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Design and Validation of cloud storage systems using Maude

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Entrada libre hasta completar el aforo

Resumen:

To deal with large amounts of data while offering high availability and throughput and low latency, cloud computing systems rely on distributed, partitioned, and replicated data stores. Such cloud storage systems are complex software artifacts that are very hard to design and analyze. We argue that formal specification and model checking should be beneficial during their design and validation. In particular, we propose rewriting logic and its accompanying Maude tools as a suitable framework for formally specifying and analyzing both the correctness and the performance of cloud storage systems. This talk gives an overview of the use of rewriting logic at the University of Illinois' Assured Cloud Computing center on industrial data stores such as Google's Megastore and Facebook/Apache's Cassandra. We also briefly summarize the experiences of the use of a different formal method for similar purposes by engineers at Amazon Web Services.

Sobre Peter Csaba Ölveczky:

Peter Ölveczky received his PhD in computer science from the University of Bergen, Norway, in 2000, having performed his thesis research at SRI International. He was assistant and then associate professor at the University of Oslo 2001-2008, and has been a full professor there since 2008. He was also a post-doctoral researcher at the University of Illinois at Urbana-Champaign (UIUC) 2002-2004, and has been a visiting researcher at UIUC since 2008. Ölveczky's research focuses on formal methods, in particular for real-time systems. He is the developer of the Real-Time Maude tool, which has been used to formally model and analyze a large range of advanced systems, including scheduling protocols, distributed data stores, wireless sensor network algorithms, the human thermoregulatory system, mobile ad hoc networks, avionics systems, and so on. Ölveczky has organized 10 international scientific workshops/conferences, and has edited a number of scientific books and journal issues.