

Linux

- Swap _____
- find _____
- Linux _____

Swap

Linux Swap

Swap (RAM) Linux Swap

1. Swap

```
free -h
#
swapon --show
#
cat /proc/swaps
```

2. Swap

```
top
# M P CPU
#
htop
```

3. Swap

```
# 4GB Swap
sudo fallocate -l 4G /swapfile
#
sudo dd if=/dev/zero of=/swapfile bs=1M count=4096
```

```
# [ ] [ ] [ ] [ ] [ ] [ ]
sudo chmod 600 /swapfile

# [ ] [ ] Swap[ ]
sudo mkswap /swapfile

# [ ] [ ] Swap[ ]
sudo swapon /swapfile
```

4. [] [] [] [] Swap[]

[] `/etc/fstab` [] [] [] [] [] [] [] []

```
/swapfile none swap sw 0 0
```

5. [] [] Swap[] [] [] [] [] swappiness

[]

swappiness[] [] 0-100[] [] [] [] [] [] [] [] Swap[] [] [] [] [] [] [] [] [] [] 60[]

```
# [ ] [ ] [ ] [ ]
cat /proc/sys/vm/swappiness

# [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
sudo sysctl vm.swappiness=10

# [ ] [ ] [ ] [ ]
echo "vm.swappiness=10" | sudo tee -a /etc/sysctl.conf
sudo sysctl -p
```

6. [] [] [] [] [] [] [] []

vfs_cache_pressure[]

```
# 查看
cat /proc/sys/vm/vfs_cache_pressure

# 设置
sudo sysctl vm.vfs_cache_pressure=50

# 生效
echo "vm.vfs_cache_pressure=50" | sudo tee -a /etc/sysctl.conf
sudo sysctl -p
```

7. 禁用 Swap

```
# 禁用 Swap
sudo swapoff /swapfile

# 删除 Swap
sudo rm /swapfile

# 编辑 /etc/fstab
sudo nano /etc/fstab
```

8. 创建 Swap

```
# 禁用 Swap
sudo swapoff /swapfile

# 创建 Swap 8GB
sudo fallocate -l 8G /swapfile
sudo mkswap /swapfile
sudo swapon /swapfile
```

9. 配置 Swap

```
# 创建 Swap 分区 /dev/sdb1
sudo mkswap /dev/sdb1
sudo swapon /dev/sdb1

# 编辑 /etc/fstab
/dev/sdb1 none swap sw 0 0
```

10. 配置 Swap

```
# 实时监控内存使用情况
watch -n 1 free -h

# 查看 Swap 使用情况
sudo smem -s swap -r

# 查看 Swap 配置
sudo swapon --show
```



1. 配置 Swap 分区 RAM $\geq 4\text{GB}$ 时，swappiness 设置为 10-30
2. 使用 SSD 作为 Swap 分区时，SSD 性能
3. Swap 分区大小
 - RAM $< 2\text{GB}$ 时，Swap = 2 * RAM
 - $2\text{GB} \leq \text{RAM} < 8\text{GB}$ 时，Swap = 1 * RAM
 - RAM $\geq 8\text{GB}$ 时，Swap = 0.5 * RAM
4. 配置 Swap 分区 Swap 分区 Swap

配置 Swap 分区 Linux 系统 Swap 分区



- -print
- -ls ls

```
find /tmp -type f -ls
```



- -delete

```
find /tmp -name "*.tmp" -delete
```



- -exec

```
find . -name "*.bak" -exec rm {} \;  
find /var/log -name "*.log" -exec gzip {} \;
```



- -a -and
- -o -or
- ! -not
- ()

```
find / \( -name "*.jpg" -o -name "*.png" \) -size +1M
```



1.

```
find /tmp -type f -empty -delete
```



```
ps aux | grep "bad_process" # PID
kill -9 PID
```

2. `nohup`

```
nohup python script.py > output.log 2>&1 &
```

3. `top` **CPU**

```
top -o %CPU # CPU
```

`man ps`

Linux

`man`

`man ps`

Linux

1. `ps`

(1) `ps`

`ps` **PID** **CPU**

```
ps aux | grep <PID> #
ps -ef | grep <PID> #
ps -p <PID> -o pid,ppid,cmd,%cpu,%mem,stat #
```

- `%CPU` CPU
 - `%MEM`
 - `STAT` `S=` `R=` `Z=`
 - `PPID` ID

(2) `top` / `htop`

`top` `htop` **CPU**

```
top # CPU
top -p <PID> # PID
htop #
```

- `ls -l`
 - `P` CPU
 - `M`
 - `F1`

2. `ls -l`

(1) `/proc/<PID>`

Linux `ls -l /proc/<PID>`

```
ls /proc/<PID> # ls -l /proc/<PID>
cat /proc/<PID>/status # cat /proc/<PID>/status PID
cat /proc/<PID>/cmdline # cat /proc/<PID>/cmdline
cat /proc/<PID>/environ # cat /proc/<PID>/environ
```

- `ls -l`
 - `status`
 - `statm`
 - `io` I/O

(2) `pmap`

`pmap -x <PID>`

```
pmap -x <PID> # pmap -x <PID>
```

3. `ls -l`

(1) `ls -l`

`ls -l`

```
ls -l -p <PID> # ls -l -p <PID>
ls -l -i :80 # ls -l -i :80
ls -l -u <PID> # ls -l -u <PID>
```

- `ls -l`
 - `-i`

o `-c <PID>` `>` `XXXXXXXXXX`

(2) `netstat` / `ss` `XXXXXXXXXX`

`XXXXXXXXXX` `XXXXXXXXXX` `]`

```
netstat -tulnp | grep <PID> # XXXXXXXXXXXXX
```

```
ss -tulnp | grep <PID> # XXXXXXXXXXXXX
```

4. `XXXXXXXXXXXXXXXXXX`

(1) `pstree` `XXXXXX`

`XXXXXX` `XXXX` `XXXX`

```
pstree -p <PID> # XXXXXXXXX
```

(2) `strace` `XXXXXXXXXX`

`XXXXXX` `XXXX` `XXXXXXXXXX`

```
strace -p <PID> # XXXXXXXXXXXXX
```

```
strace -e open,read <XX> > # XXXXXXXXXXXXX
```

(3) `gdb` `XXXXXXXXXX`

`XXXXXXXXXXXXXXXXXXXXXX`

```
gdb -p <PID> # XXXXXXXXX
```

5. `XXXXXXXXXXXXXXXXXX`

(1) `ulimit`

`XXXX` shell `XXXXXXXXXX`

```
ulimit -a # XXXXXXXXXXXXXXXXXXXXX
```

(2) `/proc/<PID>/limits`

□□□□□□□□

```
cat /proc/<PID>/limits # □□□□□ /□□
```

6. □□□□□□□□

(1) `pidstat` □□□□□

□□□□ CPU□□□□ IO □□□□ sysstat □□

```
pidstat -p <PID> 1 # □□□□□□□□  
pidstat -d -p <PID> # □□□□ I/O
```

(2) `ps -eo` □□□□□□

□□□□□□□□

```
ps -eo pid,ppid,cmd,%cpu,%mem --sort=-%mem | head # □□□□
```

□□□□□□□□

1. □□□□

```
top # □□□ CPU/□□□ PID  
strace -p <PID> # □□□□□□□□  
kill -9 <PID> # □□□□
```

2. □□□□

```
pmap -x <PID> # □□□□□□  
cat /proc/<PID>/status | grep VmRSS # □□□□□□□□
```

3. □□□□

```
lsuf -i :8080 # □□□□□□□□
```

