

Exchange space expansion

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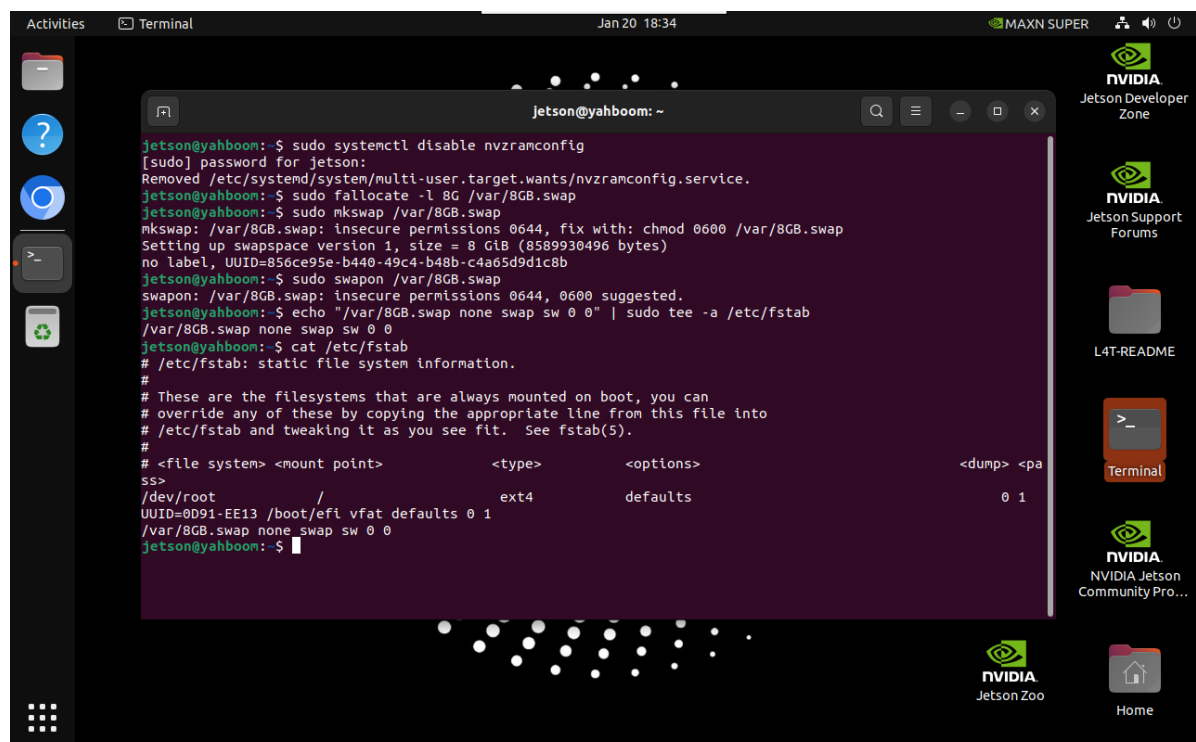
1. Swap space

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. The system comes with 7.6G swap space when it leaves the factory.

2. Expand swap space

```
sudo systemctl disable nvzramconfig
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 on a Jetson device. The user is logged in as 'jetson' at 'yahboom'. The terminal output shows the following commands and their results:

```
jetson@yahboom:~$ sudo systemctl disable nvzramconfig
[sudo] password for jetson:
Removed /etc/systemd/system/multi-user.target.wants/nvzramconfig.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 swspace 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> <pass>
ss>
/dev/root / ext4 defaults 0 1
UUID=0D91-EE13 /boot/efi vfat defaults 0 1
/var/8GB.swap none swap sw 0 0
jetson@yahboom:~$
```

The terminal window is titled 'jetson@yahboom: ~'. The desktop background is dark with a pattern of white dots. On the right side of the desktop, there are several icons: 'NVIDIA Jetson Developer Zone', 'NVIDIA Jetson Support Forums', 'L4T-README', 'Terminal', 'NVIDIA Jetson Community Pro...', 'NVIDIA Jetson Zoo', and 'Home'.

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 increased to 15.6GB:

The screenshot shows a terminal window on a Jetson device. The top bar indicates the date and time as Jan 20 18:28. The terminal output includes the following information:

- Model:** NVIDIA Jetson Orin NX Engineering Reference Developer Kit Super - Jetpack 6.2 [L4T 36]
- Mem:** 1.6G/15.3G
- Swp:** 0k/15.6G
- Jetson Clocks:** running
- GPU:** 0.0% 1.2GHz
- Disk:** 28.2G/232G
- GPU [#####]**
- Process List:**

| PID | USER | GPU | TYPE | PRI | S | CPU% | MEM | [GPU MEM] | Command |
|------|--------|-----|------|-----|---|------|-------|-----------|-----------------|
| 2806 | jetson | I | G | 20 | S | 6.9 | 80.0M | 60.4M | gnome-shell |
| 2653 | jetson | I | G | 20 | S | 0.8 | 12.4M | 37.2M | Xorg |
| 2757 | jetson | I | G | 20 | S | 3.1 | 15.0M | 2.9M | gnome-remote-de |
| 2950 | jetson | I | G | 20 | S | 0.0 | 11.1M | 1.5M | xdg-desktop-por |

Below the process list, there are sections for hardware engines, sensors, temperatures, and power usage:

- [HW engines]**: APE: [OFF], PVA0a: [OFF], DLA0c: [OFF], DLA1c: [OFF], NVENC: [OFF], NVDEC: [OFF], NVJPG: [OFF], NVJPG1: [OFF], SE: [OFF], VIC: [OFF]
- [Sensor]**: cpu, cv0, cv1, cv2, gpu, soc0, soc1, soc2, tj
- [Temp]**: 55.00C, 51.38C, 51.22C, 46.66C, 52.56C, 51.81C, 49.97C, 49.53C, 55.00C
- [Power]**: CPU 2.9W, GPU 2.9W, CV 3.0W, SOC 3.0W, VDD_IN 9.6W
- [Inst]**: 2.9W, 3.0W, 9.6W
- [Avg]**: 2.9W, 3.0W, 9.6W

The bottom of the terminal shows a navigation bar with options: 1ALL, 2GPU, 3CPU, 4MEM, 5ENG, 6CTRL, 7INFO, and Quit. The copyright notice at the bottom right is (c) 2024, RB.

