原始参考文档链接及出处
https://www.rootusers.com/how-to-increase-the-size-of-a-linux-lvm-by-adding-a-new-disk/

linux 根分区磁盘 LVM 拉升文档，请先仔细浏览出处文档和如下的实践教程，然后在按文档操作。

1. 行业云平台添加新的磁盘到目标机器上。步骤略
2. 检查系统的磁盘信息和状态，并添加磁盘

```
[root@zabbix-mariadb ~]# df -h
Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/centos-root    36G   14G   23G  37% /          #待扩容的分区
devtmpfs                  7.8G     0  7.8G   0% /dev
tmpfs                     7.8G     0  7.8G   0% /dev/shm
tmpfs                     7.8G  561M  7.3G   8% /run
tmpfs                     7.8G     0  7.8G   0% /sys/fs/cgroup
/dev/vda1                 497M  126M  371M  26% /boot
tmpfs                     1.6G     0  1.6G   0% /run/user/0
tmpfs                     7.8G     0  7.8G   0% /tmp
[root@zabbix-mariadb ~]# fdisk -l
Disk /dev/vda: 107.4 GB, 107374182400 bytes, 209715200 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: 0x0004c100
   Device Boot      Start         End      Blocks   Id  System
/dev/vda1   *        2048     1026047      512000   83  Linux
/dev/vda2         1026048    83886079    41430016   8e  Linux LVM
Disk /dev/mapper/centos-root: 38.2 GB, 38214303744 bytes, 74637312 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: 4160 MB, 4160749568 bytes, 8126464 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

（已添加的 300G 盘，待扩容）
Disk /dev/vdb: 322.1 GB, 322122547200 bytes, 629145600 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@zabbix-mariadb ~]# lsblk
NAME                 MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sr0                   11:0    1 1024M  0 rom
vda                  252:0    0  100G  0 disk
├─vda1               252:1    0  500M  0 part /boot
└─vda2               252:2    0 39.5G  0 part
  ├─centos-root 253:0    0 35.6G  0 lvm  /
  └─centos-swap 253:1    0  3.9G  0 lvm  [SWAP]
vdb                  252:16   0  300G  0 disk
[root@zabbix-mariadb ~]# fdisk /dev/vdb
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 0x193b6c2b.

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 (2048-629145599, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-629145599, default 629145599):
Using default value 629145599
Partition 1 of type Linux and of size 300 GiB is set
Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'
Command (m for help): p
Disk /dev/vdb: 322.1 GB, 322122547200 bytes, 629145600 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: 0x193b6c2b

   Device Boot      Start         End      Blocks   Id  System
/dev/vdb1            2048   629145599   314571776   8e  Linux LVM
```

```
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
[root@zabbix-mariadb ~]# pvcreate /dev/vdb1
  Physical volume "/dev/vdb1" successfully created
[root@zabbix-mariadb ~]# vgdisplay
  --- Volume group ---
  VG Name               centos          #记住该 VG Name
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  3
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                2
  Open LV               2
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               39.51 GiB
  PE Size               4.00 MiB
  Total PE              10114
  Alloc PE / Size       10103 / 39.46 GiB
  Free  PE / Size       11 / 44.00 MiB
  VG UUID               9l3Np0-jm8N-IbfG-7Gm8-n62e-ICTn-kZy2Ux

[root@zabbix-mariadb ~]# vgextend centos /dev/vdb1   #centos 为查询信息的 VG Name
  Volume group "centos" successfully extended
[root@zabbix-mariadb ~]# pvscan
  PV /dev/vda2   VG centos   lvm2 [39.51 GiB / 44.00 MiB free]
  PV /dev/vdb1   VG centos   lvm2 [300.00 GiB / 300.00 GiB free]
  Total: 2 [339.50 GiB] / in use: 2 [339.50 GiB] / in no VG: 0 [0   ]
 [root@zabbix-mariadb ~]# lvdisplay
  --- Logical volume ---
  LV Path                /dev/centos/swap
  LV Name                swap
  VG Name                centos
  LV UUID                SOiDoo-oAey-fgAo-6m9E-4H12-gPb5-05iMZ0
  LV Write Access        read/write
  LV Creation host, time localhost, 2017-10-30 12:32:56 +0800
  LV Status              available
```

```
  # open                 2
  LV Size                3.88 GiB
  Current LE             992
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:1

  --- Logical volume ---
  LV Path                /dev/centos/root
  LV Name                root
  VG Name                centos
  LV UUID                jG0H1b-tNnQ-Utai-JYsW-W9JS-vNH5-dfEZWJ
  LV Write Access        read/write
  LV Creation host, time localhost, 2017-10-30 12:32:56 +0800
  LV Status              available
  # open                 1
  LV Size                35.59 GiB
  Current LE             9111
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:0
```

```
[root@zabbix-mariadb ~]# lvextend /dev/centos/root /dev/vdb1
  Size of logical volume centos/root changed from 35.59 GiB (9111 extents) to 335.59 GiB (85910 extents).
  Logical volume root successfully resized.
[root@zabbix-mariadb ~]# cat /etc/fstab
# /etc/fstab
# Created by anaconda on Mon Oct 30 12:32:57 2017
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
/dev/mapper/centos-root /                       xfs     defaults        0 0
UUID=1cedfb5c-6866-413c-b217-ea94143ec03e /boot                   xfs     defaults        0 0
/dev/mapper/centos-swap swap                    swap    defaults        0 0
```

检查主机目标扩容分区的文件系统类型是 xfs,所以格式化文件系统使用 xfs_growfs

```
[root@zabbix-mariadb ~]# xfs_growfs /dev/centos/root
meta-data=/dev/mapper/centos-root isize=256    agcount=4, agsize=2332416 blks
```

```
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=0        finobt=0
data     =                       bsize=4096   blocks=9329664, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0 ftype=0
log      =internal               bsize=4096   blocks=4555, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
data blocks changed from 9329664 to 87971840
[root@zabbix-mariadb ~]# df -h       ##添加成功
Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/centos-root   336G   14G  323G   4% /
devtmpfs                  7.8G     0  7.8G   0% /dev
tmpfs                     7.8G     0  7.8G   0% /dev/shm
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```