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**Abstract**

Cloud computing has emerged as one of the most popular ways of providing services to users across internet. With the emergence of cloud computing, Map Reduce has established itself as the predominant programming model in these environments.

The designers of Map Reduce envisioned the framework to be extremely simple in design and use. This has led to many trade-offs in design with simplicity in design being given more preference compared to efficiency. There have been some efforts to reduce the power consumption in Map Reduce framework. However, such efforts are often limited to task level scheduling of applications or hardware level optimization.

Power aware systems are increasingly becoming necessary because of the huge amounts of carbon emissions from the data centers. Towards this end, we have proposed a novel block placement strategy for distributed file systems like Hadoop Distributed File System (HDFS) which exploits node heterogeneity in a cluster to provide power performance savings without drastic reductions in performance or violations of QoS

In our approach, the proposed block placement strategy places the blocks of data on such nodes where if execution takes places leads to optimum performance and power savings. Our goal is to define an architectural framework and principles for energy-efficient distributed computing; investigate energy-aware resource provisioning and allocation algorithms that provision data center resources to client applications in a way that improves the energy efficiency of the data center, without violating the negotiated Service Level Agreements (SLA). To meet this objective we formulated our problem to Liner programming model.