

SWAP Partition

OR

How We Can Create SWAP Space in Linux from any Disk?

- A swap space is an area of a disk under the control of the Linux kernel memory management subsystem. The kernel uses swap space to supplement the system RAM by holding inactive pages of memory.
- The combined system RAM plus swap space is called virtual memory.
- When the memory usage on a system exceeds a defined limit, the kernel searches through RAM looking for idle memory pages assigned to processes. The kernel writes the idle pages to the swap area and reassigns the RAM pages to other processes. If a program requires access to a page on disk, the kernel locates another idle page of memory, writes it to disk, then recalls the needed page from the swap area.
- Because swap areas reside on disk, swap is slow when compared with RAM
- Linux divides its physical RAM (random access memory) into chunks of memory called pages. Swapping is the process whereby a page of memory is copied to the preconfigured space on the hard disk, called swap space, to free up that page of memory. The combined sizes of the physical memory and the swap space is the amount of virtual memory available.
- Swapping is necessary for two important reasons. First, when the system requires more memory than is physically available, the kernel swaps out less used pages and gives memory to the current application (process) that needs the memory immediately. Second, a significant number of the pages used by an application during its startup phase may only be used for initialization and then never used again. The system can swap out those pages and free the memory for other applications or even for the disk cache.

RAM and Swap Space Recommendations

RAM	SWAP SPACE	SWAP SPACE IF ALLOWING FOR HIBERNATION
2 GiB or less	Twice the RAM	Three times the RAM
Between 2 GiB and 8 GiB	Same as RAM	Twice the RAM
Between 8 GiB and 64 GiB	At least 4 GiB	1.5 times the RAM
More than 64 GiB	At least 4 GiB	Hibernation is not recommended

The laptop and desktop hibernation function uses the swap space to save the RAM contents before powering off the system. When you turn the system back on, the kernel restores the RAM contents from the swap space and does not need a complete boot. For those systems, the swap space needs to be greater than the amount of RAM.

Types of SWAP Creation Method?

- 1- During the OS installation
- 2- After the OS installation

== > Partition Concept from any disk using fdisk or parted command

== > File method using dd command from any existing storage mount point

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