Nodes in a volunteer desktop grid are based on the volunteer participation of desktop nodes owned by the individual users. The volunteer nodes contribute their idle resources for public execution during their free time and withdraw during their busy time due to high priority node owner’s private execution. This property makes desktop grid dynamic in nature. Job scheduling is mainly influenced by two factors: node dynamism and heterogeneity. The job generation rate at each node is different from other nodes in the desktop Grid and hence the load at each node changes with time. This situation leads to increased computational demands at some nodes than from others and makes the grid often to get into unbalanced environment. Job migration to remote nodes involves job transmission latency. Since grid is a dynamic environment, when the job reaches to the remote node for execution the node might become busy and the selected target node may not complete the execution of the job at the expected speed. Therefore, the selection of a target node for job migration plays an important role in improving the overall performance of the desktop Grid. In this paper we present a new approach for dynamic job scheduling that considers node dynamism and job transmission latency into account for making scheduling decisions. The algorithm is compared against the Resource Exclusion and non migration algorithms and the simulation results shows that the proposed algorithm has got considerable improvement over the other two.
A New Approach for Dynamic Job Scheduling in a Volunteer Desktop Grid

References

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Index Terms

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Volunteer nodes  desktop grid  job scheduling  job migration  node dynamism  average turnaround time