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Numerous applications require more performance than even state-of-the-art sequencial computers can provide in order to be executed in acceptable time frames. With high costs for the acquisition and maintenance of supercomputers, cheaper parallel computing alternatives such as Computing Clusters, and more recently Computational Grids, are now becoming the computing systems of choice within research centers, companies and universities. On these platforms, the efficient scheduling of the tasks of a parallel application is crucial to obtaining good performance. This work studies the problem of scheduling tasks in systems of distributed heterogeneous resources which communicate via message passing. The processing costs to send and to receive messages (traditional ignored by scheduling algorithms) can dramatically influence the execution time of parallel applications. In this Dissertation three new strategies are proposed to enable list scheduling heuristics to handle these overhead costs appropriately in order to generate efficient schedules for environments such as Clusters and Computational Grids. Based on the LogP model, results show that two of the proposed strategies provide significant improvements over the only existing approach known in the literature.