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BAG Distributed Real-Time Operating System and Task Migration

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Abstract: BAG is a distributed operating system designed for real-time applications which is run on a distributed real-time system. The heterogeneously distributed BAG system consists of nodes which have VME-bus chassis, different types of processor modules, and an interconnection network. The operating system has three main parts having distributed properties: task migration, load balancing and a distributed file system. Heterogeneous task migration is based on the extended finite state machine (EFSM) programming model. The EFMS model has also eased the implementation of the migration mechanism. The load balancing algorithm is centralized in one node. But the overall system will be a multi-centered structure. Another objective of our work is to achieve a fast load balancing mechanism suitable for real-time systems. A file system supporting the task migration mechanism is also designed and developed. Users and processes all have the same view of this file system as a global tree. The file system uses a client/server approach and meets distributed file system requirements with real-time concepts such as priorities and time-out values.

Key Words: Distributed systems, real-time systems, operating systems, task migration, load balancing, distributed file system.