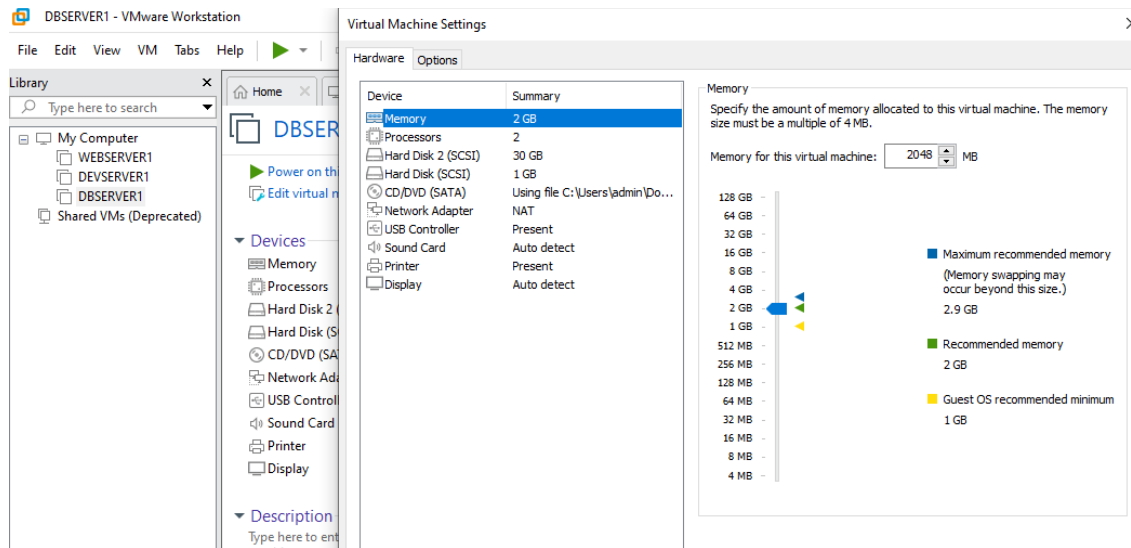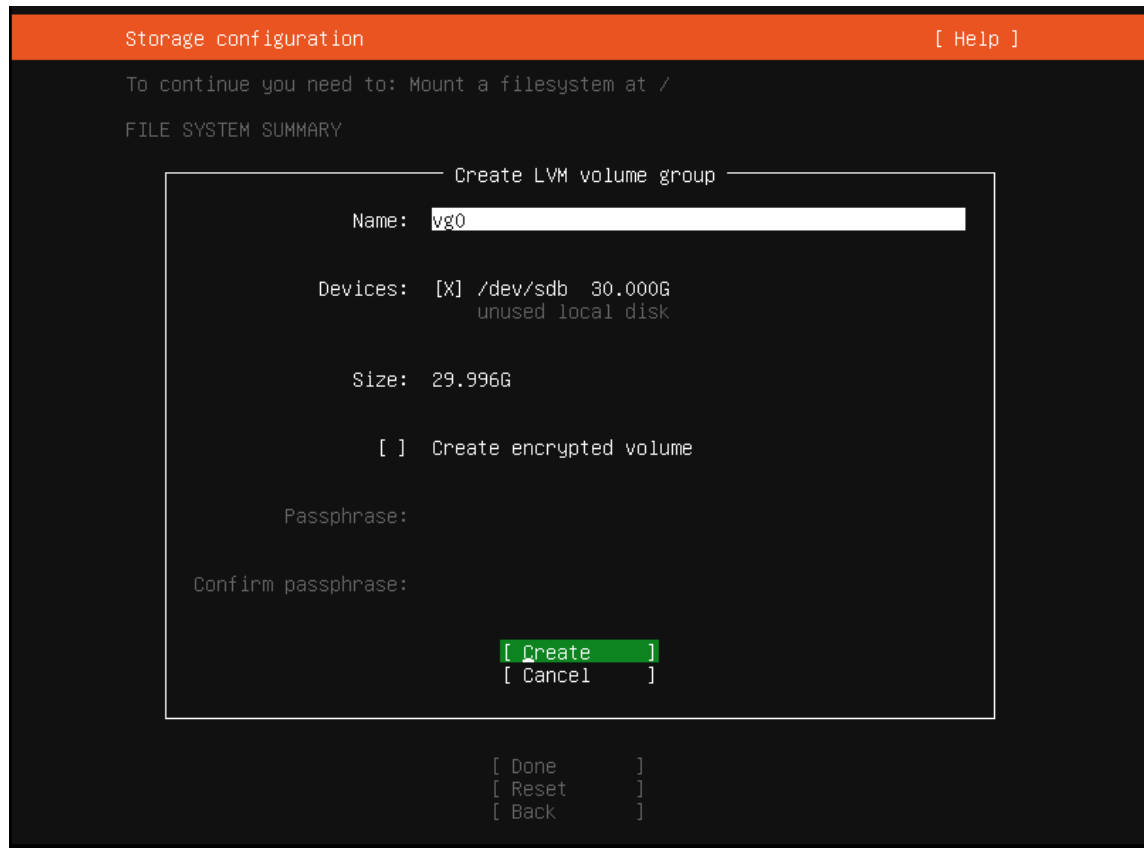## Test Environment

Two virtual disks assigned
1GB – Boot partition
30GB – LVM partition [/, var, home, usr, tmp]

Assign LVM group name = **vg0 [Total capacity 30GB]**

```
Storage configuration                                              [ Help ]

To continue you need to: Mount a filesystem at /

FILE SYSTEM SUMMARY

  No disks or partitions mounted.


AVAILABLE DEVICES

  DEVICE          TYPE              SIZE
[ vg0 (new)       LVM volume group  29.996G  ► ]
  unused

[ /dev/sda        local disk         1.000G  ► ]
  free space                       1021.000M

[ Create software RAID (md) ► ]
[ Create volume group (LVM) ► ]


USED DEVICES

  DEVICE          TYPE              SIZE
[ /dev/sda        local disk         1.000G  ► ]
  partition 1   new, bios_grub       1.000M  ►

[ /dev/sdb        local disk        30.000G  ► ]
  PV of LVM volume group vg0

                        [ Done   ]
                        [ Reset  ]
                        [ Back   ]
```

```
Storage configuration                                              [ Help ]

FILE SYSTEM SUMMARY                                                     ▲

  MOUNT POINT    SIZE     TYPE      DEVICE TYPE
[ /             2.000G   new ext4   new LVM logical volume ► ]
[ /home         2.000G   new ext4   new LVM logical volume ► ]
[ /tmp          2.000G   new ext4   new LVM logical volume ► ]
[ /usr          2.000G   new ext4   new LVM logical volume ► ]
[ /var          8.000G   new ext4   new LVM logical volume ► ]


AVAILABLE DEVICES

  DEVICE                             TYPE               SIZE
[ vg0 (new)                          LVM volume group  29.996G  ► ]
  free space                                           13.996G

[ /dev/sda                           local disk         1.000G  ► ]
  free space                                          1021.000M

[ Create software RAID (md) ► ]
[ Create volume group (LVM) ► ]


USED DEVICES

  DEVICE                             TYPE               SIZE
[ vg0 (new)                          LVM volume group  29.996G  ► ]
  lv-0       new, to be formatted as ext4, mounted at /       2.000G  ►
  lv-1       new, to be formatted as ext4, mounted at /var    8.000G  ►   ▼

                        [ Done   ]
                        [ Reset  ]
                        [ Back   ]
```

Created LVM partitions

/ = 2GB, /var = 8GB, /home= 2GB, /usr= 2GB, /tmp=2 GB

Note: Out of **30GB** LVM partition, we allocated **16GB** for root partitions and **13.99GB** is available for future usage

Partitions overview

$ df -h

```
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ df -h
Filesystem                                                                      Size  Used Avail Use% Mounted on
udev                                                                            955M     0  955M   0% /dev
tmpfs                                                                           198M  948K  197M   1% /run
/dev/mapper/vg0-lv--0                                                           2.0G  727M  1.1G  40% /
/dev/disk/by-id/dm-uuid-LVM-XUcTf7VM74mIIomo2zUWijh26ElWpIQmrCcDnPgQZdm2H6mjx5DX3vODNKp7mGvx  2.0G  740M  1.1G  41% /usr
tmpfs                                                                           986M     0  986M   0% /dev/shm
tmpfs                                                                           5.0M     0  5.0M   0% /run/lock
tmpfs                                                                           986M     0  986M   0% /sys/fs/cgroup
/dev/mapper/vg0-lv--2                                                           2.0G  6.1M  1.8G   1% /home
/dev/mapper/vg0-lv--4                                                           2.0G  6.1M  1.8G   1% /tmp
/dev/mapper/vg0-lv--1                                                           7.9G  374M  7.1G   5% /var
tmpfs                                                                           198M     0  198M   0% /run/user/1000
dssadmin@dbserver1:~$
```

To find free space:

$ sudo pvs

```
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ df -h
Filesystem                                                                      Size  Used Avail Use% Mounted on
udev                                                                            955M     0  955M   0% /dev
tmpfs                                                                           198M  952K  197M   1% /run
/dev/mapper/vg0-lv--0                                                           2.0G  727M  1.1G  40% /
/dev/disk/by-id/dm-uuid-LVM-XUcTf7VM74mIIomo2zUWijh26ElWpIQmrCcDnPgQZdm2H6mjx5DX3vODNKp7mGvx  2.0G  740M  1.1G  41% /usr
tmpfs                                                                           986M     0  986M   0% /dev/shm
tmpfs                                                                           5.0M     0  5.0M   0% /run/lock
tmpfs                                                                           986M     0  986M   0% /sys/fs/cgroup
/dev/mapper/vg0-lv--2                                                           2.0G  6.1M  1.8G   1% /home
/dev/mapper/vg0-lv--4                                                           2.0G  6.1M  1.8G   1% /tmp
/dev/mapper/vg0-lv--1                                                           7.9G  374M  7.1G   5% /var
tmpfs                                                                           198M     0  198M   0% /run/user/1000
dssadmin@dbserver1:~$ sudo pvs
  PV         VG   Fmt  Attr PSize   PFree
  /dev/sdb   vg0  lvm2 a--  <30.00g <14.00g
dssadmin@dbserver1:~$
```

To verify the volume group name

$ sudo vgdisplay

```
dssadmin@dbserver1: ~

dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ sudo vgdisplay
  --- Volume group ---
  VG Name               vg0
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  6
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                5
  Open LV               5
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               <30.00 GiB
  PE Size               4.00 MiB
  Total PE              7679
  Alloc PE / Size       4096 / 16.00 GiB
  Free  PE / Size       3583 / <14.00 GiB
  VG UUID               XUcTf7-VM74-mIIo-mo2z-UWij-h26E-lWpIQm

dssadmin@dbserver1:~$
```

In this scenario, we need to increase /var partition size from 7.9G to 16G

Make a note of the /var partition mapper name

$ sudo df -h /var

As highlighted /dev/mapper/vg0-lv- -1 is a volume group name of /var partition.

```
dssadmin@dbserver1: ~

dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ sudo df -h /var
Filesystem              Size  Used Avail Use% Mounted on
/dev/mapper/vg0-lv--1   7.9G  374M  7.1G   5% /var
dssadmin@dbserver1:~$
```

Steps to extend the /var lvm partition size from 8GB to 16GB

$ sudo lvextend -L +8G /dev/mapper/vg0-lv—1

After extend the partition, we need to resize the file system

$ sudo resize2fs /dev/mapper/vg0-lv—1

Verify the size of /var partition size

$ df -h /var

```
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ df -h /var
Filesystem          Size  Used Avail Use% Mounted on
/dev/mapper/vg0-lv--1  7.9G  374M  7.1G   5% /var
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ sudo lvextend -L +8G /dev/mapper/vg0-lv--1
  Size of logical volume vg0/lv-1 changed from 8.00 GiB (2048 extents) to 16.00 GiB (4096 extents).
  Logical volume vg0/lv-1 successfully resized.
dssadmin@dbserver1:~$ sudo resize2fs /dev/mapper/vg0-lv--1
resize2fs 1.44.1 (24-Mar-2018)
Filesystem at /dev/mapper/vg0-lv--1 is mounted on /var; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 2
The filesystem on /dev/mapper/vg0-lv--1 is now 4194304 (4k) blocks long.

dssadmin@dbserver1:~$ df -h /var
Filesystem          Size  Used Avail Use% Mounted on
/dev/mapper/vg0-lv--1   16G  382M   15G   3% /var
dssadmin@dbserver1:~$
```

```
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ df -h /var
Filesystem          Size  Used Avail Use% Mounted on
/dev/mapper/vg0-lv--1  7.9G  374M  7.1G   5% /var
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ sudo lvextend -L +8G /dev/mapper/vg0-lv--1
  Size of logical volume vg0/lv-1 changed from 8.00 GiB (2048 extents) to 16.00 GiB (4096 extents).
  Logical volume vg0/lv-1 successfully resized.
dssadmin@dbserver1:~$ sudo resize2fs /dev/mapper/vg0-lv--1
resize2fs 1.44.1 (24-Mar-2018)
Filesystem at /dev/mapper/vg0-lv--1 is mounted on /var; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 2
The filesystem on /dev/mapper/vg0-lv--1 is now 4194304 (4k) blocks long.

dssadmin@dbserver1:~$ df -h /var
Filesystem          Size  Used Avail Use% Mounted on
/dev/mapper/vg0-lv--1   16G  382M   15G   3% /var
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ df -h
Filesystem                                                          Size  Used Avail Use% Mounted on
udev                                                                955M     0  955M   0% /dev
tmpfs                                                               198M  952K  197M   1% /run
/dev/mapper/vg0-lv--0                                               2.0G  727M  1.1G  40% /
/dev/disk/by-id/dm-uuid-LVM-XUcTf7VM74mIIomo2zUWijh26ElWpIQmrCoDnPgQZdm2H6mjx5DX3vODNKp7mGvx  2.0G  740M  1.1G  41% /usr
tmpfs                                                               986M     0  986M   0% /dev/shm
tmpfs                                                               5.0M     0  5.0M   0% /run/lock
tmpfs                                                               986M     0  986M   0% /sys/fs/cgroup
/dev/mapper/vg0-lv--2                                               2.0G  6.1M  1.8G   1% /home
/dev/mapper/vg0-lv--4                                               2.0G  6.1M  1.8G   1% /tmp
/dev/mapper/vg0-lv--1                                                16G  382M   15G   3% /var
tmpfs                                                               198M     0  198M   0% /run/user/1000
dssadmin@dbserver1:~$
```

After increase the /var partition size, verify the remaining free space left

$ sudo pvs

```
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$
dssadmin@dbserver1:~$ sudo pvs
  PV         VG   Fmt  Attr PSize   PFree
  /dev/sdb   vg0  lvm2 a--  <30.00g <6.00g
dssadmin@dbserver1:~$
```