

# Exchange space expansion

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1. Exchange space
2. Swap space expansion
  - 2.1. Disable ZRAM swap configuration
  - 2.2. Create 8GB file
  - 2.3. Set the swap space format
  - 2.4. Enable swap space
  - 2.5. Permanently start swap space
3. Verify the expansion

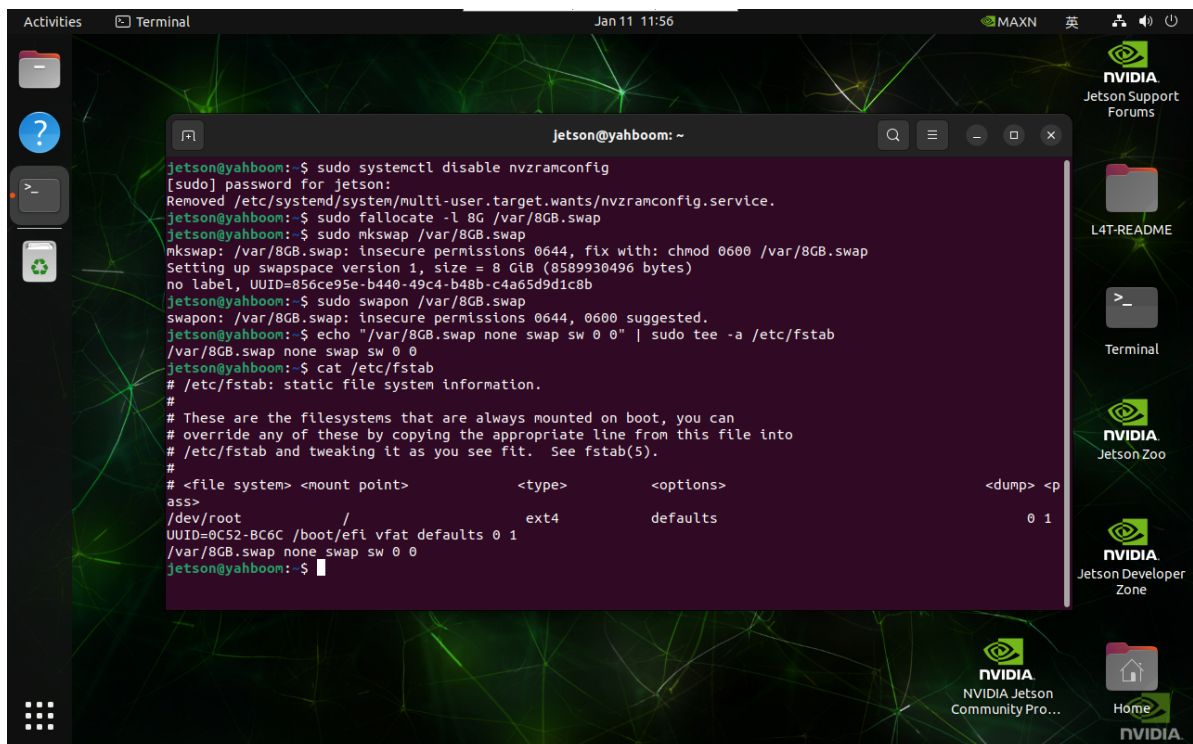
## 1. Exchange space

Swap space is a mechanism used by the operating system to expand available memory. It can continue to run when there is insufficient memory, avoiding program crashes or system freezes!

Note: The access speed of swap space is much lower than that of physical memory

## 2. Swap space expansion

```
sudo systemctl disable nvramconfig
sudo fallocate -l 8G /var/8GB.swap
sudo mkswap /var/8GB.swap
sudo swapon /var/8GB.swap
echo "/var/8GB.swap none swap sw 0 0" | sudo tee -a /etc/fstab
```



The screenshot shows a terminal window titled "jetson@yahboom: ~" with the following output:

```
jetson@yahboom:~$ sudo systemctl disable nvramconfig
[sudo] password for jetson:
Removed /etc/systemd/system/multi-user.target.wants/nvramconfig.service.
jetson@yahboom:~$ sudo fallocate -l 8G /var/8GB.swap
jetson@yahboom:~$ sudo mkswap /var/8GB.swap
mkswap: /var/8GB.swap: insecure permissions 0644, fix with: chmod 0600 /var/8GB.swap
Setting up swapspace version 1, size = 8 GiB (8589930496 bytes)
no label, UUID=856ce95e-b440-49c4-b48b-c4a65d9d1c8b
jetson@yahboom:~$ sudo swapon /var/8GB.swap
swapon: /var/8GB.swap: insecure permissions 0644, 0600 suggested.
jetson@yahboom:~$ echo "/var/8GB.swap none swap sw 0 0" | sudo tee -a /etc/fstab
/var/8GB.swap none swap sw 0 0
jetson@yahboom:~$ cat /etc/fstab
# /etc/fstab: static file system information.
#
# These are the filesystems that are always mounted on boot, you can
# override any of these by copying the appropriate line from this file into
# /etc/fstab and tweaking it as you see fit. See fstab(5).
#
# <file system> <mount point>          <type>          <options>          <dump> <p
ass>
/dev/root                /                ext4             defaults            0 1
UUID=0C52-BC6C /boot/efi vfat defaults 0 1
/var/8GB.swap none swap sw 0 0
jetson@yahboom:~$
```

## 2.1. Disable ZRAM swap configuration

Disable ZRAM swap configuration on Jetson devices: ZRAM compresses and stores memory pages in memory to reduce reliance on disk.

```
sudo systemctl disable nvzramconfig
```

## 2.2, Create 8GB file

Use `fallocate` to create a file of 8GB in size, located in the `/var/8GB.swap` path.

```
sudo fallocate -l 8G /var/8GB.swap
```

## 2.3. Set the swap space format

```
sudo mkswap /var/8GB.swap
```

## 2.4. Enable swap space

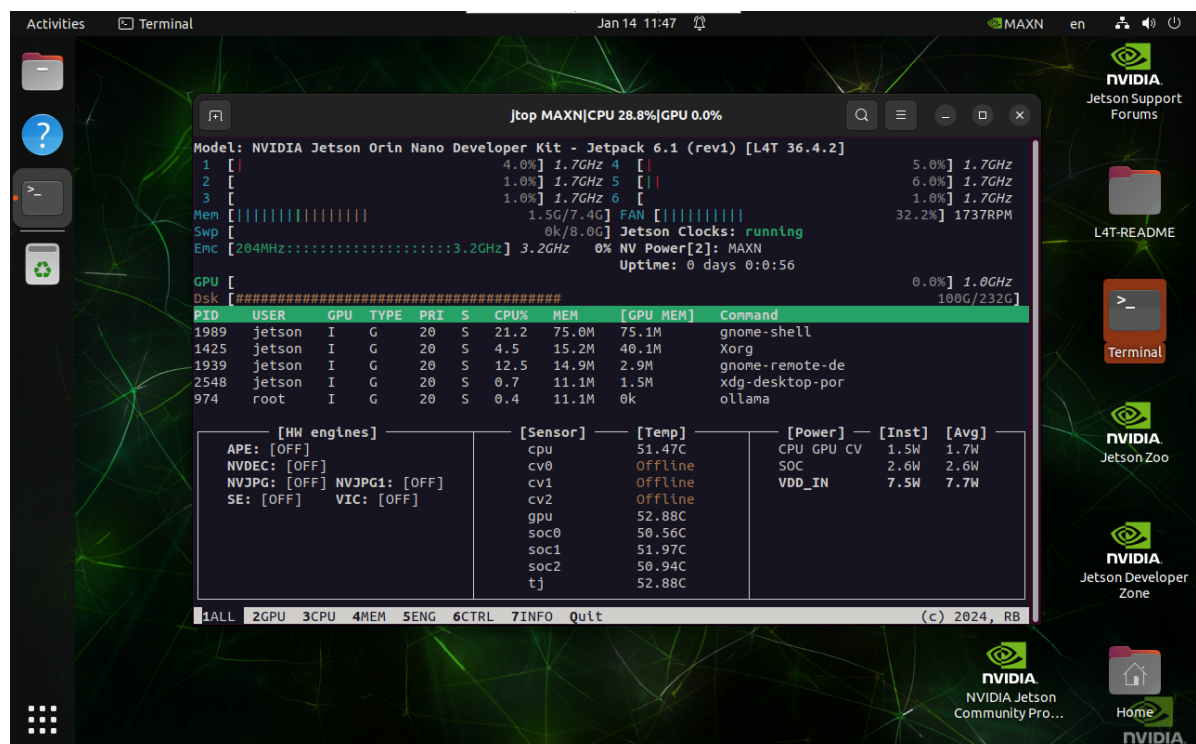
```
sudo swapon /var/8GB.swap
```

## 2.5. Permanently start swap space

```
echo "/var/8GB.swap none swap sw 0 0" | sudo tee -a /etc/fstab
```

## 3. Verify the expansion

After restarting the system, the system swap space increases to 8GB:



The screenshot shows a terminal window on a Jetson device. The top status bar indicates 'MAXN en' and the date 'Jan 14 11:47'. The terminal output includes the following sections:

- Model:** NVIDIA Jetson Orin Nano Developer Kit - Jetpack 6.1 (rev1) [L4T 36.4.2]
- Mem:** 1.5G/7.4G
- Swp:** 0k/8.0G
- GPU:** 0.0%
- Dsk:** 100G/232G
- Jetson Clocks:** running
- NV Power[2]:** MAXN
- Uptime:** 0 days 0:0:56

PID	USER	GPU	TYPE	PRI	S	CPU%	MEM	GPU MEM	Command
1989	jetson	I	G	20	S	21.2	75.0M	75.1M	gnome-shell
1425	jetson	I	G	20	S	4.5	15.2M	40.1M	Xorg
1939	jetson	I	G	20	S	12.5	14.9M	2.9M	gnome-remote-de
2548	jetson	I	G	20	S	0.7	11.1M	1.5M	xdg-desktop-por
974	root	I	G	20	S	0.4	11.1M	0k	ollama

[HW engines]	[Sensor]	[Temp]	[Power]	[Inst]	[Avg]
APE: [OFF]	cpu	51.47C	CPU GPU CV	1.5W	1.7W
NVDEC: [OFF]	cv0	Offline	SOC	2.6W	2.6W
NVJPG: [OFF]	cv1	Offline	VDD_IN	7.5W	7.7W
SE: [OFF]	cv2	Offline			
	gpu	52.88C			
	soc0	50.56C			
	soc1	51.97C			
	soc2	50.94C			
	tj	52.88C			

At the bottom of the terminal, there is a status bar: 'ALL 2GPU 3CPU 4MEM 5ENG 6CTRL 7INFO Quit (c) 2024, RB'.

