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A hybrid P2P/cloud for big data

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With the advent of the world-wide-web applications, there is an emergent need to develop user applications that access data and resources stored in the network. In order to facilitate the development of network-centric applications, new computational paradigms are needed that are scalable, elastic, available, and fault-tolerant. During the past decades two dominant paradigms referred to as Peer-to-Peer (P2P) Computing and Cloud Computing have become widely prevalent as computational paradigms for distributed applications. Peer-to-peer computing is a highly decentralized computing paradigm that leverages computing resources at the user level for supporting decentralized user level applications such as wide-scale media file sharing, telecommunication services (e.g., Skype), and others. Cloud computing on the other hand relies on large data-centers consisting of thousands of server-class machines and all application processing and application data is centralized in the network core, i.e., data-centers. In this talk, we present the Inria-UCSB Bigdatanet project whose objective is to develop a hybrid platform that combines the two paradigms and leverages computing, storage, and network resources both in the data-centers (i.e., the cloud) as well as at the edges of the network (i.e., the peer or user machines). During this project we plan to explore the suitability of this hybrid model for big-data applications such as scientific applications, social networks, and massive data analytics.

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