

Title: Networking the Cloud: Enabling Enterprise Computing and Storage

Abstract:

Cloud computing has been changing how enterprises run and manage their IT systems. Cloud computing platforms provide customers with flexible, on demand resources at low cost. It also offers the opportunity to lower costs for enterprises in deploying disaster recovery solutions. However, while existing offerings are useful for providing basic computation and storage resources, they have not provided the transparency, security and network controls that many enterprise customers would like. This lecture will start with a brief introduction on Cloud Computing. We propose a Virtual Cloud Pool abstraction to logically unify cloud and enterprise data center resources, and present the vision behind CloudNet, a cloud platform architecture which utilizes Virtual Private Networks to securely and seamlessly link cloud and enterprise sites. CloudNet opens new opportunities for cross data center load balancing and dynamic application placement based on metrics like latency to users or energy cost. Cloud hosting promises economies of scale and on-demand provisioning that are a perfect fit for the infrequent yet urgent needs of disaster recovery. We build on CloudNet to solve the difficult problem of disaster recovery to Cloud sites that are geographically separated from the enterprise's primary site. The WAN latency between a cloud site and an enterprise can become a major performance bottleneck when synchronously replicating an application's data into the cloud. I will describe our proposal called 'Pipelined synchrony' to address this problem.