Weighted voting for optimising Streamlined Blockchain Consensus Algorithms

Diana Micloiu – supervised by Dr. Jérémie Decouchant and Rowdy Chotkan

TU Delft Delft University of Technology

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Consensus denotes the collective agreement of network participants, a mechanism needed to ensure proper functionality of distributed systems.

Byzantine Fault Tolerant (BFT) represents a family of protocols which enable systems to tolerate arbitrary node failures; in particular, protocols require $3f+1$ nodes to withstand f failures.

Streamlined algorithms – use leader rotation in each round to shift the communication burden from the leader.

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The impact of **weighted voting** has been applied so far only on first generation consensus algorithms, in AWARE [1].

The research aims to address the benefits of **weighted voting on streamlined algorithms** such as Hotstuff [4].

The research also looks into the possibility of using a **generalised weighting scheme in AWARE** (rather than the binary one) for **optimising the recovery performance of the system.**

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- Design an algorithm that would emulate Hotstuff behaviour, combined with the binary weighted voting mechanism presented in WHEAT.
- Develop a **latency prediction method** for a given distributed scenario.
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References

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AWARE (Adaptive Wide-Area REplication) [1]:

- Deterministic, self-monitoring and self-optimising algorithm for optimising the latency of the blockchain.
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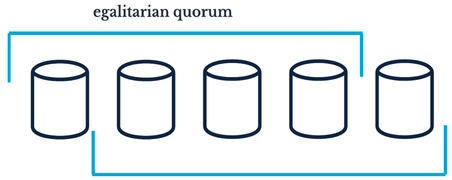

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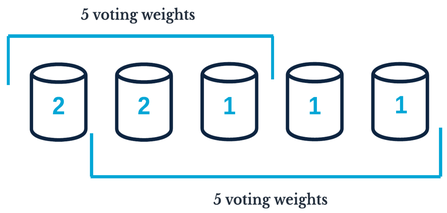

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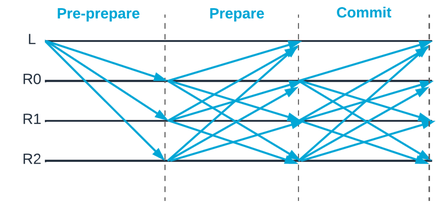

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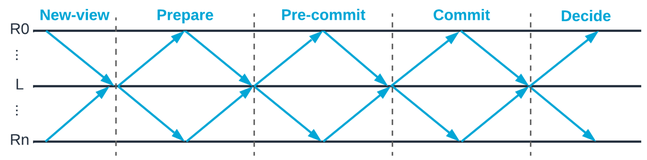

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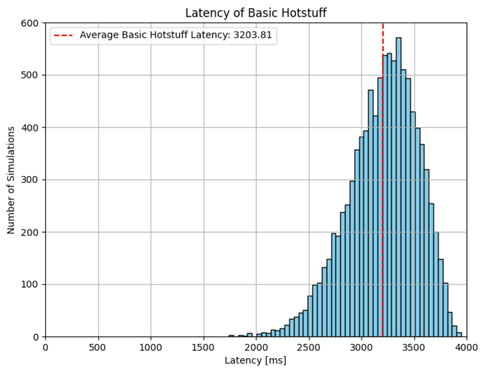

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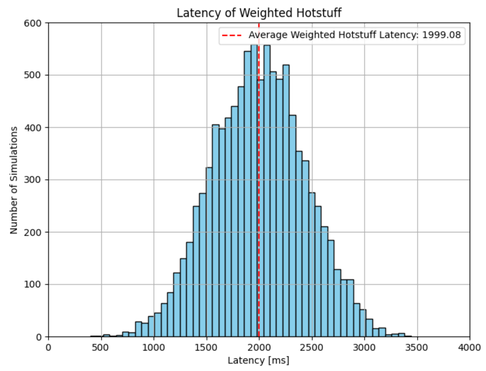

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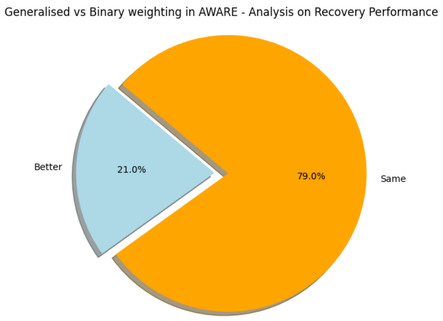

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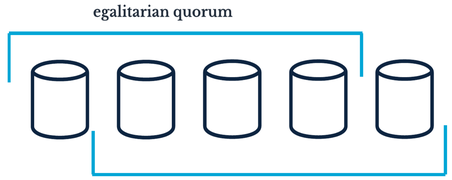

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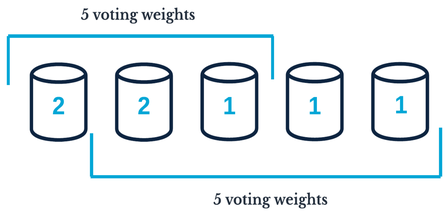

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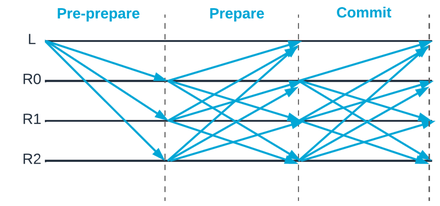

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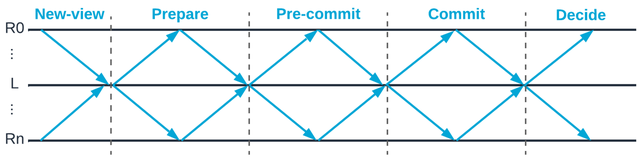

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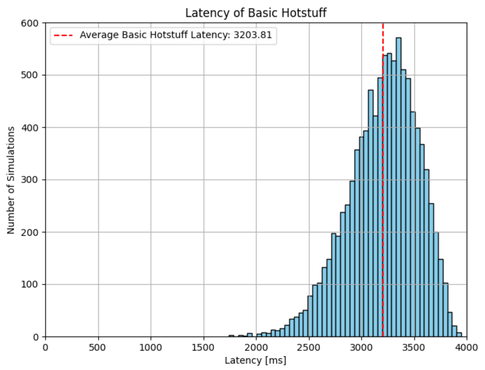

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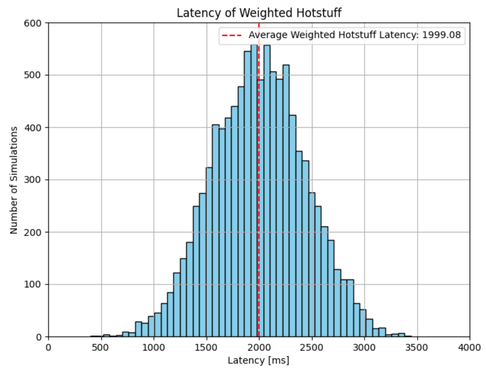

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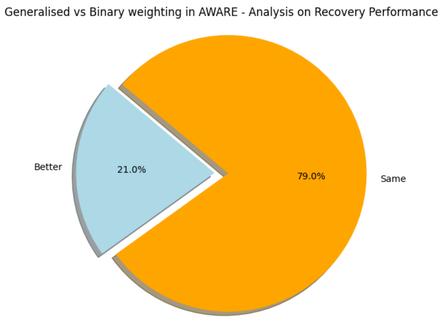

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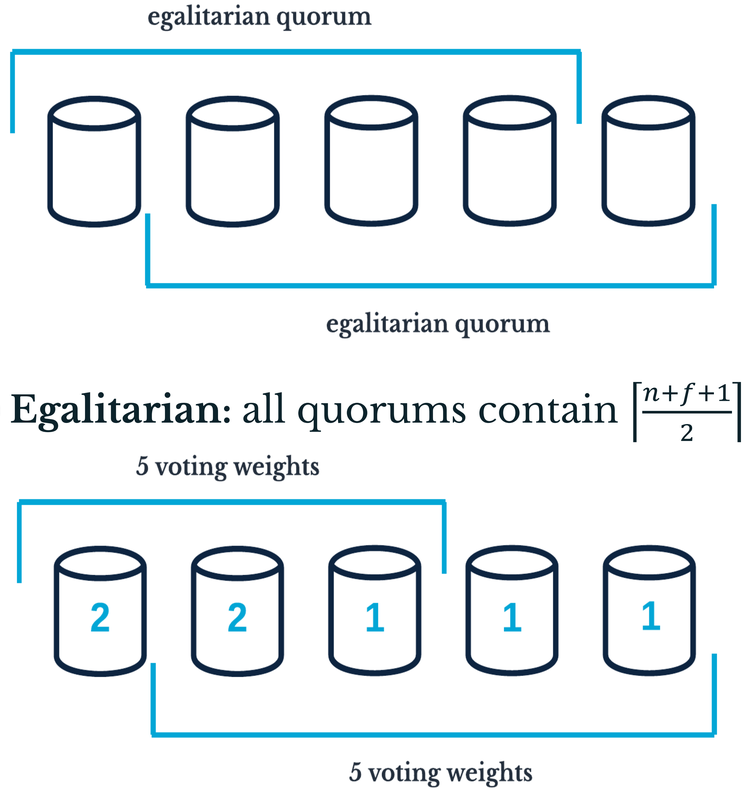

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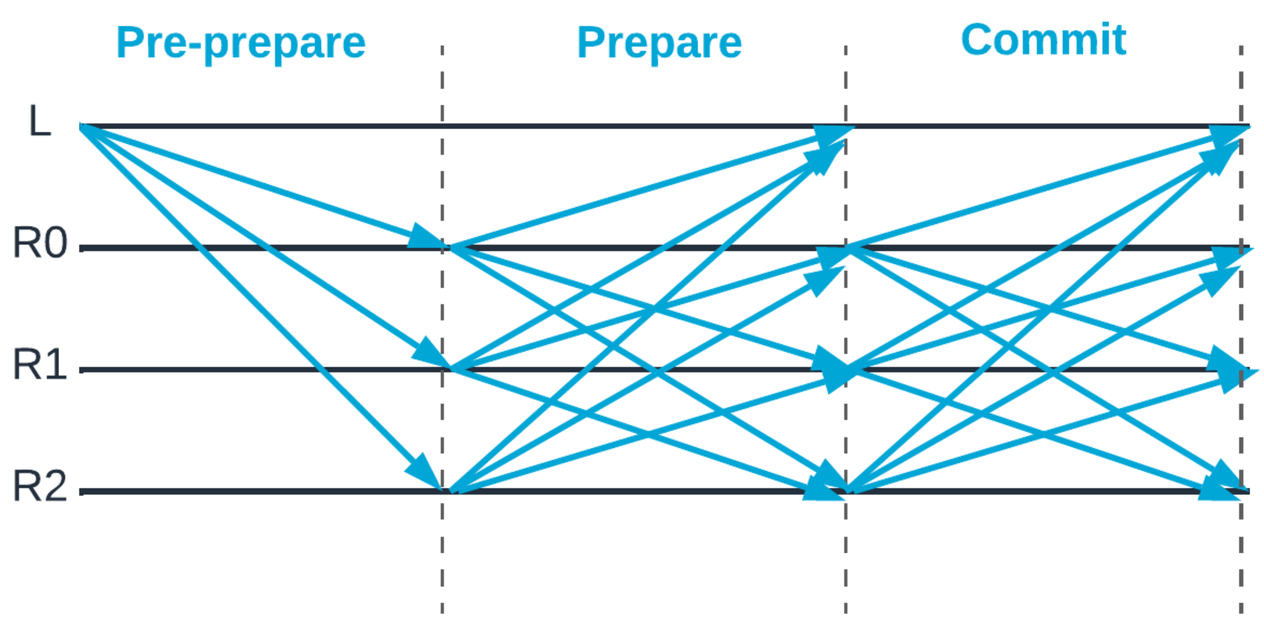

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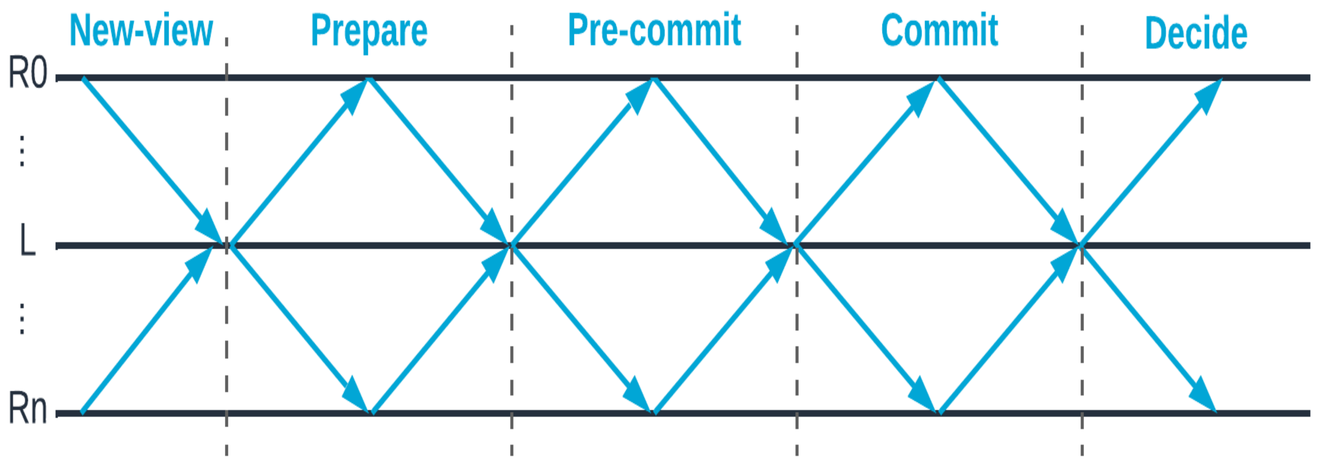

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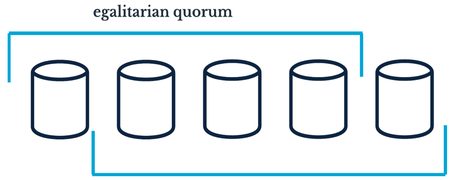

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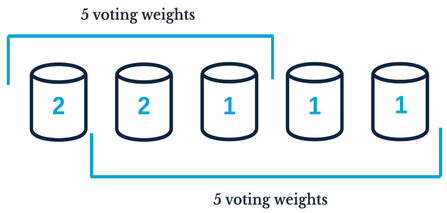

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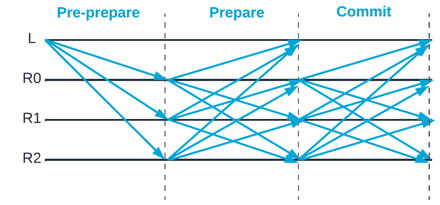

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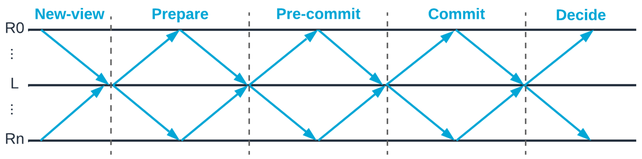

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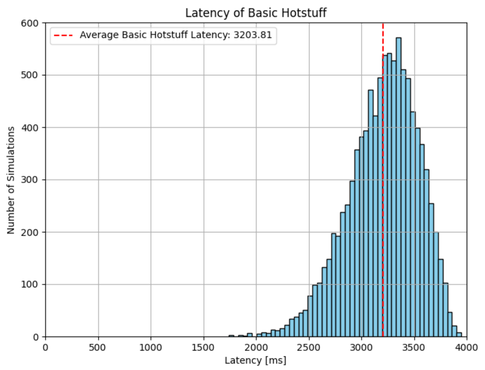

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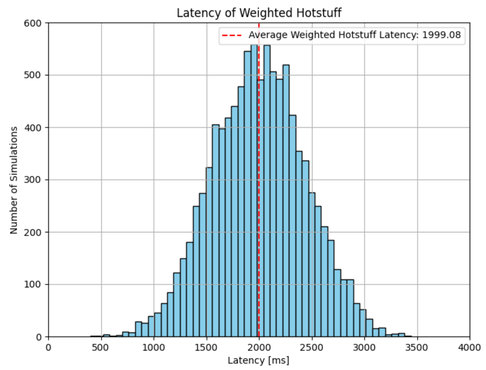

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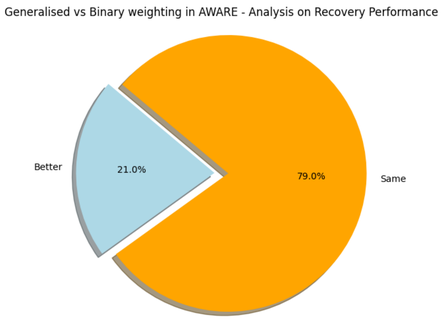

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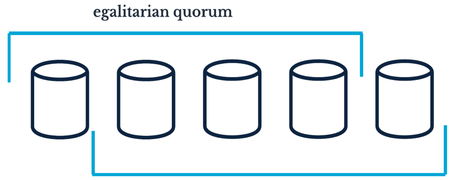

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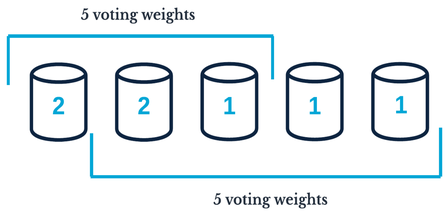

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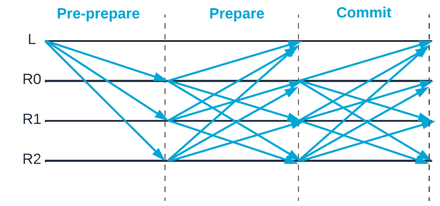

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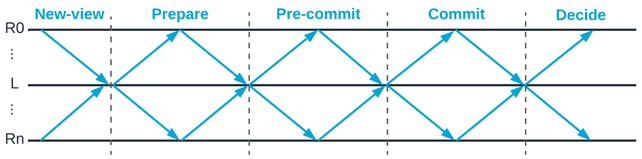

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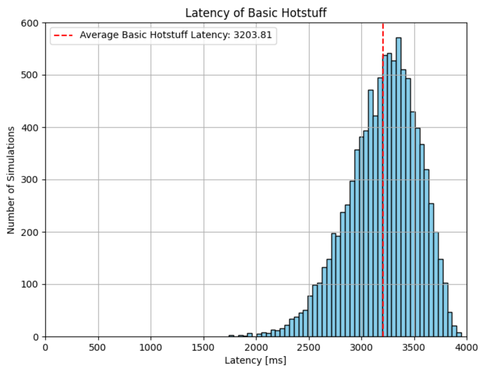

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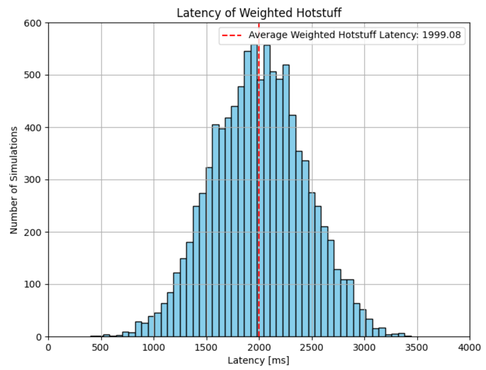

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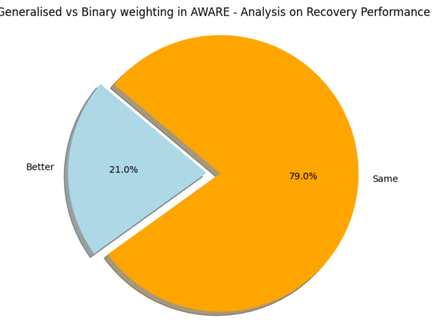

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Weighted voting for optimising Streamlined Blockchain Consensus Algorithms

Diana Micloiu – supervised by Dr. Jérémie Decouchant and Rowdy Chotkan

TU Delft Delft University of Technology

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Byzantine Fault Tolerant (BFT) represents a family of protocols which enable systems to tolerate arbitrary node failures; in particular, protocols require *3f +1* nodes to withstand f failures.

Streamlined algorithms – use leader rotation in each round to shift the communication burden from the leader.

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The impact of **weighted voting** has been applied so far only on first generation consensus algorithms, in AWARE [1].

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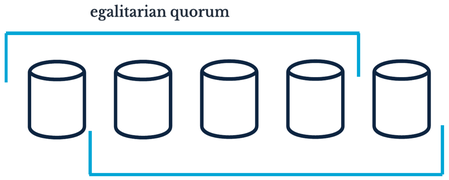

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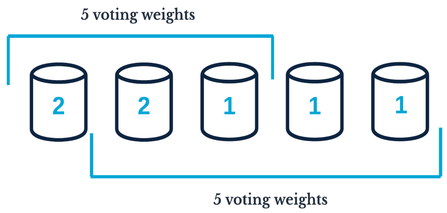

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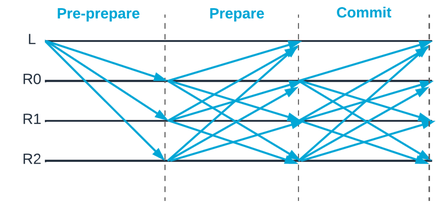

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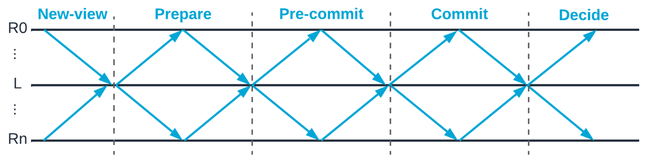

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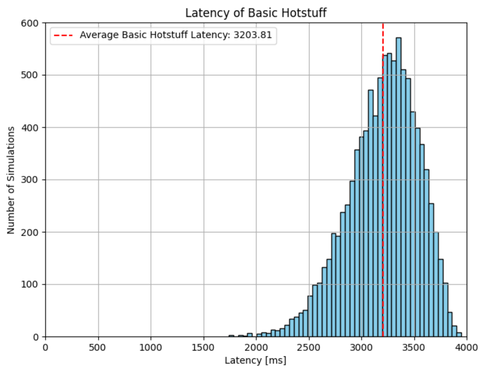

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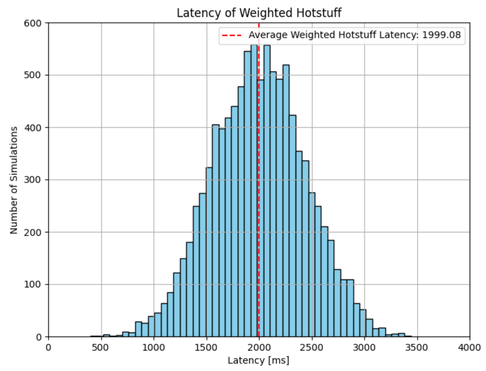

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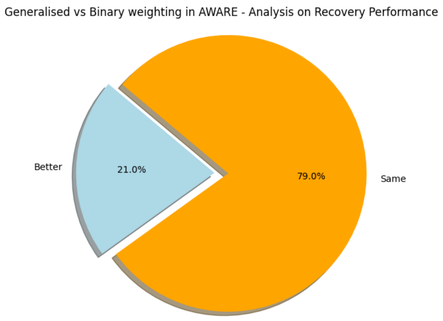

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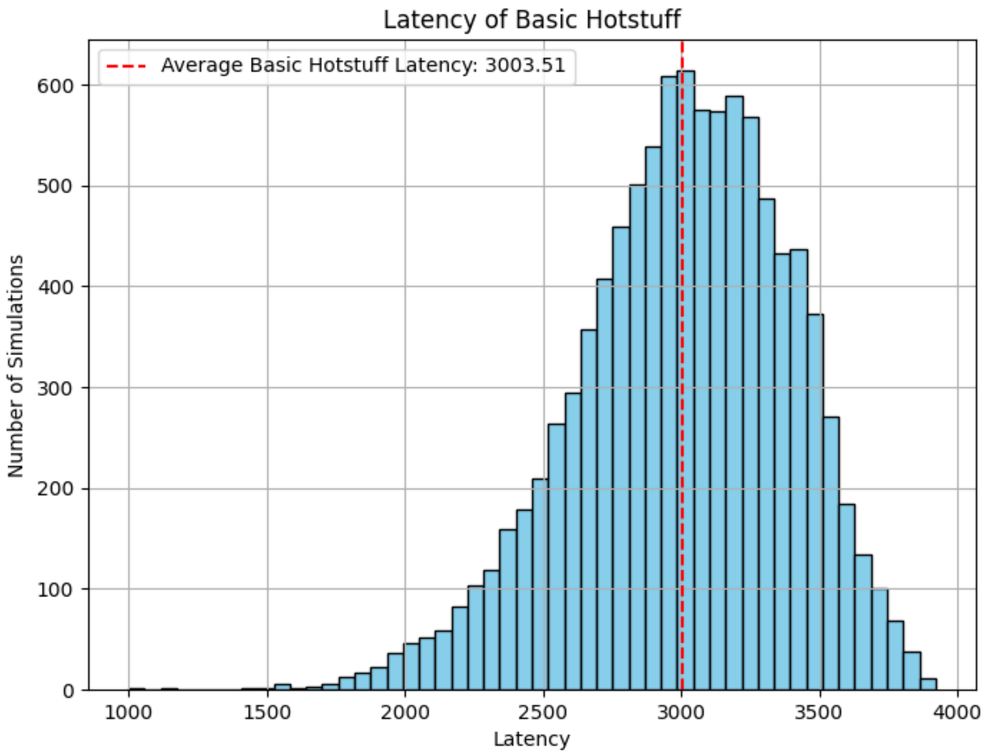

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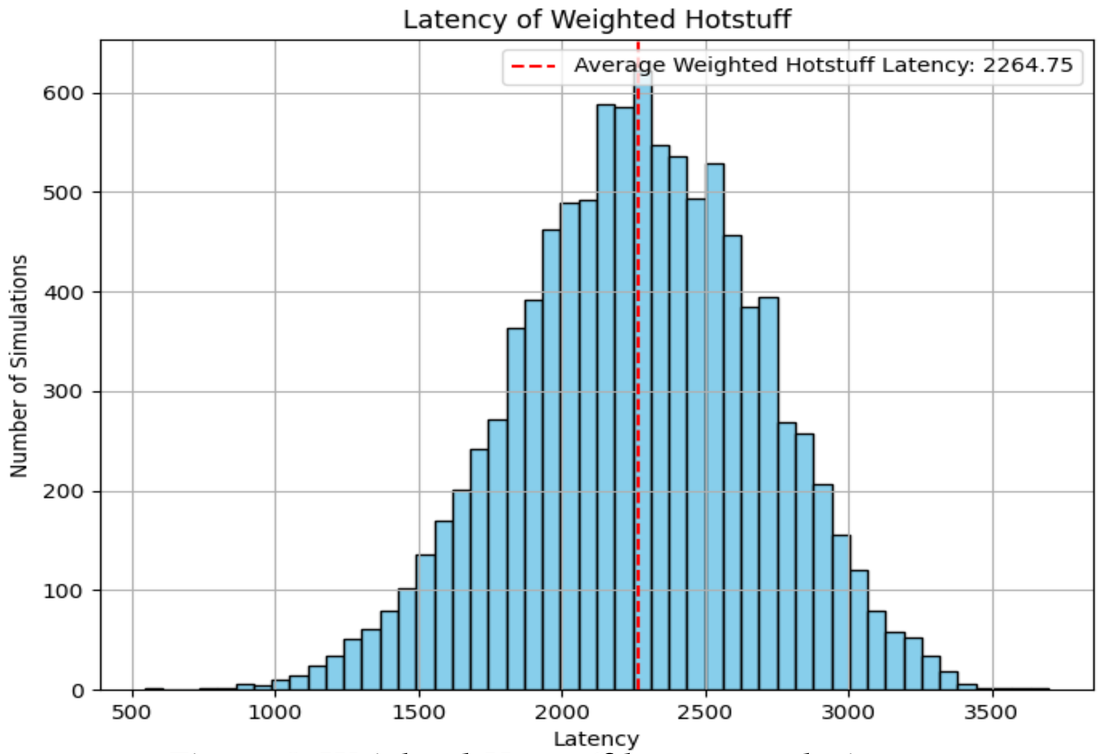

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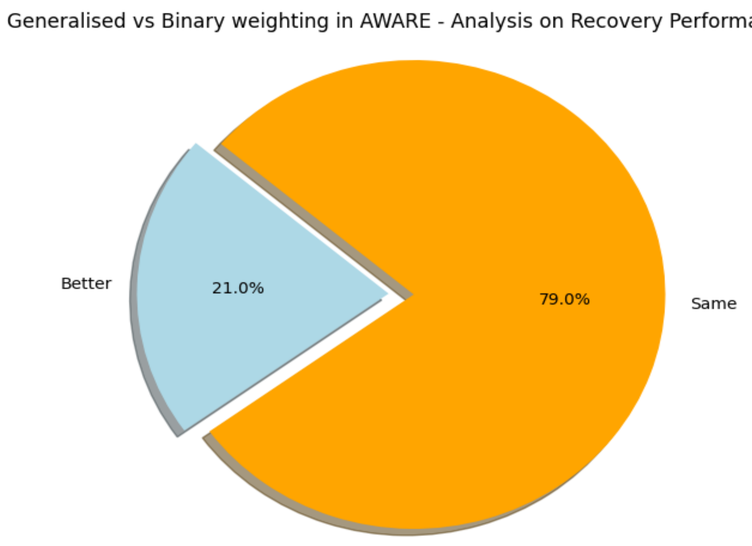

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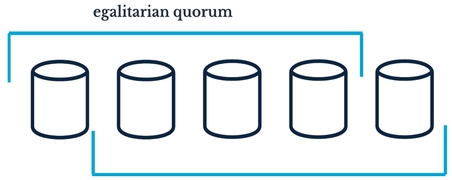

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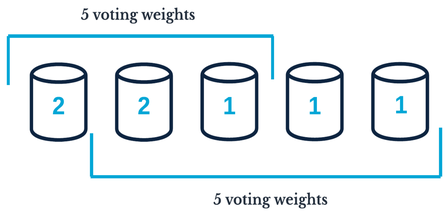

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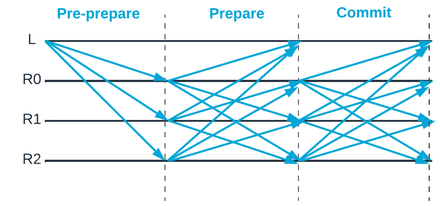

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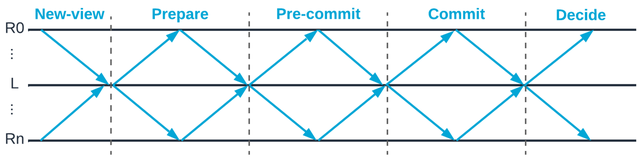

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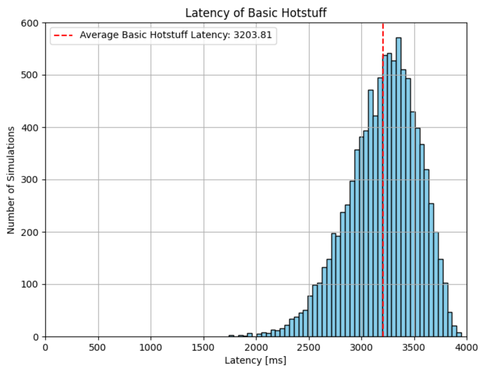

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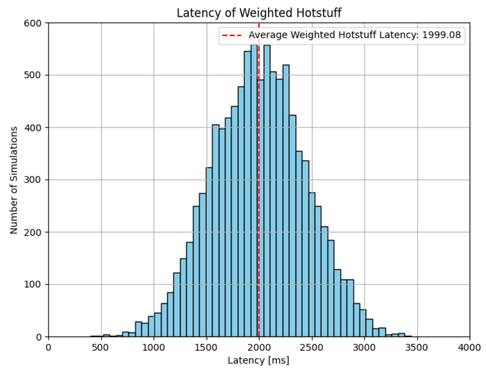

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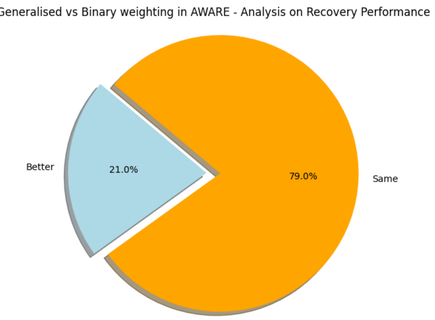

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