Disconnected Operation Service in Mobile Grid Computing*

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Abstract. In this paper, we discuss on the extension of grid computing systems in mobile computing environments, where mobile devices can be effectively incorporated into the grid either as service recipients or as more valuable service providers. First, based on the present grid architecture, we try to figure out what would be the newly required services in such a mobile/grid integrated architecture. There are a number of challenging issues when taking mobile environment into account, such as intermittent connectivity, device heterogeneity, and weak security. Among these issues to solve, we particularly focus on a disconnected operation problem in this paper since mobile resources are prone to frequent disconnections due to their confined communication range and device mobility. We develop a new job scheduling algorithm for mobile grid system and evaluate it by various methods such as mathematical analysis, simulation, and prototype implementation.