Transparent HugePage Support (THP) is an alternative mean of using huge pages for the backing of virtual memory with huge pages that supports the automatic promotion and demotion of page sizes and without the shortcomings of hugetlbfs.

Currently THP only works for anonymous memory mappings and tmpfs/shmem.

THP can be enabled system wide or **restricted to certain tasks** or **even memory ranges inside task's address space**. Unless THP is completely disabled, there is khugepaged daemon that scans memory and collapses sequences of basic pages into huge pages.

The THP behaviour is controlled via [sysfs](https://www.kernel.org/doc/html/latest/admin-guide/mm/transhuge.html" \l "thp-sysfs) interface and using madvise(2) and prctl(2) system calls.

Transparent Hugepage Support maximizes the usefulness of free memory if compared to the reservation approach of hugetlbfs by allowing all unused memory to be used as cache or other movable (or even unmovable entities).

In certain cases when hugepages are enabled system wide, application may end up allocating more memory resources. An application may mmap a large region but only touch 1 byte of it, in that case a 2M page might be allocated instead of a 4k page for no good. This is why it's possible to disable hugepages system-wide and to only have them inside MADV\_HUGEPAGE madvise regions.

echo always >/sys/kernel/mm/transparent\_hugepage/enabled

echo madvise >/sys/kernel/mm/transparent\_hugepage/enabled

echo never >/sys/kernel/mm/transparent\_hugepage/enabled