Abstract

Grid computing is a service for sharing computer resources and data storage capacity over the internet. As resource requirements of recent applications increased greatly, grid systems have gained importance in the last decade. Resource discovery is the essential job in Grid computing which provides searching and identifying necessary resources for given processes. There are various Resource Discovery mechanisms in which Peer-to-Peer (P2P) technology witnessed a rapid development. Current Peer-to-Peer system is based on DHTs struggle with routing locality because of random node ID assignment. Locality awareness is one of the important properties of P2P Systems, which builds and operates their topology independently in the underlying network topology. Among structured P2P system Chord is well-known protocol due to its simplicity, dynamicity, scalability and flexibility in node join and departure. Due to the use of logical overlay network, Chord suffered from high routing latency and low efficiency in data lookup. In this paper, Geo-Chord is introduced, which is based on geographical location of nodes. Based on the Euclidian distance among nodes neighbors are identified and many Region-Rings are formed. Ring heads of Regions form the main Chord ring. Geo-Chord makes use of the physical network topology of the overlay network to demonstrate more efficient key lookup. Simulation results show that our proposed algorithm performs better in terms of average number of messages, hops and average communication time.
Geo-Chord: Geographical Location based Chord Protocol in Grid Computing

References

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