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Challenges in Real-Time Virtualization and Predictable Cloud Computing

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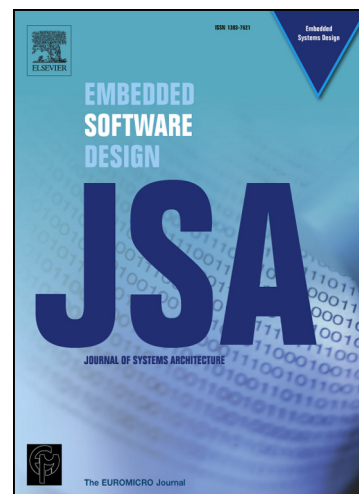
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# Challenges in Real-Time Virtualization and Predictable Cloud Computing

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## Abstract

Cloud computing and virtualization technology have revolutionized general-purpose computing applications in the past decade. The cloud paradigm offers advantages through reduction of operation costs, server consolidation, flexible system configuration and elastic resource provisioning. However, despite the success of cloud computing for general-purpose computing, existing cloud computing and virtualization technology face tremendous challenges in supporting emerging soft real-time applications such as online video streaming, cloud-based gaming, and telecommunication management. These applications demand real-time performance in an open, shared and virtualized computing environments. This paper identifies the technical challenges in supporting real-time applications in the cloud, surveys recent advancement in real-time virtualization and cloud computing technology, and offers research directions to enable cloud-based real-time applications in the future.

**Keywords:** *Cloud computing, soft real-time systems, virtualization, resource management, quality of service, SLA*

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