ZCLOUD, Consensus on Hardware for Distributed Systems

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Abstract

In distributed applications where the number of members in the cluster increases, the separation of the consensus related operations at the hardware level is essential for the following reasons:

1. At the operating system level, messages broadcast on the protocol stack cause latency.

2. It is necessary to increase the number of completed transactions in the communication of distributed system components and on the network unit (throughput).

3. For devices with limited storage and CPU computing facilities that use embedded operating systems such as IOT devices, it is also necessary to reduce the processing burden due to "consensus" operations.

4. A common consensus communication model is needed for different applications that need to work together in (BFT) distributed systems.

ZCloud is an embedded hardware solution for distributed systems and conceived to provide Byzantine fault tolerance (BFT) consensus primitives. ZCloud came out as a solution for today's demands such as distributed hardware and software solutions and network components in data centers, distributed software architectures with very high number of components, IOT components for distributed architecture, distributed data processing, distributed data storage. ZCloud is ongoing research effort and is in early stage for now.