Data Management and Routing in General Networks

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Abstract

Modern parallel systems are usually constructed out of standard commodity workstations that are connected via a relatively sparse and unstructured network like, e.g., the Internet. While this approach, in principle, enables high performance computing at comparatively low cost, it poses new challenges for the design of algorithms, as these have to achieve a high scalability even for irregular networks.

This thesis provides a theoretical analysis of algorithms for routing and data management services in general topology networks. The proposed algorithms achieve a high scalability by distributing the communication load evenly among all network resources and thereby exploiting the communication potential of the network as best as possible.