

Message Clustering Techniques towards Efficient Irregular Data  
Redistribution in Clusters and Grids  
Shih-Chang Chen, Tai-Lung Chen, 許慶賢  
Computer Science & Information Engineering  
Computer Science and Informatics  
chh@chu.edu.tw

Abstract

Efficient scheduling algorithms are essential to irregular data redistribution in cluster grid. Cluster grid is an environment with heterogeneous computing nodes and complex network. It is important for schedulers to keep an eye on load balance and low communication cost while distributing different size of data segment on various processors. High Performance Fortran Version 2 (HPF2) provides GEN\_BLOCK distribution format which facilitates generalized block distributions. In this paper, we present a message clustering technique to derive low communication cost when performing such operation in clusters grid. The main idea of the proposed technique is to cluster three kinds of messages and normalize the cost. The performance evaluation is given and show the proposed method successfully adapts to heterogeneous environment.

Keyword : HPF2