

On Designing Wireless Clusters for Grid Usage

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In an effort for the ever-increasing mobile community to enter the application domain of Grid computing and take advantage of its high performance capabilities and wide variety of services, we must find ways to compensate for the limitations inherent in these devices and wireless communication links. The nature of mobile devices and wireless communications, with the increased rate of failures, limited available resources and low level of reliability, could significantly degrade the overall Grid performance and availability. We propose in this paper the utilization of these mobile devices in the form of a single virtual wireless cluster that will hide the heterogeneity, mask the failures and quietly recover from them and make management and monitoring easier. This design, coupled with a number of techniques that will increase performance and availability, will allow for the efficient utilization of the vast number of mobile devices into the Grid and will lay the foundations for further development in this area.