TECHNISCHE UNIVERSITÄT DRESDEN

Zentrum für Informationsdienste und Hochleistungsrechnen

EINLADUNG

zum

ZIH-Kolloquium

Titel: **How do superpeer networks emerge?**

Referent: **Prof. Dr. Niloy Ganguly**
Indian Institute of Technology, Kharagpur

Abstract:
In this talk, we present a formal framework which explains the emergence of superpeer networks based on execution of commercial peer-to-peer bootstrapping protocols by incoming nodes. Bootstrapping protocols exploit physical properties of the online peers like resource content, processing power, storage space, connectivity etc as well as they take the finiteness of bandwidth of each online peer into consideration. With the help of rate equations, we show that application of these protocols results in the emergence of superpeer nodes in the network - the exact degree distribution is evaluated. We validate the framework developed through extensive simulation. The agreement between the theoretical and simulation results establishes the success of the formalism. The detailed analysis of the results shows that the amount of superpeers produced in the network depends on the protocol as well as the properties of the joining nodes. Interestingly, our analysis reveals that increase in the amount of resource and the number of resourceful nodes do not always help to increase the fraction of superpeer nodes in the network. The impact of the frequent leaving of the peers on the topology of the emerging network is also evaluated. As an application study, we show that our framework can explain the topology configuration of commercial Gnutella networks.

Ort: **Informatik-Neubau, Nöthnitzer Str. 46, Raum INF 1004**

Zeit: **Dienstag, 19. Mai 2009, 14:00 Uhr**

gez. Prof. Dr. Wolfgang E. Nagel