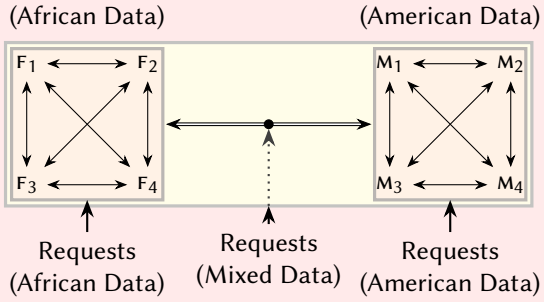
BySHARD: Sharding in a Byzantine Environment

Jelle Hellings[1,2] Mohammad Sadoghi[1]

[1]Exploratory Systems Lab, Department of Computer Science, University of California, Davis.

[2]Department of Computing and Software. McMaster University

Overview of BySHARD



A design for high-performance Byzantine fault-tolerant Sharding

Shards are cluster of replicas that can be faulty. Shards are operated using a minimal amount of *Byzantine primitives*:

Consensus for each *computation* within shards.

Cluster-sending for any *communication* between shards.

Multi-shard transactions via the *orchestrate-execute model*

Execution method determines the *local operations* of a shard.

Orchestration method determines how *control is transferred* between shards.

Eighteen *high-performance* protocols that provide fine-grained control over isolation level and performance *per* transaction.

Performance evaluation