How to Create a Swap File as a Swap Space?

written by sysadmin | 19 April 2025

Swap space is a portion of hard drive storage that has been set aside for the operating system to temporarily store data that it can no longer hold in RAM. So, if the system needs more memory resources and the RAM is full, inactive pages in memory are moved to the swap space. Swap space can be a dedicated swap partition (recommended), a swap file, or a combination of swap partitions and swap files. You can use a swap file as a swap space if your server does not create a partition when installing Linux.

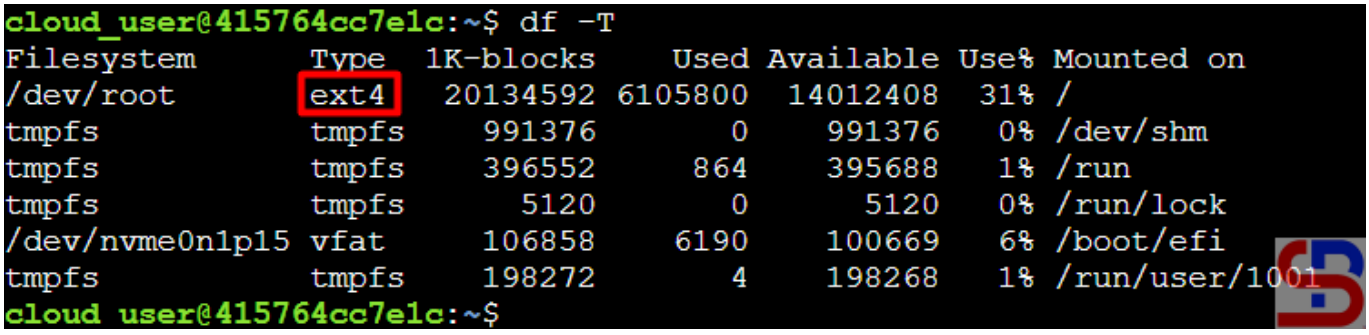
Problem

How to create a swap file as a swap space?

Solution

First, you have to check the type of filesystem that you use by running the command below:

```
df -T
```



Check the filesystem type

If you use the ext4 or xfs filesystem, you can use the steps below in this article. Type the command below to see whether the swap is already on your Linux server or not:

```
cat /proc/swaps
```

If the above command results are as shown below, then your server hasn’t used a swap:

```
cloud_user@415764cc7e1c:~$ cat /proc/swaps
Filename                                Type            Size            Used            Priority
cloud_user@415764cc7e1c:~$
```

Check the swap

After that, check how much hard disk size on your Linux server and determine the size of the swap file you need. You should know that the size of the swap file will reduce the size of your hard disk. Generally, the swap size is twice the size of the RAM server, so if your Linux server RAM is 1 GB, the swap size is 2 GB. In this article, we use 2GB for the swap file. Type the command below to create a 2GB swap file:

```
sudo fallocate -l 2G /swapfile
ls -lh /swapfile
```

```
cloud_user@415764cc7e1c:~$ sudo fallocate -l 2G /swapfile
[sudo] password for cloud_user:
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ ls -lh /swapfile
-rw-r--r-- 1 root root 2.0G Apr  3 03:47 /swapfile
cloud_user@415764cc7e1c:~$
```

Create the size of the swap file

Then give the command below so that the users can not read the swap file:

```
sudo chmod 0600 /swapfile
```

Set up the swap file with the command:

```
sudo mkswap /swapfile
```

```
cloud_user@415764cc7e1c:~$ sudo mkswap /swapfile
Setting up swapspace version 1, size = 2 GiB (2147479552 bytes)
no label, UUID=29e0aff1-bcc1-4f78-847f-02c4106f86d9
cloud_user@415764cc7e1c:~$
```

Set up the swap file

Enable the new swap space for paging and swapping by typing the following:

```
sudo swapon /swapfile
```

And then run this command to verify:

```
sudo swapon --show
```

```
cloud_user@415764cc7e1c:~$ sudo swapon /swapfile
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ sudo swapon --show
NAME      TYPE SIZE USED PRIO
/swapfile file   2G   0B   -2
cloud_user@415764cc7e1c:~$
```

Enable the swap file

You can see if the swap space is available on your Linux server after creating a swap file:

```
cloud_user@415764cc7e1c:~$ cat /proc/swaps
Filename                                Type            Size            Used            Priority
/swapfile                               file            2097148         0               -2
cloud_user@415764cc7e1c:~$
```

Check the swap space after creating the swap file

To make the swap file permanent, you have to add the swap file to the fstab file using the command below:

```
echo '/swapfile none swap sw 0 0' | sudo tee -a /etc/fstab
```

```
cloud_user@415764cc7e1c:~$ cat /etc/fstab
LABEL=cloudimg-rootfs   /        ext4   discard,errors=remount-ro       0 1
LABEL=UEFI      /boot/efi       vfat    umask=0077      0 1
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ echo '/swapfile none swap sw 0 0' | sudo tee -a /etc/fstab
/swapfile none swap sw 0 0
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ cat /etc/fstab
LABEL=cloudimg-rootfs   /        ext4   discard,errors=remount-ro       0 1
LABEL=UEFI      /boot/efi       vfat    umask=0077      0 1
/swapfile none swap sw 0 0
cloud_user@415764cc7e1c:~$
```

Add the swap file to the fstab file

If you want, you can reboot the server to see whether the swap is still there after you reboot the server.

Note

You can determine how often your Linux system exchanges data from RAM to the swap space using swappiness parameters by giving a value between 0 to 100, representing the percentage. If you give a value that is close to zero, the Linux system will not write data to the disk unless it is necessary. But if you give a value that is close to 100, the Linux system will write more data into the swap to keep more free RAM space. By default, the Linux system gives a value of 60 in the file/proc/sys/vm/swappiness, and if you want to change the value, for example, to 20, then you can change it using the command below:

```
sudo sysctl vm.swappiness=20
```

```
cloud_user@415764cc7e1c:~$ cat /proc/sys/vm/swappiness
60
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ sudo sysctl vm.swappiness=20
vm.swappiness = 20
cloud_user@415764cc7e1c:~$
cloud_user@415764cc7e1c:~$ cat /proc/sys/vm/swappiness
20
cloud_user@415764cc7e1c:~$
```

Change the swappiness parameter

But if you reboot the server, the swappiness value will

return to the initial value. So if you want the swappiness value to remain, add the script below to the **/etc/sysctl.conf** file:

```
vm.swappiness=20
```

References

digitalocean.com
docs.redhat.com
docs.oracle.com