Abstract of the talk:

In this talk, we will focus on the problem of bandwidth allocation to users of Cloud data centers. An interesting approach is to use advance bandwidth reservation. Most works using bandwidth reservation assume all requests arriving at the system to be demanding either bandwidth-guarantee (BG) or time-guarantee (TG), but not both. Hence the solutions are tailored for one type of requests. A BG request demands guarantee on bandwidth; whereas a TG request demands guarantee on time for transfer of data of specified volume. We define a new model that allows users to not only submit both kinds of requests, but also specify flexible demands. We tie up the problem of bandwidth allocation with differential pricing, that gives discounts to users based on the flexibility in requests. We propose a two-phase, adaptive and flexible bandwidth allocator (A-FBA) that, in one phase decides on admitting dynamically arriving user requests, and in another phase, allocates bandwidth for accepted requests. The problem formulated in first phase is NP-hard, while the second phase can be solved in polynomial time. We show that, in comparison to a traditional deterministic model, the A-FBA not only increases the number of accepted requests significantly, but also does so by generating higher revenues.

Bio of the speaker:

Dinil Mon Divakaran is a Research Fellow at the Department of Electrical and Computer Engineering in the National University of Singapore (NUS), since Feb. 2012. Prior to this he worked as an Assistant Professor in IIT Mandi, where he joined soon after his PhD defense in July 2010. He carried out his PhD at the INRIA RESO team in ENS Lyon, France. He holds a Master degree from IIT Madras. His research works revolve around applications of game theory, queueing theory and probabilistic models, as well as the study of optimization problems and design of heuristics, all in the broad area of computer networks. He is also keenly interested in the study of architectures, protocols (specifically TCP) and QoS mechanisms for networks.