

# SWAP

## What is SWAP?

- Swap is a space on a disk that is used when the amount of physical RAM memory is full.
- When a Linux system runs out of RAM, inactive pages are moved from the RAM to the swap space.
- Swap space can take the form of either a dedicated swap partition or a swap file.
- In most cases when running CentOS on a virtual machine a swap partition is not present so the only option is to create a swap file.

## Commands to create partition:

- `fdisk /dev/sdb`

```
[root@localhost ~]# fdisk /dev/sdb
Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x55fa4ed8.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-6291455, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-6291455, default 6291455): +=1G
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-6291455, default 6291455): +1G

Created a new partition 1 of type 'Linux' and of size 1 GiB.

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p):
```

## To check partition is created or not:

- `lsblk`

```
[root@server ~]# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xff470e58.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-10485759, default 10485759): +2g

Created a new partition 1 of type 'Linux' and of size 2 GiB.
Partition #1 contains a ext4 signature.

Do you want to remove the signature? [Y]es/[N]o: y

The signature will be removed by a write command.

Command (m for help): e
e: unknown command

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): e
Partition number (2-4, default 2):
First sector (4196352-10485759, default 4196352):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (4196352-10485759, default 10485759): +2g

Created a new partition 2 of type 'Extended' and of size 2 GiB.

Command (m for help): w
```

**To check partition is created or not:**

➤ **lsblk**

```
[root@server ~]# lsblk
NAME        MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
sda          8:0    0    20G  0 disk
├─sda1       8:1    0     1G  0 part /boot
└─sda2       8:2    0    19G  0 part
   └─cs-root 253:0    0    17G  0 lvm  /
      └─cs-swap 253:1  0     2G  0 lvm  [SWAP]
sdb          8:16   0     5G  0 disk
├─sdb1       8:17   0     2G  0 part
└─sdb2       8:18   0     1K  0 part
sdc          8:32   0     5G  0 disk
sr0         11:0    1  100.6M  0 rom   /run/media/root/CDROM
sr1         11:1    1     8.1G  0 rom   /run/media/root/CentOS-Stream-9-BaseOS-x86_64
```

**Make SWAP:**

**mkswap /dev/sdb1**

```
[root@server ~]# mkswap /dev/sdb1
Setting up swapspace version 1, size = 2 GiB (2147479552 bytes)
no label, UUID=1695a89c-ea7c-4bc3-99f8-38e17ecc266e
```

## On the SWAP:

➤ swapon /dev/sdb1

```
[root@server ~]# swapon /dev/sdb1
[root@server ~]# free -h
```

	total	used	free	shared	buff/cache	available
Mem:	1.7Gi	1.2Gi	76Mi	11Mi	634Mi	523Mi
Swap:	4.0Gi	292Mi	3.7Gi			

```
[root@server ~]# lsblk
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINTS
sda	8:0	0	20G	0	disk	
└─sda1	8:1	0	1G	0	part	/boot
└─sda2	8:2	0	19G	0	part	
└─┬─cs-root	253:0	0	17G	0	lvm	/
└─┴─cs-swap	253:1	0	2G	0	lvm	[SWAP]
sdb	8:16	0	5G	0	disk	
└─sdb1	8:17	0	2G	0	part	[SWAP]
└─sdb2	8:18	0	1K	0	part	
sdc	8:32	0	5G	0	disk	
sr0	11:0	1	100.6M	0	rom	/run/media/root/CDROM
sr1	11:1	1	8.1G	0	rom	/run/media/root/CentOS-Stream-9-BaseOS-x86_64

## Creating a Swap File:

fallocate -l +4G /swapfile

```
[root@server ~]# fallocate -l +4g /swapfile
[root@server ~]# ls -lh /swapfile
```

Permissions	Link Count	User	Group	Size	Month	Day	Time	File
-rw-r--r--	1	root	root	4.0G	Oct	7	10:44	/swapfile

1. For Swapping the file we should change 644 to 600

Permission:

➤ chmod 600 /swapfile

```
[root@server ~]# chmod 600 /swapfile
[root@server ~]# ls -lh /swapfile
```

Permissions	Link Count	User	Group	Size	Month	Day	Time	File
-rw-----	1	root	root	4.0G	Oct	7	10:44	/swapfile

2. Make SWAP:

➤ mkswap /swapfile

```
[root@server ~]# mkswap /swapfile
Setting up swapspace version 1, size = 4 GiB (4294963200 bytes)
no label, UUID=1b05f6a8-faa0-4700-a25f-8cba25fbaef7
```

### 3. On the SWAP:

➤ swapon /swapfile

```
[root@server ~]# swapon
swapoff swapon
[root@server ~]# swapon /swapfile
[root@server ~]# free -h
```

	total	used	free	shared	buff/cache	available
Mem:	1.7Gi	1.2Gi	74Mi	11Mi	637Mi	524Mi
Swap:	8.0Gi	290Mi	7.7Gi			

### 4. For Permanent Mount:

➤ Vi /etc/fstab

```
/dev/mapper/cs-root / xfs defaults 0 0
UUID=a89c18f2-6e7e-4254-afa7-fbdb2410b3f4 /boot xfs defaults 0 0
/dev/mapper/cs-swap none swap defaults 0 0
/swapfile swap swap defaults 0 0
```