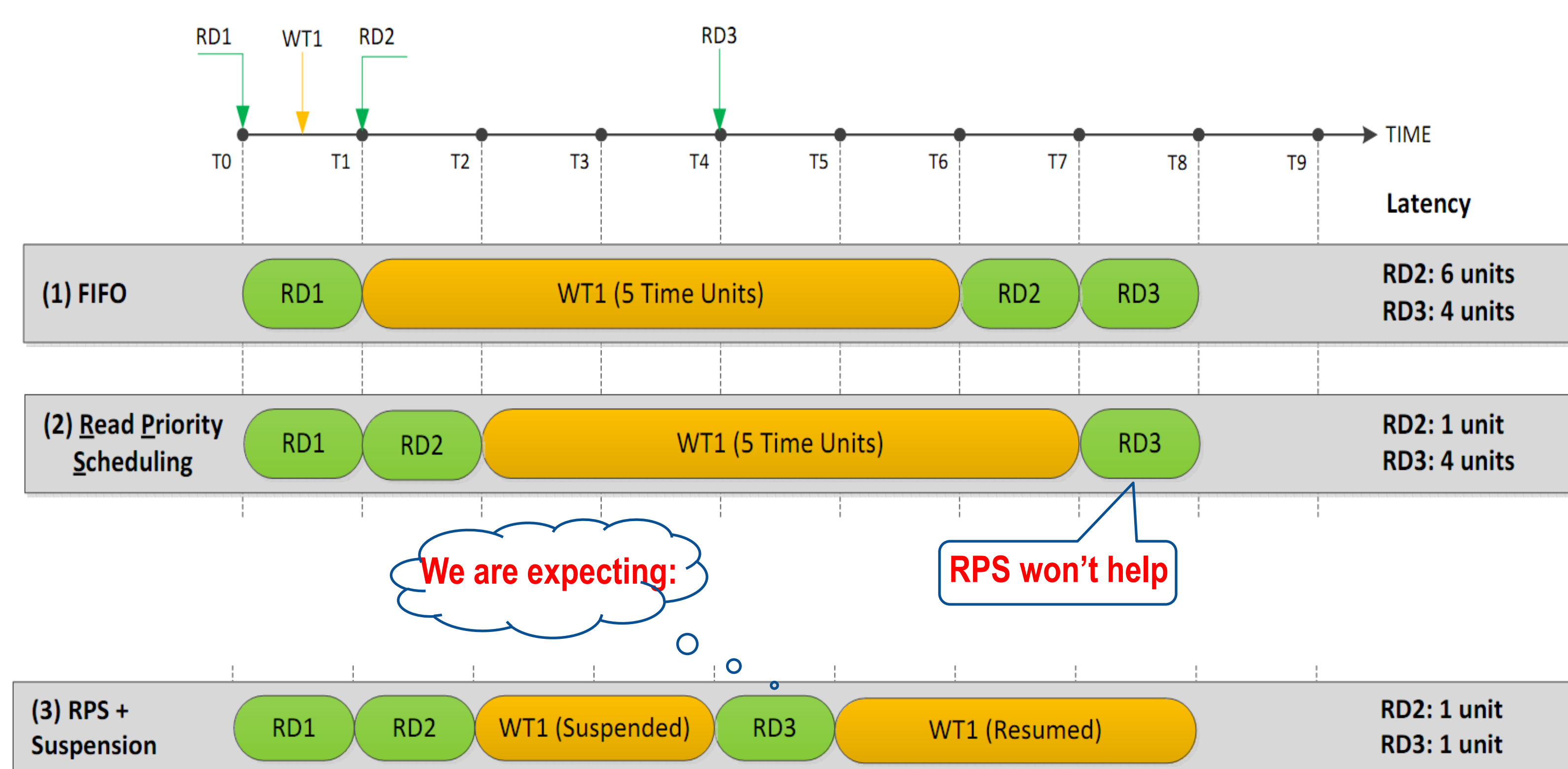


Introduction

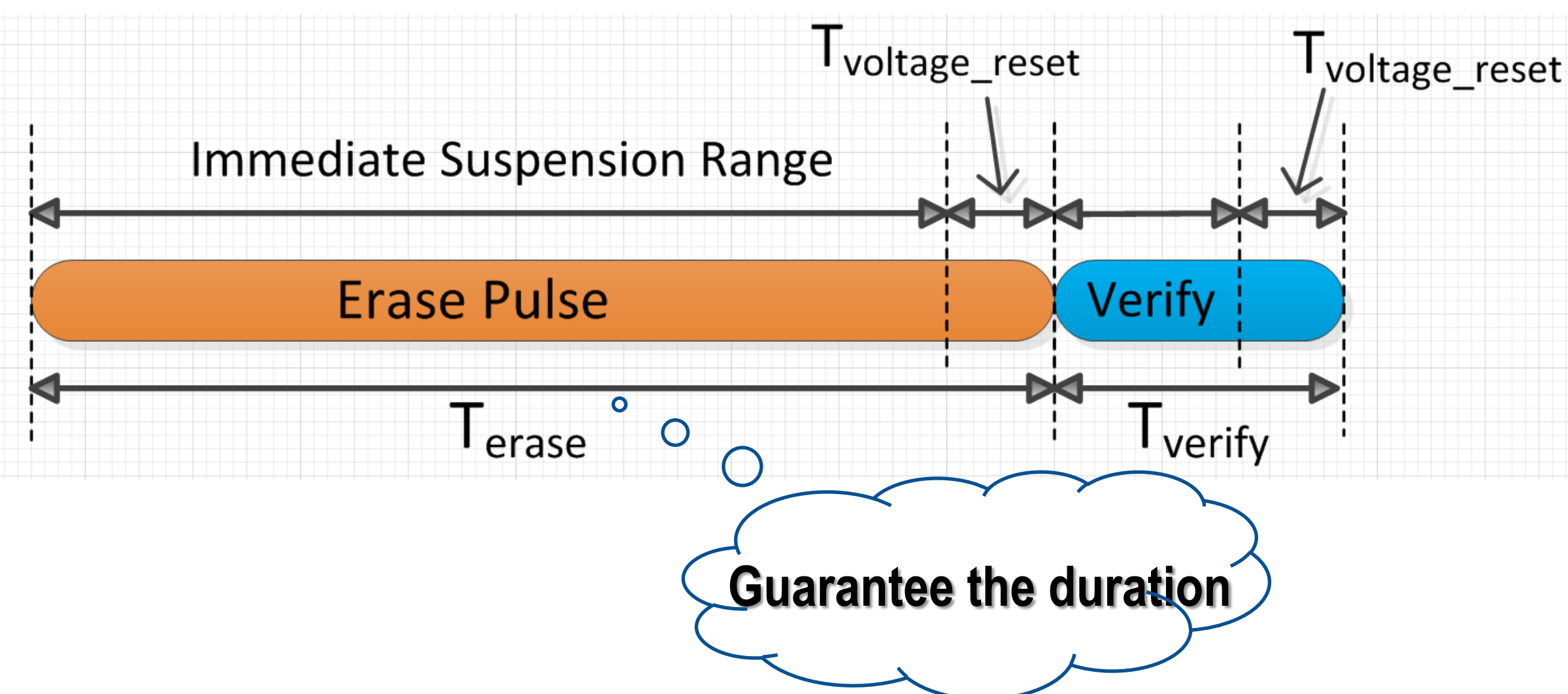
In NAND flash memory, the program or erase (P/E) operations are non-suspendable. Therefore, the subsequent read requests have to wait until the time-consuming P/E operations to complete. This problem could increase the read latency by 2x. Inspired by the internal mechanism of NAND flash P/E algorithms, we propose a low-overhead P/E suspension scheme to reduce SSD read latency.

Motivation

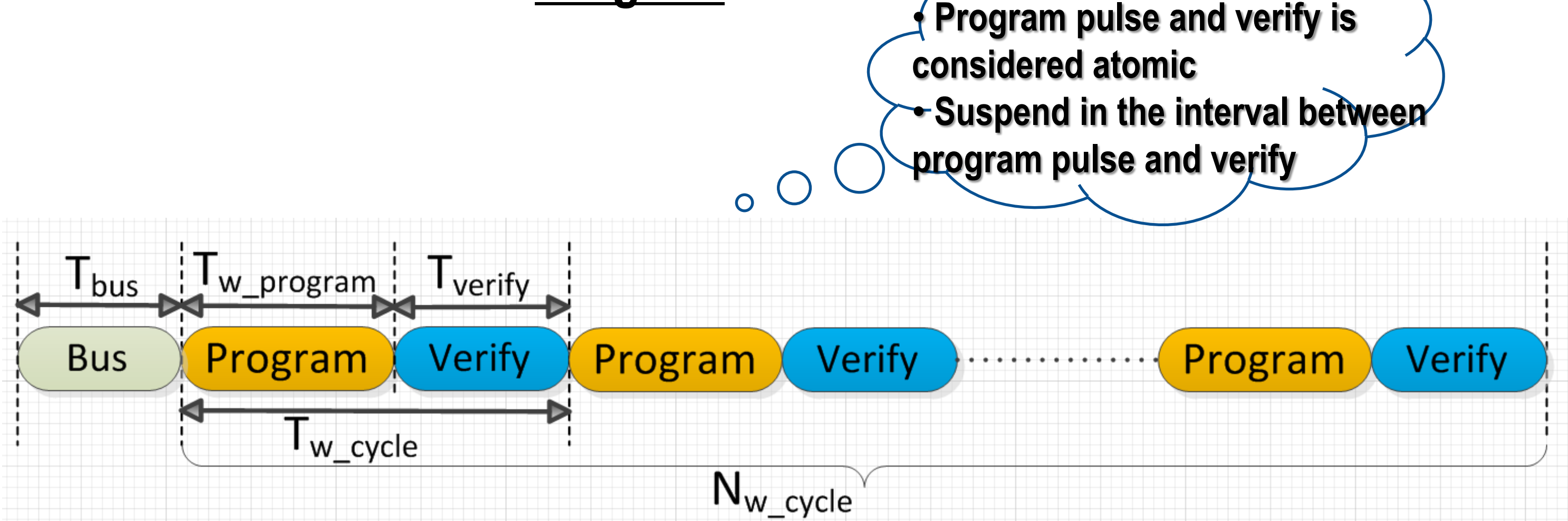


Background

NAND Flash Erase



NAND Flash Program



References

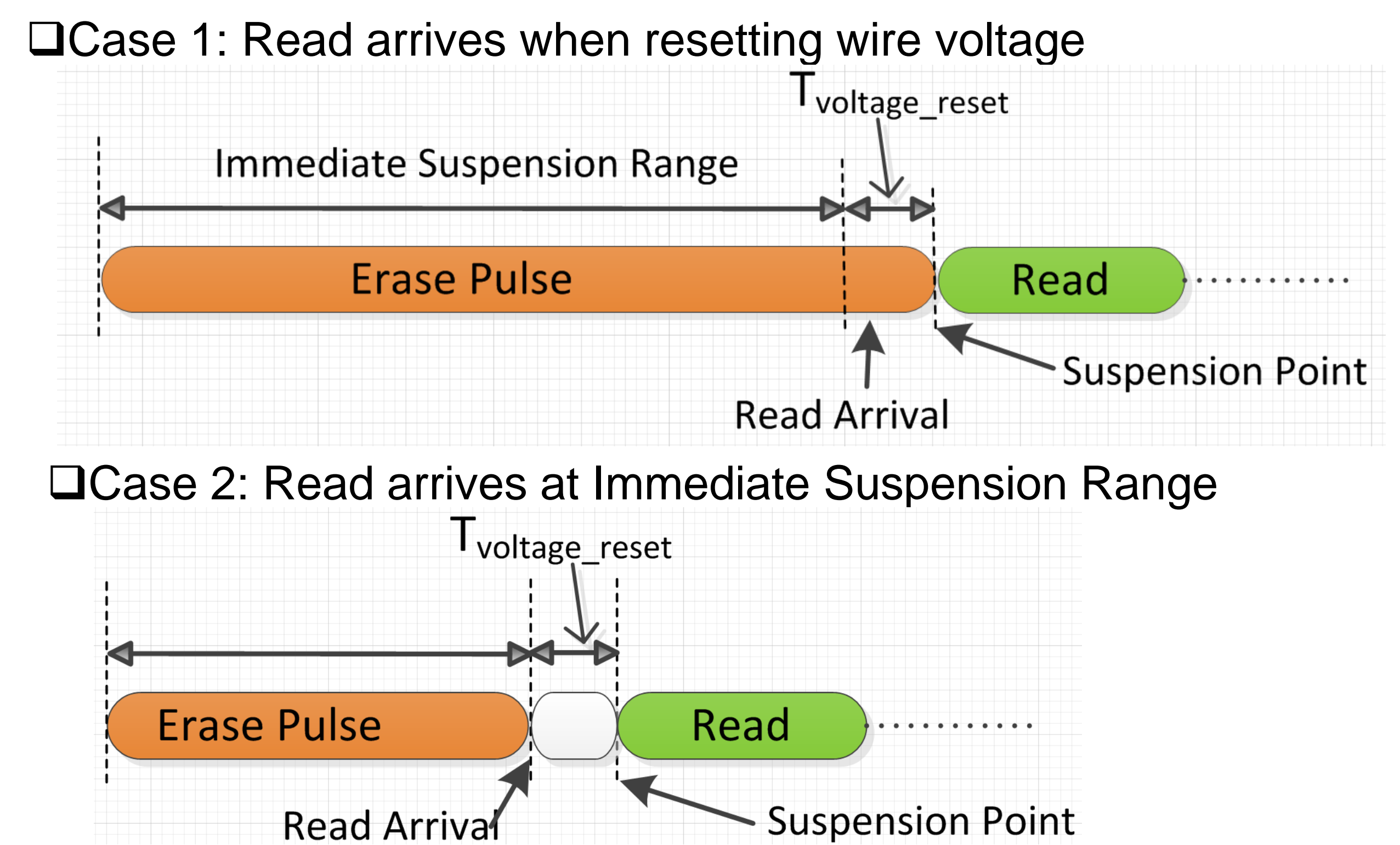
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Acknowledgement

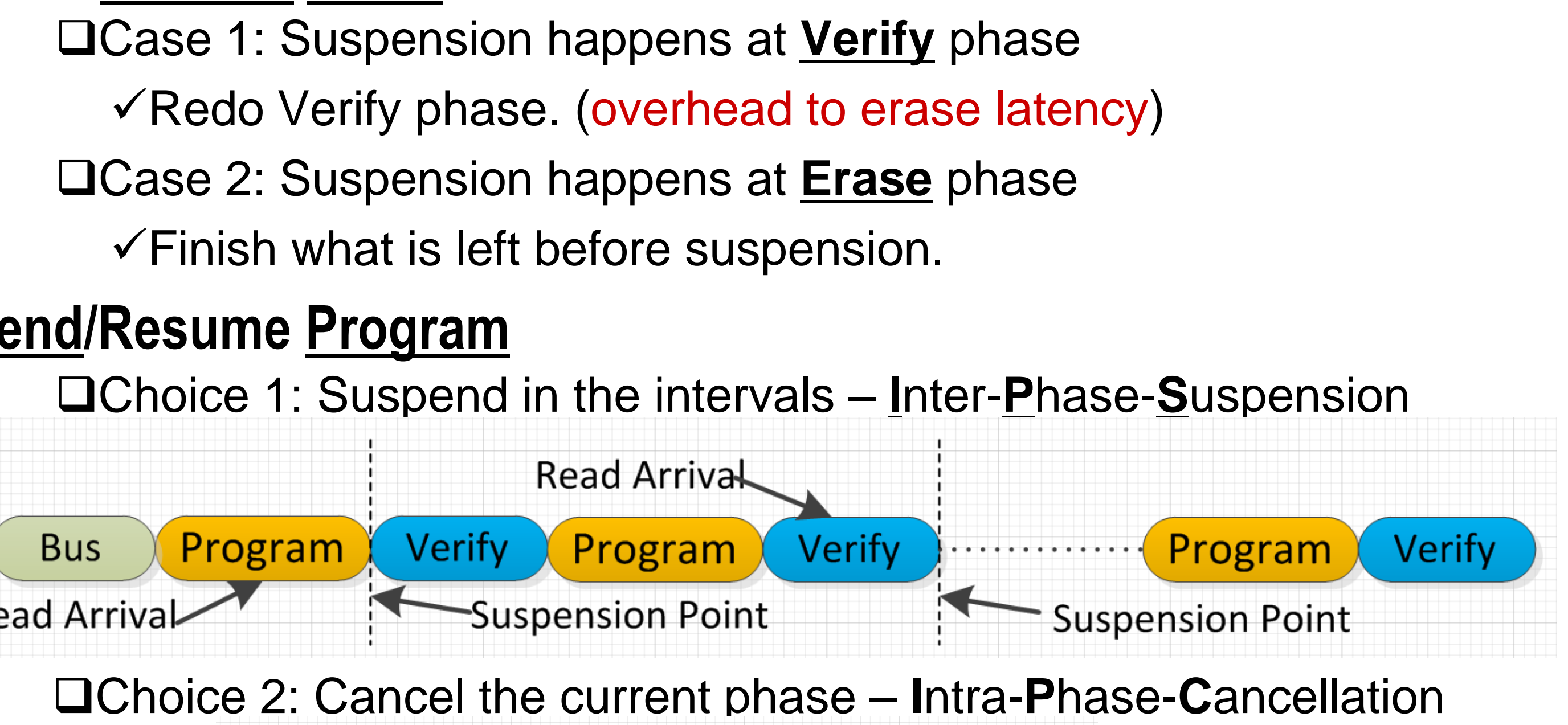
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Design

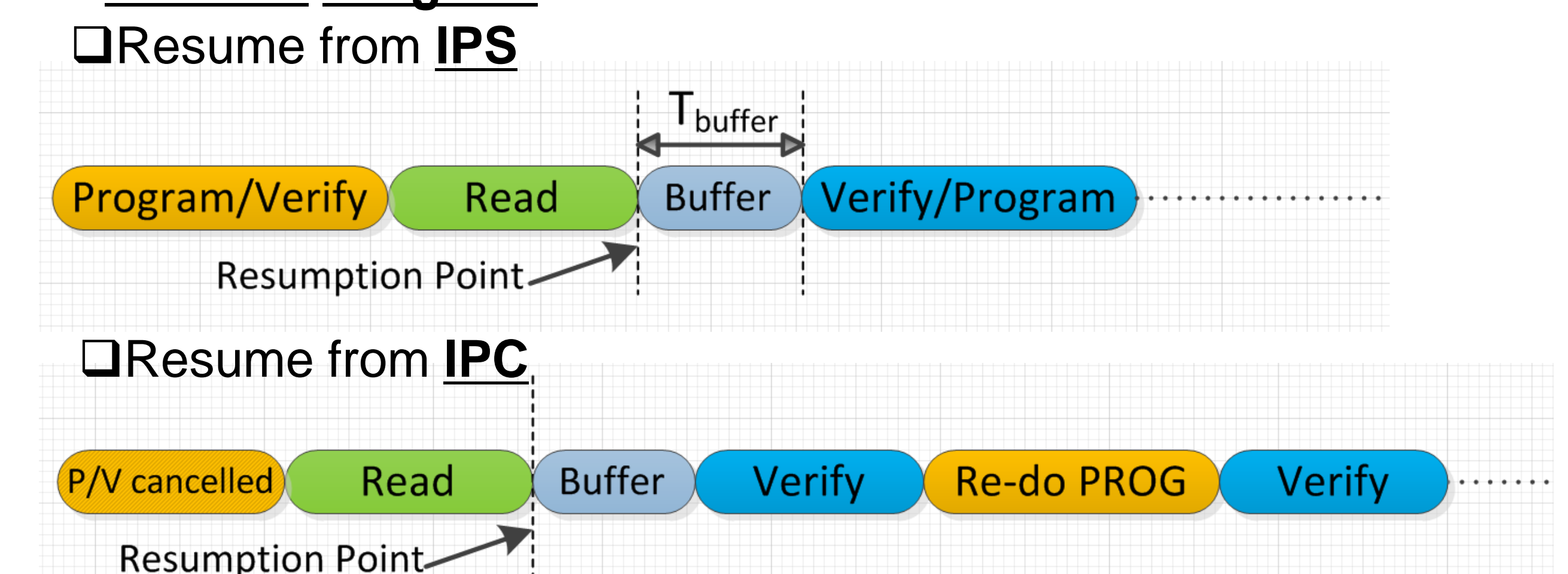
Suspend/Resume Erase



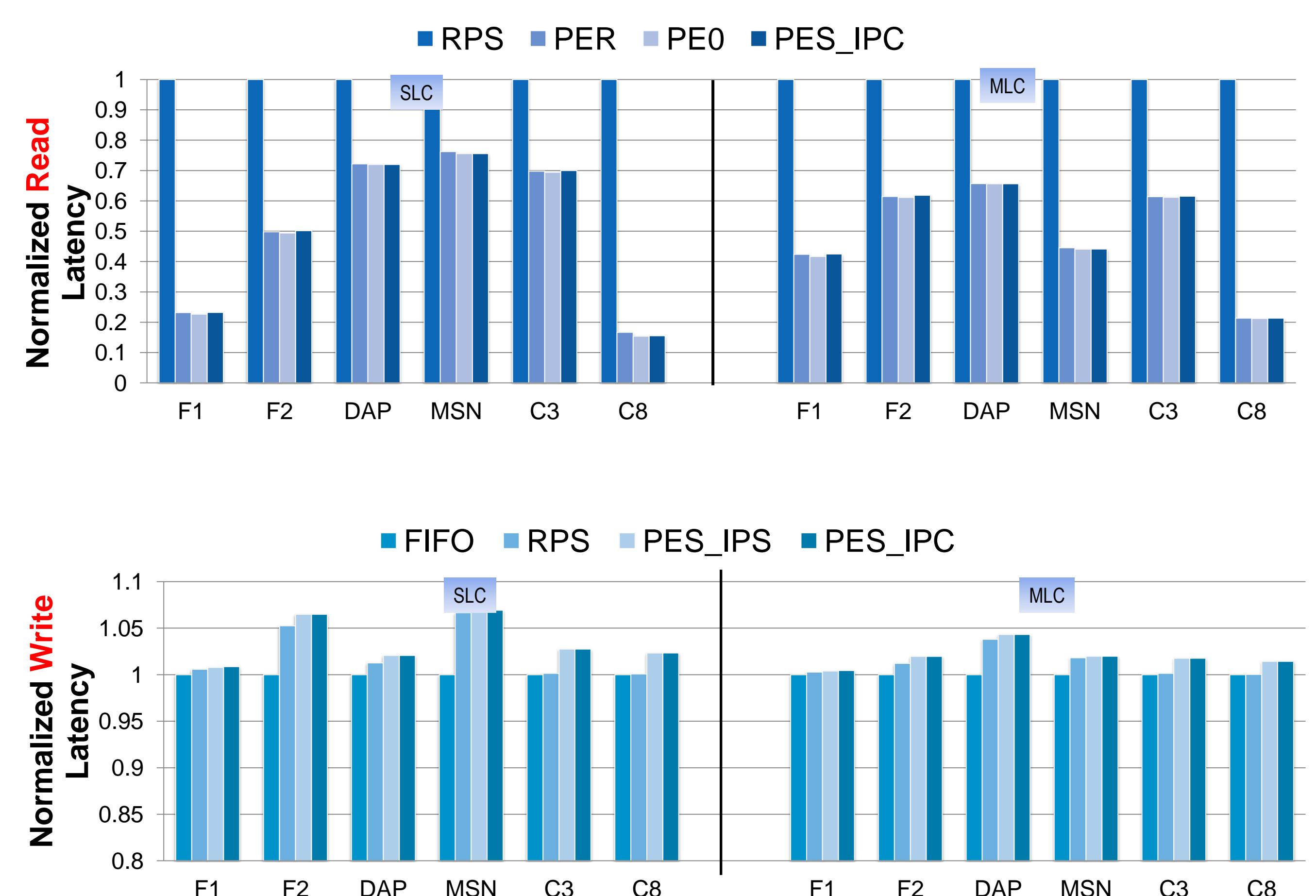
Suspend/Resume Program



Suspend/Resume Program



Evaluation



Conclusion

- Suspending P/E for read is achievable.
 - ✓ Easy to implement.
 - ✓ Significant read performance gain.
 - ✓ Low overhead on write latency.