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mTHP swap-out and swap-in

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In addition to the work by Chris Li and Ryan Roberts on optimizing mTHP swap-out slot allocation [1][2], we at OPPO have several patchsets focused on mTHP swap-in [3][4] and enhancing zsmalloc/zRAM [5] to save and restore compressed mTHP.

Without mTHP swap-in, mTHP is a one-way ticket: once swapped out, they cannot revert to mTHP. With mTHP swap-in, we make mTHP bidirectional and gain the ability to compress and decompress large folios, significantly improving compression ratios and reducing CPU usage.

This topic will cover the current progress on mTHP swap-in and mTHP compression/decompression in zsmalloc/zRAM. It will also initiate a discussion on the appropriate policies for determining the optimal mTHP swap-in size for various swap files, such as zRAM and SSD, with a particular focus on zRAM in our current work.

[1] <https://lore.kernel.org/linux-mm/20240618232648.4090299-1-ryan.roberts@arm.com/>

[2] <https://lore.kernel.org/linux-mm/20240614-swap-allocator-v2-0-2a513b4a7f2f@kernel.org/>

[3] <https://lore.kernel.org/linux-mm/20240529082824.150954-1-21cnbao@gmail.com/>

[4] <https://lore.kernel.org/linux-mm/20240629111010.230484-1-21cnbao@gmail.com/>

[5] <https://lore.kernel.org/linux-mm/20240327214816.31191-1-21cnbao@gmail.com/>

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