An energy-efficient process clustering assignment algorithm for distributed system

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Abstract
This paper proposes a distributed assignment algorithm for selecting the optimal energy consumption during process execution, idling, and transmission in a distributed system. Selection criteria are based on identifying candidate processing units that are suitable for minimizing idle energy in task scheduling. The proposed algorithm tries to mimic as close to real situation as possible by assuming that each processing unit has multiple capabilities to execute different tasks with different characteristics. Task scheduling can be flexibly carried out to attain optimal energy consumption without any restrictions as those of comparative algorithms. Thus, the energy required by each processing unit varies considerably depending on the schedule. Experimental results show that the proposed algorithm yields the lowest idle, total energy consumption, and satisfactory execution energy. The extraneous transmission energy is a trade-off for scheduling flexibility.