Linux Troubleshooting

Resource Limitation (Soft and Hard limits)

1. Create a user with name: user1

```
sudo useradd user1
```

2. Set the user1 soft limit RAM size to 1 GB

```
su user1
ulimit -Sv 1048576
```

3. Set the user1 soft limit file size to 2MB and Hard Limit file size to 3MB while logged in as user1

```
ulimit -Sf 2048
ulimit -Hf 3072
```

4. Set the user1 Linux open file limit Soft = 5000 hard = 6000 while logged in as user1

```
ulimit -Sn 5000
ulimit -Hn 6000
```

 For the ulimits to persists across reboots, add followings to /etc/security/limits.conf and save the file

```
user1 soft fsize 2048
user1 hard fsize 3072
user1 soft nofile 5000
user1 hard nofile 6000
```

- 5. Set the servers network card's receiving ring buffer to Maximum value
 - find the max of receiving ring buffer

```
ethtool -g enp0s3
```

set to the max of receiving ring buffer

```
sudo ethtool -G enp0s3 rx <max-RX-value>
```

6. Share the screenshot of

i. Ulimit -Ha

```
user1@ubuntu–server:~$ ulimit –Ha
                           (blocks, -c) unlimited (kbytes, -d) unlimited
core file size
data seg size
scheduling priority
                                    (-e) 0
                           (blocks, -f) 3072
(-i) 7599
file size
pending signals
max locked memory
                           (kbytes, -1) 65536
                           (kbytes, –m) unlimited
max memory size
open files
                                    (-n) 6000
                       (512 bytes, -p) 8
(bytes, -q) 819200
pipe size
POSIX message queues
real–time priority
                                    (-r) 0
stack size
                           (kbytes, -s) unlimited
cpu time
                          (seconds, -t) unlimited
                                   (-u) 7599
max user processes
                           (kbytes, –v) unlimited
virtual memory
                                    (-x) unlimited
file locks
user1@ubuntu-server:~$
```

ii. Ulimit -Sa

```
user1@ubuntu–server:~$ ulimit –Ha
                          (blocks, -c) unlimited
(kbytes, -d) unlimited
core file size
data seg size
scheduling priority
                                   (-e) 0
file size
                           (blocks, -f) 3072
                                   (-i) 7599
pending signals
                           (kbytes, −1) 65536
(kbytes, −m) unlimited
max locked memory
max memory size
                                   (-n) 6000
open files
pipe size
                       (512 bytes, -p) 8
                           (bytes, -q) 819200
POSIX message queues
real–time priority
                                   (-r) 0
                           (kbytes, –s) unlimited
stack size
                         (seconds, -t) unlimited
cpu time
                                   (-u) 7599
max user processes
virtual memory
                           (kbytes, -v) unlimited
                                   (-x) unlimited
file locks
user1@ubuntu–server:~$
```

iii. /etc/security/limits.conf

```
hirumal@ubuntu–server :~ $ tail –16 /etc/security/limits.conf
                 soft
                                          0
                         core
                                          100000
#root
                 hard
                         core
                                          10000
                 hard
                         rss
#@student
                                          20
                 hard
                         nproc
#@faculty
                                          20
                 soft
                         nproc
#@faculty
                                          50
                 hard
                         nproc
#ftp
                 hard
                         nproc
#ftp
                                          /ftp
                         chroot
#@student
                         maxlogins
                 soft
                                          2048
user1
                         fsize
user1
                 hard
                         fsize
                                          3072
                         nofile
                                          5000
user1
                 soft
                                          6000
                         nofile
user1
                 hard
# End of file
hirumal@ubuntu–server:~ $ _
```

SWAP

Creare Two swap files, and one should be in size of 100MB and second file should 200MB

· create files those will be used as swap files

```
sudo fallocate -1 100M /swapfile1
sudo fallocate -1 200M /swapfile2
```

o if fallocate not installed

```
sudo dd if=/dev/zero of=/swapfile1 bs=1024 count=102400
sudo dd if=/dev/zero of=/swapfile2 bs=1024 count=204800
```

· set permissions

```
sudo chmod 600 /swapfile1
sudo chmod 600 /swapfile2
```

setup the files as swap space

```
sudo mkswap /swapfile1
sudo mkswap /swapfile2
```

· enable swap

```
sudo swapon /swapfile1
sudo swapon /swapfile2
```

1. Assign 200MB swap file a priority 10 and 100MB swap file a priority 20

```
sudo swapoff /swapfile1; sudo swapon -p 20 /swapfile1
sudo swapoff /swapfile2; sudo swapon -p 10 /swapfile2
```

- 2. Configure swap files to mount during a boot
 - append followings to the /etc/fstab file

```
/swapfile1 swap swap pri=20 0 0
/swapfile2 swap swap pri=10 0 0
```

3. Change system swappiness value to 40

```
sudo sysctl vm.swappiness=40
```

- 4. Share the screenshot of
 - i. /etc/fstab

```
hirumal@ubuntu–server :~ $ cat /etc/fstab
# /etc/fstab: static file system information.
# Use 'blkid' to print the universally unique identifier for a
 device; this may be used with UUID= as a more robust way to name devices
 that works even if disks are added and removed. See fstab(5).
# <file system> <mount point>
                                                      <dump>
                               <type> <options>
                                                                <pass>
 / was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/5847351f-a5fe-4622-9f4f-3e073ba9d315 / ext4 defaults 0 0
                       swap
               none
                                S₩
UUID=09ebb14c-0b58-4f35-bdac-3d021c3ecb22 /mnt auto defaults,loop 0 0
/swapfile1 swap swap pri=20 0 0
/swapfile2 swap swap pri=10 0 0
hirumal@ubuntu–server :^
```

ii. free -m

```
hirumal@ubuntu–server
              total
                                         free
                                                   shared
                                                           buff/cache
                                                                         available
                            used
               1987
                             149
                                         1534
                                                                   304
                                                                               1686
Mem:
               2297
                                         2297
Swap:
hirumal@ubuntu–server :~ $
```

iii. swapon -s

```
hirumal@ubuntu–server :~ $ swapon –s
                                                                           Priority
 ilename
                                          Type
                                                          Size
                                                                   Used
                                                          2045948 0
∕swap.img
                                          file
                                                                           -2
                                                                           20
′swapfile1
                                          file
                                                           102396 0
                                          file
                                                                           10
 swapfile2
                                                          204796 0
nirumal@ubuntu–server:~ $ _
```

FTP

Configure and setup the proftpd FTP server.

```
sudo apt update
sudo apt install proftpd
```

use /etc/proftpd/proftpd.conf to configure

If needed change the server name change the server name value in the file.

```
ServerName "prod-devops-master"
```

To only allow users access to their home directory by adding(or uncommenting),

```
# Use this to jail all users in their homes
DefaultRoot ~
```

Whenever changes are made to the configuration files make sure to restart the ftp service. To restart:

```
sudo service proftpd restart
```

1. Create a user called proftpuser , which should be able to upload and download content from the ftp server

```
sudo echo "/bin/false" >> /etc/shells
sudo adduser proftpuser --shell /bin/false --home /home/proftpuser
```

add followings to /etc/proftpd/proftpd.conf and save.

```
<Directory /home/proftpuser>
    Umask 022
    AllowOverwrite off
    <Limit LOGIN>
         AllowUser proftpuser
         DenyAll
          </Limit>
          <Limit ALL>
                AllowUser proftpuser
                DenyAll
                </Limit AllowUser proftpuser
                DenyAll
                </Directory>
```

- 2. Set the proftpd process priority (Nice value) as -5
 - if the server is already running
 - find the process PID

```
ps aux | grep -i 'proftpd'
```

change nice value

```
renice -n -5 process-PID>
```

3. Share screenshot of

i. Top command showing priority of the proftpd process

```
1 user, load
1 sleeping,
                                                         O stopped,
                                                                         O zombie
                                 0.0 ni,100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
1484.1 free, 170.3 used, 333.3 buff/cache
%Cpu(s): 0.0 us, 0.0 sy,
MiB Mem: 1987.8 total,
                      0.0 sy,
                                  1484.1 free,
1iB Տաaր։
              2298.0 total,
                                  2298.0 free,
                                                                       1664.8 avail Mem
                                                        0.0 used.
    PID USER
                     PR NI
                                  VIRT
                                            RES
                                                    SHR S
                                                            %CPU %MEM
                                                                                TIME+ COMMAND
   1600 proftpd
                                                                              0:00.00 proftpd
```

ii. Share the configuration file of proftpd service

https://github.com/HirumalPriyashan/linux-training.git

SQUID Proxy

Setup and configure the Squid proxy server in the Linux box

```
sudo apt update
sudo apt install squid
```

- 1. Make sure to allow HTTP traffic via squid proxy.
 - open /etc/squid/squid.conf

```
sudo nano /etc/squid/squid.conf
```

navigate to the http_access deny all option and change that to the following:

```
http_access allow all
```

o restart the service

```
sudo systemctl restart squid
```

2. Then point your local web browser to Squid proxy and check whether you can access HTTP web sites via the proxy

```
curl -x http://127.0.0.1:3128/ -l http://google.com/
```

- 3. Configure Squid proxy to block following Domains
 - i. .facebook.com and facebook.com
 - ii. .wso2.com and wso2.com
 - iii. Ubuntu.com
 - o create new file for blocked list

```
sudo nano /etc/squid/blocked.acl
```

add followings to the file

```
.facebook.com
.wso2.com
ubuntu.com
```

open the /etc/squid/squid.conf file

```
sudo nano /etc/squid/squid.conf
```

• add the following lines before the first http_access allow statement:

```
acl blocked_websites dstdomain "/etc/squid/blocked.acl"
http_access deny blocked_websites
```

restart the service

```
sudo systemctl restart squid
```

4. Configure Squid proxy daemon so that it will start during the boot in only in 1,3,5 run levels

```
update-rc.d squid defaults
update-rc.d squid disable 2 4 6
update-rc.d squid enable 1 3 5

(runlevel 1 & 6 can be omitted since action will have no effect on those runlevels)
```

- 5. Assign the I/O priority of Constant to the proftpd process (Go via ionice command)
 - o find proftpd service's pid

```
ps aux | grep "proftpd"
```

assign the I/O priority

```
sudo ionice -c 1 -p {pid-of-proftpd}
```

i. Share the configuration file of Squid (You can share configuration file via Github public repository URL)

https://github.com/HirumalPriyashan/linux-training.git