Rethinking Eventual Consistency: Can we do better?

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Abstract

Today's data-driven internet-facing applications pose unprecedented challenges to the database systems that back these application. In addition to the immense scale of data, thousands of concurrent requests, and low latency response, these applications also strive for 24X7 availability. The big data serving systems empowering these applications must therefore have low request latencies, be highly-available, and be geo-replicated. As a result, there has been a resurgence of work on replicated, distributed database systems to meet the demands of intermittently-connected clients and of disaster-tolerant databases that span data centers spanning the globe. Many of these data serving systems weaken the criteria for replica-consistency or isolation, and in some cases add new mechanisms, to improve partition-tolerance, availability, and performance. In this talk, I'll present a framework for comparing these criteria and mechanisms, to help architects navigate through this complex design space and reason about the various weak forms of replica consistency. Joint work with Philip A. Bernstein.

Biography

Sudipto Das is a Researcher in the Extreme Computing Group (XCG) at Microsoft Research (MSR) in Redmond, WA, USA. He received his Ph.D. in Computer Science from University of California Santa Barbara (UCSB). His research interests are in the broad area of scalable, distributed, and multi-tenant DBMSs for cloud platforms. Dr. Das is the recipient of the 2013 ACM SIGMOD Jim Gray Doctoral Dissertation Award, UCSB's 2012 Lancaster Dissertation Award, the CIDR 2011 Best Paper Award, MDM 2011 Best Runner-up Paper Award, the 2012 Outstanding Dissertation Award in Computer Science, and the 2011 Outstanding Student Award in Computer Science at UC Santa Barbara, and the TCS-JU Best Student Award for 2006.

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