

Paxos

→ Paxos is the algorithm that is used to achieve consensus among a set of distributed computers that are connected via an asynchronous network.

→ One or more clients proposes a value to paxos and we have majority in the system when a majority of system running Paxos system agrees on one of the proposed value.

→ A run of the paxos protocol results in the selection of single proposed value.

→ Paxos simply selects a single value from one or more values that are proposed to it and lets everyone know what it is.

→ Paxos is widely used and is legendary in computer science since it is the first consensus algorithm that has been rigorously been proved to be correct.

→ Paxos provide abortable consensus. This means that some processes abort the consensus if there is contention while others decide on the value.

→ Those processes that decide have to agree on a value. Aborting allows a process to terminate rather than to be blocked indefinitely.

Assumptions for the algorithm

- Concurrent proposal
- Validity
- Majority rule
- Asynchronous network
- Fail stop faults
- Unicasts
- Announcements

RAFT Algorithm

- This was designed to be easy to understand.
- RAFT states that each node in a replicated state machine can remain in any of the following 3 states
 - i) leader
 - ii) Candidate
 - iii) Follower
- Under normal condition, a node can stay in any of the state
- Only a leader can interact with the client, any request to the follower node is redirected to leader node.
- A candidate can ask votes to become the leader. A follower responds only to candidate or leader.
- This algorithm is equivalent to Paxos in fault tolerant and perf.
- To maintain server state, raft algorithm divides time into small forms of arbitrary length. Each term is identified by a monotonically increasing number called term number.