A Discovery Scheme for Device-to-Device Communications in Synchronous Distributed Networks

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***Abstract*—Device-to-Device (D2D) communications have been proposed as a means of realizing the potential advantage of the physical proximity of communicating devices, improving user experience and resource utilization. Discovery is one of the major design issues in the D2D communications, since they must discover each other and identify services provided by each other to directly communicate with one another. There are some requirements for discovery such as energy-efficiency (e.g. low duty cycle), scalability (e.g. support for high device density) and proximity-based autonomous detection in the D2D communications. In this paper, we propose a discovery scheme for D2D communications in synchronous distributed networks. In particular, we present a discovery scheme that each device advertises its presence and service and discovers other nearby devices autonomously and continuously, along with resource allocation in distributed manner. Using simulation, we evaluate the performances of our proposed scheme in terms of discovery latency and the number of discovered devices.**

***Keyword*—D2D, Discovery, Synchronous distributed networks**

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