Swap Space Management

1. Extending a swap space

1.1. Extending the current swap space

(processes using swap must be stopped first)

1.1.1. View the current memory and swap usage:

```
# free -h
```

1.1.2. Display top 10 processes using the swap space including percentage values:

```
# find /proc -maxdepth 2 -path "/proc/[0-9]*/status" -readable -exec awk -v
FS=":" -v TOTSWP="$(sed 1d /proc/swaps | awk 'BEGIN{sum=0} {sum=sum+$(NF-2)}
END{print sum}')" '{process[$1]=$2; sub(/^[ \t]+/,"",process[$1]);} END
{if(process["VmSwap"] && process["VmSwap"] != "0 kB")
{used_swap=process["VmSwap"]; sub(/[ a-zA-Z]+/,"",used_swap);
percent=(used_swap/TOTSWP*100); printf "%10s %-30s %20s
%6.2f%\n",process["Pid"],process["Name"],process["VmSwap"],percent}}' '{}'
\; | awk '{print $(NF-2),$0}' | sort -hr | head | cut -d " " -f2-
```

1.1.3. Verify the volume group has enough space available:

```
# vgs
```

1.1.4. Deactivate the swap space:

```
# swapoff /dev/vg00/swap_lv
```

1.1.5. Extend the logical volume:

```
# lvresize -L +2048M /dev/vg00/swap_lv
```

1.1.6. Format the logical volume as swap space:

```
# mkswap /dev/vg00/swap_lv
```

1.1.7. Activate the swap space:

```
# swapon /dev/vg00/swap_lv
```

1.1.8. View the new memory and swap usage:

```
# free -h
```

1.2. Creating an additional swap space

(processes using swap cannot be stopped)

A. Creating a swap logical volume

1. View the current memory and swap usage:

```
# free -h
```

2. Verify the volume group has enough space available:

```
# vgs
```

3. Create a 2 GB logical volume for swap:

```
# lvcreate -n swap2_lv -L 2048M vg00
```

4. Format the logical volume as swap space:

```
# mkswap /dev/vg00/swap2_lv
```

5. Activate the swap space:

```
# swapon /dev/vg00/swap2_lv
```

6. Edit /etc/fstab to make the swap space available permanently:

```
# echo '/dev/mapper/vg00-swap2_lv swap swap defaults 0 0' >> /etc/fstab
```

7. Update systemd with the new /etc/fstab configuration (RHEL/CentOS 7/8):

```
# systemctl daemon-reload
```

8. View the new memory and swap usage:

```
# free -h
```

B. Creating a swap file

1. View the current memory and swap usage:

```
# free -h
```

2. Verify that there is enough free space in the root file system:

```
# df -h /
```

3. Create a 2 GB swap file:

```
# dd if=/dev/zero of=/swapfile bs=1024 count=2097152
```

4. Format the file as swap space:

```
# mkswap /swapfile
```

5. Set up correct file permissions:

```
# chmod 600 /swapfile
```

6. Activate the swap space:

```
# swapon /swapfile
```

7. Edit /etc/fstab to make the swap space available permanently:

```
# echo '/swapfile swap swap defaults 0 0' >> /etc/fstab
```

8. Update systemd with the new /etc/fstab configuration (RHEL/CentOS 7/8):

```
# systemctl daemon-reload
```

9. View the new memory and swap usage:

```
# free -h
```

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2. Configuring the swappiness value

2.1. Display the swappiness value:

```
# sysctl vm.swappiness
vm.swappiness = 60
```

or

```
# cat /proc/sys/vm/swappiness
60
```

2.2. Permanently change the swappiness to the required value:

```
# echo 'vm.swappiness=30' >> /etc/sysctl.conf
```

or

```
# echo 'vm.swappiness=30' >> /etc/sysctl.d/99-swappiness.conf
```

2.3. Reload the settings:

```
# sysctl -p
```

or

```
# sysctl -p /etc/sysctl.d/99-swappiness.conf
```

2.4. Verify the new swappiness value:

```
# sysctl vm.swappiness
vm.swappiness = 30
```

---

3. Removing a swap space

A. Removing a swap logical volume

1. View the current memory and swap usage:

```
# free -h
```

2. Deactivate the swap space:

```
# swapoff /dev/vg00/swap2_lv
```

3. Remove the swap logical volume:

```
# lvremove /dev/vg00/swap2_lv
```

4. Remove the entry from /etc/fstab:

```
# sed -i '/swap2_lv/d' /etc/fstab
```

5. Update systemd with the new /etc/fstab configuration (RHEL/CentOS 7/8):

```
# systemctl daemon-reload
```

6. View the new memory and swap usage:

```
# free -h
```

B. Removing a swap file

1. View the current memory and swap usage:

```
# free -h
```

2. Deactivate the swap space:

```
# swapoff /swapfile
```

3. Remove the swap file:

```
# rm -f /swapfile
```

4. Remove the entry from /etc/fstab:

```
# sed -i '/swapfile/d' /etc/fstab
```

5. Update systemd with the new /etc/fstab configuration (RHEL/CentOS 7/8):

```
# systemctl daemon-reload
```

6. View the new memory and swap usage:

```
# free -h
```

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