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**A Decentralized Self-Adaptation Mechanism for Service-Based Applications in the Cloud**

**Abstract**

Cloud computing, with its promise of (almost) unlimited computation, storage, and bandwidth, is increasingly becoming the infrastructure of choice for many organizations. As cloud offerings mature, service-based applications need to dynamically recompose themselves to self-adapt to changing QoS requirements. In this paper, we present a decentralized mechanism for such self-adaptation, using market-based heuristics. We use a continuous double-auction to allow applications to decide which services to choose, among the many on offer. We view an application as a multi-agent system and the cloud as a marketplace where many such applications self-adapt. We show through a simulation study that our mechanism is effective for the individual application as well as from the collective perspective of all applications adapting at the same time.