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File Server

Assignment 4

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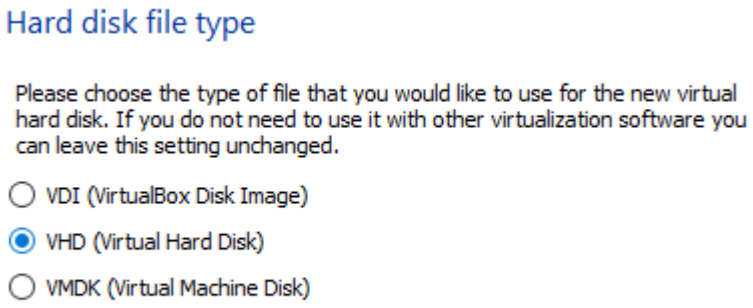
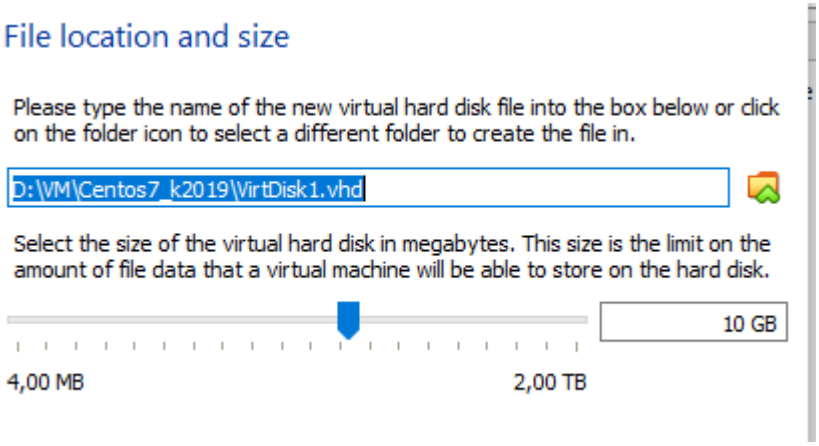
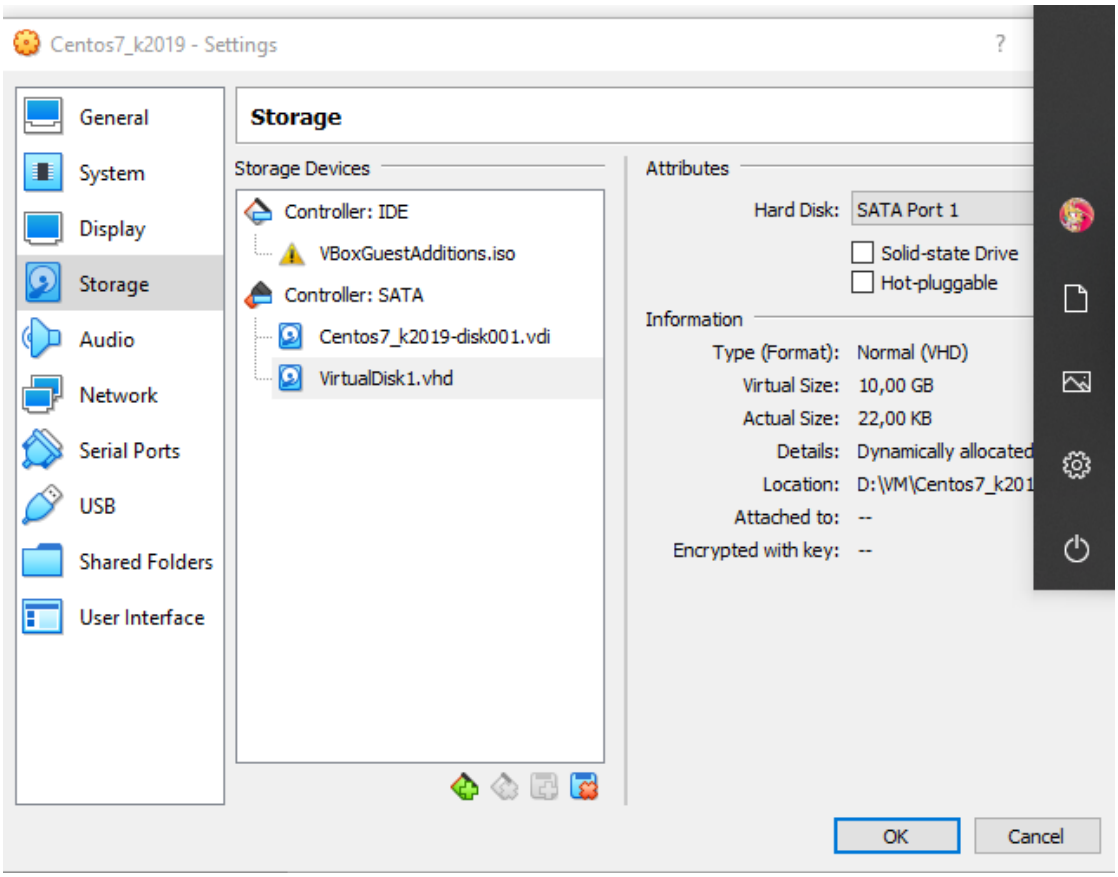
Sisältö

1 LVM partitioning




File location and size
Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.
D:\VM\Centos7_k2019\VirtDisk1.vhd
Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.
10 GB
4,00 MB
2,00 TB


Centos7_k2019 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Storage
Storage Devices
Controller: IDE
VBoxGuestAdditions.iso
Controller: SATA
Centos7_k2019-disk001.vdi
VirtualDisk1.vhd
Attributes
Hard Disk:
SATA Port 1
Solid-state Drive
Hot-pluggable
Information
Type (Format): Normal (VHD)
Virtual Size: 10,00 GB
Actual Size: 22,00 KB
Details: Dynamically allocated
Location: D:\VM\Centos7_k201
Attached to: --
Encrypted with key: --
OK
Cancel

```
Disk label type: dos
Disk identifier: 0x000a565a

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *        2048     1026047      512000   83  Linux
/dev/sda2         1026048    33554431    16264192   8e  Linux LVM

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/mapper/centos-root: 14.9 GB, 14889779200 bytes, 29081600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/mapper/centos-swap: 1719 MB, 1719664640 bytes, 3358720 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

[root@lab1.k8684.local k8684]# _
```

Creating new primary partition

```
[root@lab1.k8684.local ~]# fdisk /dev/sdb
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x5d42c82a.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-20971519, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-20971519, default 20971519):
Using default value 20971519
Partition 1 of type Linux and of size 10 GiB is set
```

Creating new LVM PV on sdb1 partition

```
[root@lab1.k8684.local ~]# pvcreate /dev/sdb1
  Physical volume "/dev/sdb1" successfully created.
```

New volume group

```
[root@lab1.k8684.local ~]# vgcreate vgstorage /dev/sdb1
  Volume group "vgstorage" successfully created
```

Creating new logical volume, within vgstorage group and giving it 100% of space available

```
[root@lab1.k8684.local ~]# lvcreate -n data vgstorage -l 100%FREE
  Logical volume "data" created.
```

Output of lvdisplay

```
--- Logical volume ---
LV Path                /dev/vgstorage/data
LV Name                data
VG Name                vgstorage
LV UUID                nyYDk6-DONW-Y4SM-zivS-coBB-a6gO-K9Hcw5
LV Write Access        read/write
LV Creation host, time lab1.k8684.local, 2019-12-08 13:38:13 +0200
LV Status              available
# open                 0
LV Size                <10.00 GiB
Current LE             2559
Segments               1
Allocation             inherit
Read ahead sectors     auto
- currently set to     8192
Block device           253:2
```

2 Filesystem and mountpoint

Creating new XFS file system on lvm partition.

```
[root@lab1.k8684.local ~]# mkfs.xfs /dev/vgstorage/data
meta-data=/dev/vgstorage/data    isize=512    agcount=4, agsize=655104 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=0, sparse=0
data     =                       bsize=4096   blocks=2620416, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0 ftype=1
log      =internal log           bsize=4096   blocks=2560, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
```

Creating new directory /mnt/data

```
[root@lab1.k8684.local ~]# mkdir /mnt/data
```

Mounting new filesystem on startup

```
/dev/vgstorage/data /mnt/data xfs defaults 0 0
```

After server reboot we can see

```
[root@lab1.k8684.local mnt]# df -H
Filesystem                  Size  Used Avail Use% Mounted on
devtmpfs                    508M     0  508M   0% /dev
tmpfs                       520M     0  520M   0% /dev/shm
tmpfs                       520M  7.0M  513M   2% /run
tmpfs                       520M     0  520M   0% /sys/fs/cgroup
/dev/mapper/centos-root      15G  2.1G   13G  14% /
/dev/sda1                   521M  222M  300M  43% /boot
/dev/mapper/vgstorage-data   11G   34M   11G   1% /mnt/data
tmpfs                       104M     0  104M   0% /run/user/0
```

3 Samba

Installing samba

```
[root@lab1.k8684.local mnt]# yum install samba samba-client
```

Configuring

```
Cmder
 GNU nano 2.3.1                        File: /etc/samba/smb.conf

# See smb.conf.example for a more detailed config file or
# read the smb.conf manpage.
# Run 'testparm' to verify the config is correct after
# you modified it.

[global]
        workgroup = k8684.zz
        netbios name = SMBSERVER
        map to guest = Bad User
```

Setting on SELinux Boolean

```
[root@lab1.k8684.local mnt]# getsebool samba_enable_home_dirs
samba_enable_home_dirs --> off
```

```
[root@lab1.k8684.local mnt]# setsebool samba_enable_home_dirs on
[root@lab1.k8684.local mnt]# getsebool samba_enable_home_dirs
samba_enable_home_dirs --> on
```

Creating users sulo and teppo, adding samba password for them

```
k8684
teppo
sulo
```

Figure 1 output of “getent passwd | cut -d: -f1”

Users sulo and teppo were created during labra 1

Adding samba password to existing users

```
[root@lab1.k8684.local mnt]# smbpasswd -a sulo
New SMB password:
Retype new SMB password:
Added user sulo.
[root@lab1.k8684.local mnt]# smbpasswd -a teppo
New SMB password:
Retype new SMB password:
Added user teppo.
```

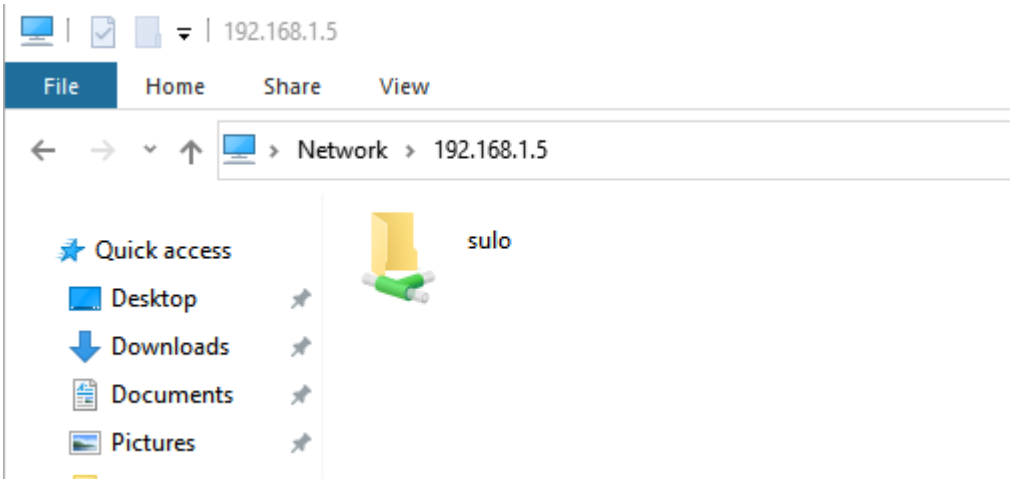
Permamently adding new service – samba

```
[root@lab1.k8684.local mnt]# firewall-cmd --permanent --add-service=samba
success
```

Enabling smb and nmb services

```
[root@lab1.k8684.local mnt]# systemctl enable samba
Failed to execute operation: No such file or directory
[root@lab1.k8684.local mnt]# systemctl enable samba-service
Failed to execute operation: No such file or directory
[root@lab1.k8684.local mnt]# systemctl enable smb
Created symlink from /etc/systemd/system/multi-user.target.wants/smb.service to /usr/lib/systemd/system/smb.service.
[root@lab1.k8684.local mnt]# systemctl enable nmb
Created symlink from /etc/systemd/system/multi-user.target.wants/nmb.service to /usr/lib/systemd/system/nmb.service.
[root@lab1.k8684.local mnt]# systemctl start smb
[root@lab1.k8684.local mnt]# systemctl starn nmb
Unknown operation 'starn'.
[root@lab1.k8684.local mnt]# systemctl start nmb
[root@lab1.k8684.local mnt]# systemctl status smb
● smb.service - Samba SMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2019-12-08 18:14:53 EET; 12s ago
     Docs: man:smbd(8)
```

Testing connection on host machine



4 Restricted folder

Creating new group, adding existing users to it

```
[root@lab1.k8684.local ~]# groupadd smbusers
[root@lab1.k8684.local ~]# sudo groupadd sulo
groupadd: group 'sulo' already exists
[root@lab1.k8684.local ~]# usermod -a -G smbusers sulo
[root@lab1.k8684.local ~]# usermod -a -G smbusers teppo
```

Creating directory and changing owner

```
[root@lab1.k8684.local ~]# mkdir /mnt/data/restricted
[root@lab1.k8684.local ~]# chown :smbusers /mnt/data/restricted/
```

Changing permission

```
[root@lab1.k8684.local ~]# chmod 2770 /mnt/data/restricted/
[root@lab1.k8684.local ~]# cd /mnt/data/
[root@lab1.k8684.local data]# ls -al
total 0
drwxr-xr-x. 3 root root     24 Dec  8 18:55 .
drwxr-xr-x. 3 root root     17 Dec  8 17:39 ..
drwxrws---. 2 root smbusers  6 Dec  8 18:55 restricted
[root@lab1.k8684.local data]#
```

Changing context of folder

```
[root@lab1.k8684.local data]# chcon -t samba_share_t restricted/
```

Modifying conf file

```
[limited]
        path=/mnt/data/restricted
        writable=yes
        valid users = @smbusers
        create mode = 660
        directory mode = 770
```

Rebooting server

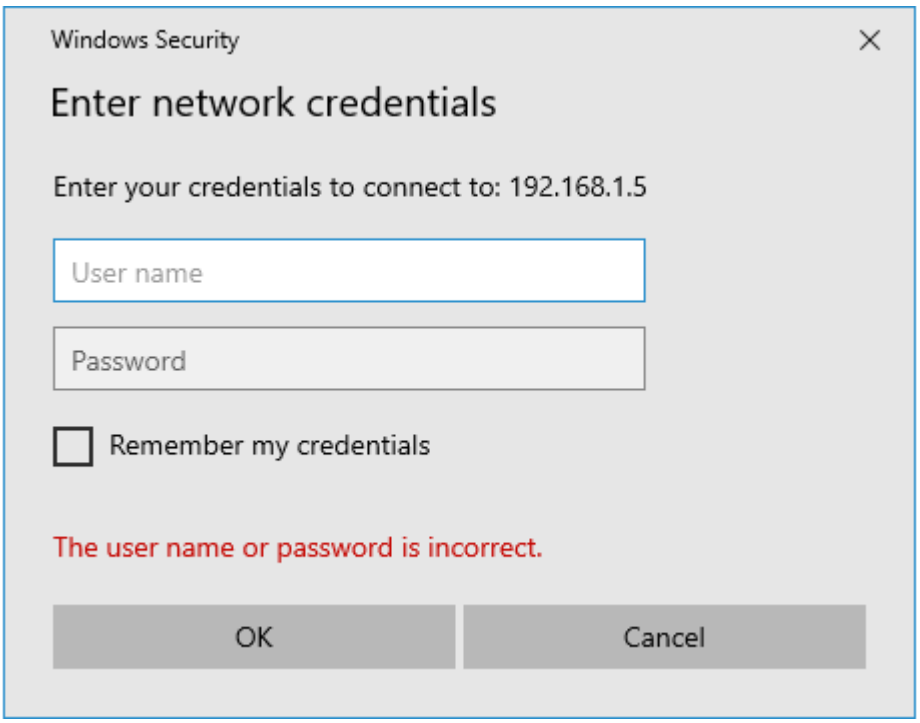
```
[root@lab1.k8684.local data]# systemctl reboot
Connection to 192.168.1.5 closed by remote host.
Connection to 192.168.1.5 closed.

A:\cmder
λ ssh root@192.168.1.5
root@192.168.1.5's password:
Last login: Sun Dec  8 18:40:41 2019 from 192.168.1.246
[root@lab1.k8684.local ~]#
```

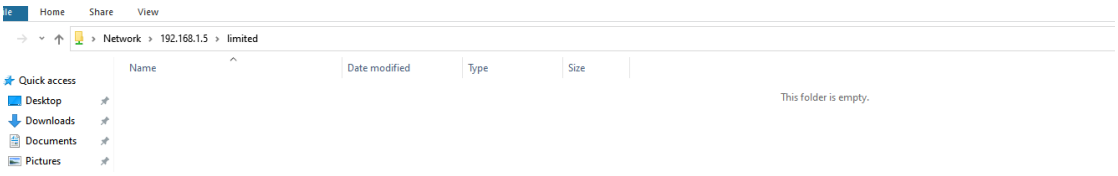
Removing old connection from Windows

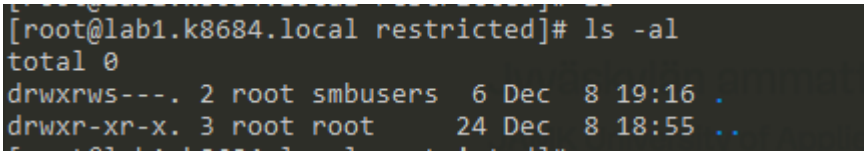
```
PS C:\Users\andre> net use \\192.168.1.5\sulo /delete
\\192.168.1.5\sulo was deleted successfully.
```

Now system asks to login again

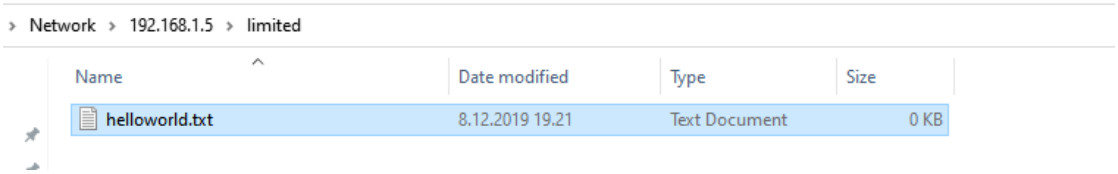


Now we can access limited folder





Creating new test file

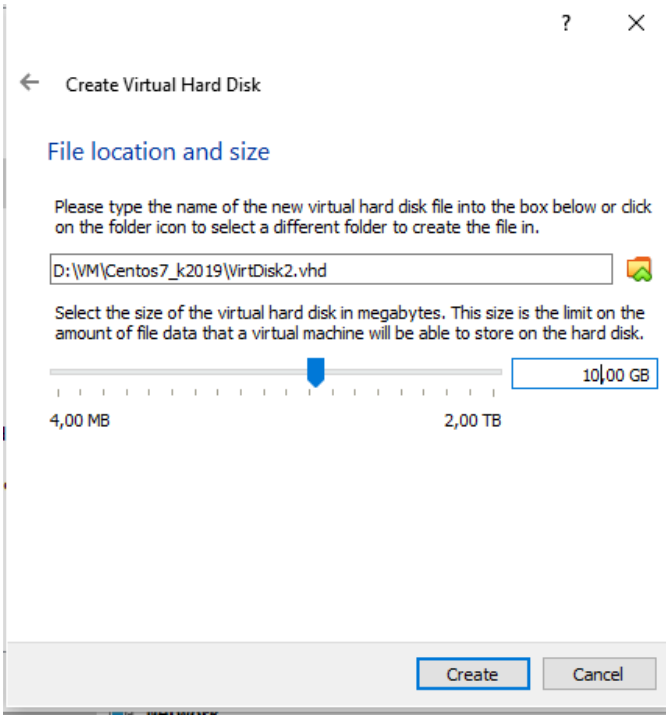


Same file is created under restricted folder with right group

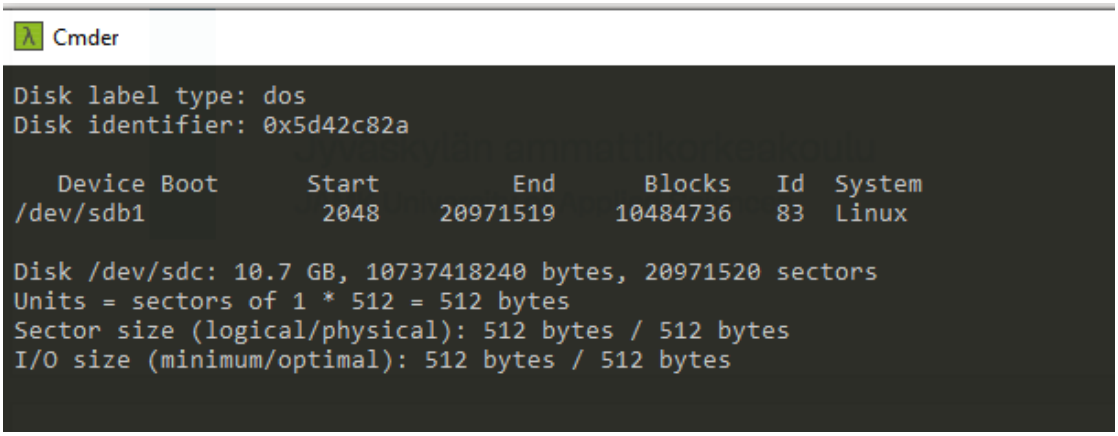
```
[root@lab1.k8684.local restricted]# ls -al
total 0
drwxrws---. 2 root smbusers 28 Dec  8 19:21 .
drwxr-xr-x. 3 root root     24 Dec  8 18:55 ..
-rw-rw----. 1 sulo smbusers  0 Dec  8 19:21 helloworld.txt
```

5 Adding more space

Adding new disk



System can see new sdc disk



Creating partition with fdisk

```
Disk /dev/sdc: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x6ef42e65

   Device Boot      Start         End      Blocks   Id  System
/dev/sdc1            2048    20971519    10484736   83  Linux
```

New LVM PV

```
[root@lab1.k8684.local ~]# pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created.
```

Adding new PV to existing volume group

```
[root@lab1.k8684.local ~]# vgextend vgstorage /dev/sdc1
  Volume group "vgstorage" successfully extended
```

Listing all groups

```
[root@lab1.k8684.local ~]# pvs
  PV         VG        Fmt  Attr PSize   PFree
  /dev/sda2  centos    lvm2 a--  <15.51g  40.00m
  /dev/sdb1  vgstorage lvm2 a--  <10.00g      0
  /dev/sdc1  vgstorage lvm2 a--  <10.00g <10.00g
[root@lab1.k8684.local ~]# vgs
  VG        #PV #LV #SN Attr   VSize   VFree
  centos      1   2   0 wz--n- <15.51g  40.00m
  vgstorage   2   1   0 wz--n-  19.99g <10.00g
[root@lab1.k8684.local ~]# lvs
  LV   VG        Attr       LSize   Pool Origin Data%  Meta%  Move Log Cpy%Sync Convert
  root centos    -wi-ao---- <13.87g
  swap centos    -wi-ao----   1.60g
  data vgstorage -wi-ao---- <10.00g
```

Checking available space with vgdisplay

```
--- Volume group ---
VG Name               vgstorage
System ID
Format                lvm2
Metadata Areas        2
Metadata Sequence No  3
VG Access             read/write
VG Status             resizable
MAX LV                0
Cur LV                1
Open LV               1
Max PV                0
Cur PV                2
Act PV                2
VG Size               19.99 GiB
PE Size               4.00 MiB
Total PE              5118
Alloc PE / Size       2559 / <10.00 GiB
Free  PE / Size       2559 / <10.00 GiB
VG UUID               NEFd0h-YL2D-j0Zp-ghu5-aZ1I-yrAT-7LGAYF
```

We can see 2559 block available, resizing

```
[root@lab1.k8684.local ~]# lvextend -l +2559 /dev/vgstorage/data
  Size of logical volume vgstorage/data changed from <10.00 GiB (2559 extents) to 19.99 GiB (5118 extents).
  Logical volume vgstorage/data successfully resized.
```

```
--- Volume group ---
VG Name               vgstorage
System ID
Format                lvm2
Metadata Areas        2
Metadata Sequence No  4
VG Access             read/write
VG Status             resizable
MAX LV                0
Cur LV                1
Open LV               1
Max PV                0
Cur PV                2
Act PV                2
VG Size               19.99 GiB
PE Size               4.00 MiB
Total PE              5118
Alloc PE / Size       5118 / 19.99 GiB
Free  PE / Size       0 / 0
VG UUID               NEFd0h-YL2D-j0Zp-ghu5-aZ1I-yrAT-7LGAYF
```

At the end extending physical storage

```
[root@lab1.k8684.local vgstorage]# xfs_growfs /dev/vgstorage/data
meta-data=/dev/mapper/vgstorage-data isize=512    agcount=4, agsize=655104 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=0 spinodes=0
data     =                       bsize=4096   blocks=2620416, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0 ftype=1
log      =internal               bsize=4096   blocks=2560, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
data blocks changed from 2620416 to 5240832
[root@lab1.k8684.local vgstorage]# df -h
Filesystem                Size  Used Avail Use% Mounted on
devtmpfs                  485M     0  485M   0% /dev
tmpfs                     496M     0  496M   0% /dev/shm
tmpfs                     496M  6.7M  489M   2% /run
tmpfs                     496M     0  496M   0% /sys/fs/cgroup
/dev/mapper/centos-root    14G  2.0G   12G  15% /
/dev/sda1                 497M  212M  286M  43% /boot
/dev/mapper/vgstorage-data  20G   33M   20G   1% /mnt/data
tmpfs                     100M     0  100M   0% /run/user/0
[root@lab1.k8684.local vgstorage]#
```