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Hibernation Testing Challenges and Optimization Opportunities

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While many Linux distributions don't officially support hibernation, OEMs must validate thousands of successful hibernation cycles during hardware certification. This creates significant testing bottlenecks, particularly on multi-CPU systems with complex device configurations where failures can occur intermittently, requiring days of continuous testing to reproduce edge cases.
Some Optimization Areas:
1. CPU Management Efficiency
All CPUs are brought online after hibernation snapshot creation before saving the image. Optimization can be done to limit this number reduces hibernation time, especially on systems where CPU initialization is slow.
2. Enhanced Fault Tolerance
Any single device failure during resume immediately discards the hibernation image by unmarking swap signatures, There is possibility to delay signature unmarking to allow retry attempts. I have also experimented with backup device fallback mechanisms.

Questions for Discussion:
Would addressing these optimization areas provide meaningful values?

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