Asynchronous Dynamic Reliable Byzantine Broadcast

In current large and complex distributed systems, interactions between processes are not limited to point-to-point communication protocols. Thus, *broadcast* abstractions are introduced to distributed systems. It allows a process to send a message to other processes simultaneously, and these processes agree on the message they receive. However, as we know, there always exists some Byzantine processes in distributed systems, which are free to do whatever they want to destroy systems. It is important to ensure that broadcast abstractions are fault-tolerant.

Another important issue in distributed systems is the stability. To keep for long-lived distributed systems, we want to deploy new processes and replace old, slow or died processes with new, faster ones. Thus, distributed systems need to be *dynamic*.

In this thesis, we will study the reliable broadcast problem in a dynamic asynchronous system with faulty nodes. We will start by understanding existing reliable broadcast algorithms and dynamic systems. Then we will propose our new algorithms in dynamic asynchronous systems.

While we already have some ideas about how such algorithms might look, we are interested in your vision and input on how to design such algorithms.

Requirements: Prior knowledge in distributed systems, or solid background in algorithm and graph theory. You should be able to read and understand theoretical papers and write formalized proof.

Interested? Please contact us for more details!

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