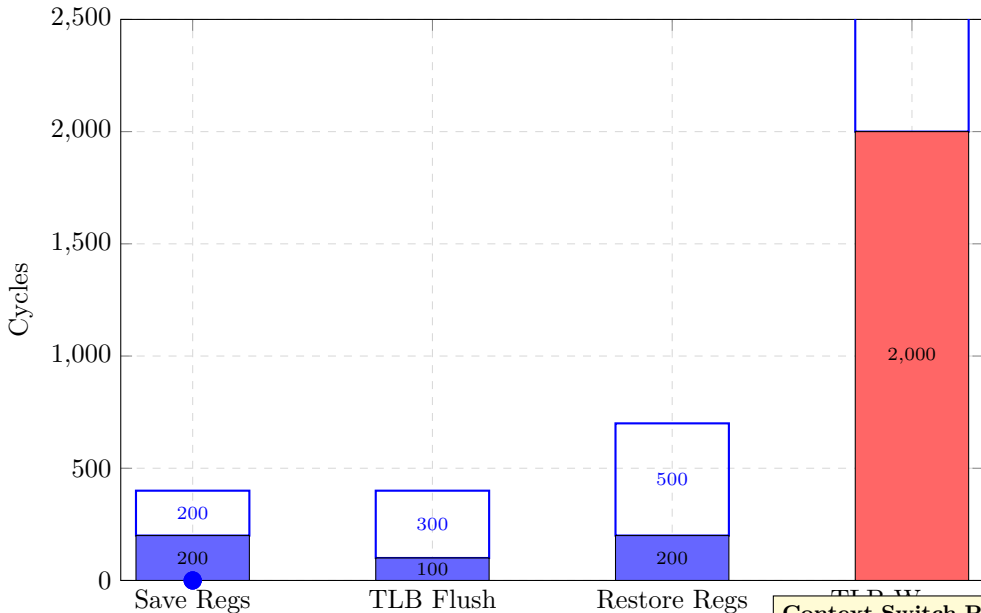


Context Switch Cost Breakdown



Optimizations:

- Global pages (no flush)
- PCID (tag TLB by ASID)
- Large pages (fewer entries)
- Process affinity

TLB Flush Impact:

- Invalidates all translations
- First ~100 accesses miss
- Each miss: 400+ cycles
- Dominates switch cost

Context Switch Phases:

1. Save registers: ~200 cycles
2. Write CR3 (TLB flush): ~100 cycles
3. Restore registers: ~200 cycles
4. TLB warmup: ~2000 cycles

Total: ~2500 cycles

Measured Context Switch Times:

Linux kernel: 2-5 μ s (6000-15000 cycles @ 3 GHz)

Includes: scheduler overhead
+ cache effects + TLB refill