**DISK QUOTA ON “XFS” (RHEL-7)**

A way to limit the users to eat disk space.

Quota can be implemented on behalf of,

         **Block size:**     limit by block size

         **Inode no:**     limit by inode/no of files

Limit is also differentiated in,

         **Soft Limit:** For warnings, it’s like a barrier means if you jump the

 Barrier you will be notified about the jumping incident.

         **Hard Limit:** No way, you jumped the barrier and we notified about your  daredevil act. Now we can not allow you to cross the limits.

XFS quotas are enabled as filesystem mount options when the filesystem is mounted.

**User, Group and Project quotas are enabled independently.**

Each quota type can be specified as noenforce, in this case quota reporting will be maintained but not enforced.

Valid mount options are

**Mount Options                   Description**

**uquota**          Enable user quotas and enforce usage limits.

**gquota**          Enable group quotas and enforce usage limits.

**pquota**          Enable project quotas and enforce usage limits.

**uqnoenforce**     Enable user quotas. Report usage, but do not enforce

usage limits.

**gqnoenforce**     Enable group quotas. Report usage, but do not enforce

usage limits.

**pqnoenforce**     Enable project quotas. Report usage, but do not enforce

usage limits.

Once quotas are enabled, the xfs\_quota tool can be used to set limits and report on disk usage

xfs\_quota has two modes of operation, **basic** and **expert** mode

Basic mode includes commands for reporting disk usage to users.

Expert mode (xfs\_quota -x) contains advanced commands that allow the modification of the quota system.

**BASIC MODE…………………………………..**

[root@rhel7-server ~]# xfs\_quota

xfs\_quota> help

df [-bir] [-hn] [-f file] -- show free and used counts for blocks and inodes

help [command] -- help for one or all commands

print -- list known mount points and projects

quit -- exit the program

quota [-bir] [-gpu] [-hnNv] [-f file] [id|name]... -- show usage and limits

Use 'help commandname' for extended help.

xfs\_quota> df

Filesystem           1K-blocks       Used  Available  Use% Pathname

/dev/sda5             15349760    7022460    8327300   46% /

/dev/sdd1              1038336      32928    1005408    3% /tdir2

/dev/sde1               508588      25760     482828    5% /tdir3

/dev/sdb1              1038336      32928    1005408    3% /tdir1

/dev/sda3              1038336      36812    1001524    4% /home

/dev/sda1               713388     125484     587904   18% /boot

xfs\_quota> print

Filesystem          Pathname

/                   /dev/sda5

/tdir2              /dev/sdd1

/tdir3              /dev/sde1

/tdir1              /dev/sdb1

/home               /dev/sda3

/boot               /dev/sda1

xfs\_quota> help quota

quota [-bir] [-gpu] [-hnNv] [-f file] [id|name]... -- show usage and limits

 display usage and quota information

 -g -- display group quota information

 -p -- display project quota information

 -u -- display user quota information

 -b -- display number of blocks used

 -i -- display number of inodes used

 -r -- display number of realtime blocks used

 -h -- report in a human-readable format

 -n -- skip identifier-to-name translations, just report IDs

 -N -- suppress the initial header

 -v -- increase verbosity in reporting (also dumps zero values)

 -f -- send output to a file

 The (optional) user/group/project can be specified either by name or by

 number (i.e. uid/gid/projid).

xfs\_quota> q

[root@rhel7-server ~]#

**EXPERT MODE……………………..**

[root@rhel7-server ~]# xfs\_quota -x -c

xfs\_quota: option requires an argument -- 'c'

Usage: xfs\_quota [-V] [-x] [-p prog] [-c cmd]... [-d project]... [path]

[root@rhel7-server ~]# xfs\_quota -x -c 'df -h' /home

Filesystem     Size   Used  Avail Use% Pathname

/dev/sda3     1014M  35.9M 978.1M   4% /home

[root@rhel7-server ~]# xfs\_quota -x -c 'df -ih' /home

Filesystem   Inodes   Used   Free Use% Pathname

/dev/sda3      1.0m    236   1.0m   0% /home

**Setting quota for “user1” to limit block & inode via EXPERT MODE……..**

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=20m bhard=30m isoft=50 ihard=75 user1' /home**

xfs\_quota: cannot set limits: Function not implemented 

**Let’s implement the function……..**

[root@rhel7-server ~]# mount -o remount,rw,uquota,gquota /home

[root@rhel7-server ~]# mount |grep /home

/dev/sda3 on /home type xfs (rw,relatime,seclabel,attr2,inode64,noquota)

**Nothing happened……………..**

**It means some more exercise required…………..**

[root@rhel7-server ~]# umount /home

[root@rhel7-server ~]# mount -o uquota,gquota /dev/sda3 /home

[root@rhel7-server ~]# mount |grep /home

/dev/sda3 on /home type xfs (rw,relatime,seclabel,attr2,inode64,usrquota,grpquota)

[root@rhel7-server ~]# grep home /etc/fstab

UUID=87eef21b-7f45-4b27-a64e-81c3afa53b96 /home                   xfs     defaults        1 2

**No changes in /etc/fstab, means it might not sustain reboot.**

[root@rhel7-server ~]# xfs\_quota -x /home

xfs\_quota> print

Filesystem          Pathname

/home               /dev/sda3 (uquota, gquota)

28          0          0     00 [--------]

xfs\_quota> state

User quota state on /home (/dev/sda3)

  Accounting: ON

  Enforcement: ON

  Inode: #1152 (2 blocks, 2 extents)

Group quota state on /home (/dev/sda3)

  Accounting: ON

  Enforcement: ON

  Inode: #1190 (2 blocks, 2 extents)

Project quota state on /home (/dev/sda3)

  Accounting: OFF

  Enforcement: OFF

  Inode: #1190 (2 blocks, 2 extents)

Blocks grace time: [7 days 00:00:30]

Inodes grace time: [7 days 00:00:30]

Realtime Blocks grace time: [7 days 00:00:30]

xfs\_quota> report -h

User quota on /home (/dev/sda3)

                        Blocks

User ID      Used   Soft   Hard Warn/Grace

---------- ---------------------------------

root          32K      0      0  00 [------]

araman       3.5M      0      0  00 [------]

raman         52K      0      0  00 [------]

user1         56K    20M    30M  00 [------]

user3         28K      0      0  00 [------]

user4         28K      0      0  00 [------]

user5         28K      0      0  00 [------]

Group quota on /home (/dev/sda3)

                        Blocks

Group ID     Used   Soft   Hard Warn/Grace

---------- ---------------------------------

root          32K      0      0  00 [------]

araman       3.5M      0      0  00 [------]

raman         52K      0      0  00 [------]

user1         56K      0      0  00 [------]

user3         28K      0      0  00 [------]

user4         28K      0      0  00 [------]

user5         28K      0      0  00 [------]

xfs\_quota> limit bsoft=10M bhard=15M user3   setting quota via BASIC MODE

xfs\_quota> report -h

User quota on /home (/dev/sda3)

                        Blocks

User ID      Used   Soft   Hard Warn/Grace

---------- ---------------------------------

root          32K      0      0  00 [------]

araman       3.5M      0      0  00 [------]

raman         52K      0      0  00 [------]

user1         56K    20M    30M  00 [------]

user3         28K    10M    15M  00 [------]

user4         28K      0      0  00 [------]

user5         28K      0      0  00 [------]

Group quota on /home (/dev/sda3)

                        Blocks

Group ID     Used   Soft   Hard Warn/Grace

---------- ---------------------------------

root          32K      0      0  00 [------]

araman       3.5M      0      0  00 [------]

raman         52K      0      0  00 [------]

user1         56K      0      0  00 [------]

user3         28K      0      0  00 [------]

user4         28K      0      0  00 [------]

user5         28K      0      0  00 [------]

**SETTING QUOTA BY EXPERT MODE……………………..**

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=25m bhard=50m isoft=50 ihard=100 user1' /home**

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=125m bhard=150m isoft=200 ihard=500 user3' /home**

[root@rhel7-server ~]# xfs\_quota -x -c "report -bih" /home

User quota on /home (/dev/sda3)

                        Blocks                            Inodes

User ID      Used   Soft   Hard Warn/Grace     Used   Soft   Hard Warn/Grace

---------- --------------------------------- ---------------------------------

root          32K      0      0  00 [------]      4      0      0  00 [------]

araman       3.5M      0      0  00 [------]    133      0      0  00 [------]

raman         52K      0      0  00 [------]     27      0      0  00 [------]

user1         56K    25M    50M  00 [------]     30     50    100  00 [------]

user3         28K   125M   150M  00 [------]     14    200    500  00 [------]

user4         28K      0      0  00 [------]     14      0      0  00 [------]

user5         28K      0      0  00 [------]     14      0      0  00 [------]

**REMOVING QUOTA BY EXPERT MODE……………………..**

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=0 bhard=0 isoft=0 ihard=0 user1' /home**

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=0 bhard=0 isoft=0 ihard=0 user3' /home**

[root@rhel7-server ~]# xfs\_quota -x -c "report -bih" /home

User quota on /home (/dev/sda3)

                        Blocks                            Inodes

User ID      Used   Soft   Hard Warn/Grace     Used   Soft   Hard Warn/Grace

---------- --------------------------------- ---------------------------------

root          32K      0      0  00 [------]      4      0      0  00 [------]

araman       3.5M      0      0  00 [------]    133      0      0  00 [------]

raman         52K      0      0  00 [------]     27      0      0  00 [------]

user1         56K      0      0  00 [------]     30      0      0  00 [------]

user3         28K      0      0  00 [------]     14      0      0  00 [------]

user4         28K      0      0  00 [------]     14      0      0  00 [------]

user5         28K      0      0  00 [------]     14      0      0  00 [------]

[root@rhel7-server ~]# xfs\_quota -x -c 'off -ugp -v' /home

User quota are not enabled on /dev/sda3

**[root@rhel7-server ~]# xfs\_quota -x -c 'limit bsoft=125m bhard=150m isoft=200 ihard=500 user3' /home**

xfs\_quota: cannot set limits: Function not implemented see the msg

[root@rhel7-server ~]# mount |grep /home

/dev/sda3 on /home type xfs (rw,relatime,seclabel,attr2,inode64,noquota)

**Enable the quota…………………..**

Did changes at /home in /etc/fstab

[root@rhel7-server ~]# grep home /etc/fstab

UUID=87eef21b-7f45-4b27-a64e-81c3afa53b96 /home                   xfs     defaults,uquota,gquota        1 2

**Trying to implement quota……..**

[root@rhel7-server ~]# xfs\_quota -x  -c "enable -gu -v"  /home

XFS\_QUOTAON: Function not implemented

[root@rhel7-server ~]# xfs\_quota -x /home

xfs\_quota> report

xfs\_quota> q

[root@rhel7-server ~]# mount -o remount,rw /home

[root@rhel7-server ~]# mount |grep /home

/dev/sda3 on /home type xfs (rw,relatime,seclabel,attr2,inode64,noquota)

**Nothing Happened,**

**Reboot the system……………………………..**

[root@rhel7-server ~]# xfs\_quota -x  -c "enable -gu -v"  /home

XFS\_QUOTAON: File exists

[root@rhel7-server ~]# mount |grep /home

/dev/sda3 on /home type xfs (rw,relatime,seclabel,attr2,inode64,**usrquota**,**grpquota**)

[root@rhel7-server ~]# xfs\_quota -x /home

xfs\_quota> report -b

User quota on /home (/dev/sda3)

                               Blocks

User ID          Used       Soft       Hard    Warn/Grace

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root               32          0          0     00 [--------]

araman           3596          0          0     00 [--------]

raman              52          0          0     00 [--------]

user1              56          0          0     00 [--------]

user3              28          0          0     00 [--------]

user4              28          0          0     00 [--------]

user5              28          0          0     00 [--------]

Group quota on /home (/dev/sda3)

                               Blocks

Group ID         Used       Soft       Hard    Warn/Grace

---------- --------------------------------------------------

root               32          0          0     00 [--------]

araman           3596          0          0     00 [--------]

raman              52          0          0     00 [--------]

user1              56          0          0     00 [--------]

user3              28          0          0     00 [--------]

user4              28          0          0     00 [--------]

user5              28          0          0     00 [--------]

xfs\_quota> state -u

User quota state on /home (/dev/sda3)

  Accounting: ON

  Enforcement: ON

  Inode: #1152 (2 blocks, 2 extents)

Blocks grace time: [7 days 00:00:30]

Inodes grace time: [7 days 00:00:30]

Realtime Blocks grace time: [7 days 00:00:30]

xfs\_quota> timer -b 3days

xfs\_quota> state -u

User quota state on /home (/dev/sda3)

  Accounting: ON

  Enforcement: ON

  Inode: #1152 (2 blocks, 2 extents)

Blocks grace time: [3 days 00:00:30]

Inodes grace time: [7 days 00:00:30]

Realtime Blocks grace time: [7 days 00:00:30]