

Fast Confirmation Rule for L2s

The Fast Confirmation Rule (FCR) is a new Ethereum feature that **decreases L1 to L2 deposit time to approximately 13 seconds**, a 98% reduction from the approximately 13-minute time to finality. Faster deposits directly lead to better user experience, but also decrease capital lockup and improve market efficiency. Moreover, L2s can price gas more precisely by reading up-to-date blob gas prices, reducing risk of blob price surges.

FCR works by counting attestations in real-time. If there is overwhelming support for a block and robustness checks are passed, the block is fast-confirmed. L1 nodes run the rule locally, which means FCR does not require a hardfork. The first consensus clients are expected to be production-ready around the end of Q1. **In Q2, L2s can already use FCR.**

FCR comes with two core assumptions. First, it assumes the network is synchronous, meaning attestations are delivered within about 8 seconds. Second, it assumes there is no adversary with more than 25% stake, slightly less than the 33% maximum adversarial stake that finality can withstand. **If these assumptions hold, any fast-confirmed block will, with certainty, be finalized.**

These assumptions are reasonable and usually hold. In the rare case that they do not, it can cause either a liveness or a safety failure. A liveness failure means it may take longer than 13 seconds to fast-confirm a block. This is a feature, not a bug, because the rule falls back to more security when needed. Eventually, the rule automatically falls back to finality. A safety failure means that a fast-confirmed block is reorged. In that very exceptional case, the L2 needs to reorg with the L1.

Most L2s today wait for a number of slots until they treat an L1 block as safe. These L2s also need to be able to reorg with the L1. The advantage of FCR is that L2s typically only need to wait for a single slot. A confirmation rule that waits for a fixed number of slots has no provable security, unlike FCR.

Implementing FCR in an L2 is very easy. It only requires the L2 sequencer to call an API endpoint from a node running FCR.

We encourage L2 teams to start testing FCR once live on testnets. For support, contact fastconfirm@ethereum.org.