence of a large number of writer processes generating bursty workload patterns of disk access. In this presentation, we will analyse the underlying behavior of such situations and study the effectiveness of two algorithms: (a) deterministic (rate based), and (b) stochastic (effective bandwidth (EB) based), for improving the effective TPS of reader processes. For the rate based approach, we will show by measurements, how the presence of memory (Long-Range Dependence (LRD)) in workload patterns can influence the decision of choosing the sampling type and the length of the sampling window. The stochastic approach is based on the established theory of EB where we consider a set of fluid On-Off writers that independently generate dirty pages inside the virtual memory (VM). Both the algorithms have been implemented inside the NetBSD 3.1 kernel. Performance evaluation results will be presented to highlight scenarios where the algorithms have been observed to work and fail!

## **Biography:**

Sumantra Kundu received his B.Tech degree from IIT Kharagpur (1999) and M.S. degree from the Univ. of Iowa, Iowa City (2001), both in Electrical Engineering. Since Fall 2003, he has been associated with CReWMaN Lab at UTA as a PhD student. His research interests include Performance Modeling of Core and Wireless Networks and Computer Systems. He has filed 3 patents and published several papers in these areas.