

File system Extension Script for RHEL Servers

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DATE : 17 AUG 2014

By using the filesystem extension script we will be increasing “/home” filesystem as shown in below output.

```
[root@rhel5_64bit ~]# df -h /home
Filesystem      Size  Used Avail Use% Mounted on
/dev/mapper/vg00-lv_home
                4.8G  3.4G  1.2G  75% /home
[root@rhel5_64bit ~]#
```

Below is the script file we use for filesystem extension in linux servers.

```
[root@rhel5_64bit ~]# ls -lrth extend_fs_linux.sh
-rwxr-xr-x 1 root root 7.5K Aug 15 03:09 extend_fs_linux.sh
[root@rhel5_64bit ~]#
```

What happens when we run the script as normal user id ?

Below is the warning message displayed when we run the below script as normal user.

```
[vinod@rhel5_64bit ~]$ ./extend_fs_linux.sh

***** This script is used to extend linux lvm filesystem - online ****

WARNING.... You must be a root user to execute this script... Please switch to root user and execute the script again...
[vinod@rhel5_64bit ~]$
```

Running the script as root user

- 1) We need to enter the filesystem name

```
[root@rhel5_64bit ~]# ./extend_fs_linux.sh

***** This script is used to extend linux lvm filesystem - online ****

Please enter the filesystem name to extend the filesystem:
```

Entered the filesystem name as /home

```
[root@rhel5_64bit ~]# ./extend_fs_linux.sh

***** This script is used to extend linux lvm filesystem - online ****

Please enter the  filesystem name to extend the filesystem: /home
```

Below are the filesystem details displayed by the script in below format...

```
Please enter the  filesystem name to extend the filesystem: /home
=====
Below is the information for the filesystem /home you entered
=====

Filesystem  "/"home" Properties

/home      vg name           : vg00
/home      lv name           : lv_home
/home      vol info          : /dev/mapper/vg00-lv_home
/home      fs type           : ext3
/home      total size        : 4.8G
/home      used size         : 3.4G
/home      avail size        : 1.2G
/home      usage in %        : 75%

Volume Group size information

/home      VG name is       "vg00"

vg00 total size      : 27.81 GB ( 29163520 KB )
vg00 free space      : 2.77 GB ( 2908160 KB )

Do you want to extend the filesystem /home now .....press [yes/no]:
```

- 2) The script will ask for your confirmation to extend the filesystem ... you can enter yes/no, which are case insensitive (you can enter like yes/YES/yEs/Yes.....same for no option....etc)
- 3) You also need to mention in which size(MB/GB) you enter the data this option is also case insensitive.

```
Do you want to extend the filesystem /home now .....press [yes/no]: yes
Please enter the size in MB/GB ... Press [MB/GB] :
```

- 4) Next the script will ask for the size which is to be extended... and displays the commands before executing. Before executing the commands the script will ask for DOUBLE CONFIRMATION.

```

Do you want to extend the filesystem /home now .....press [yes/no]: yes
Please enter the size in MB/GB ... Press [MB/GB] : mb
Please enter the size to be extended(only in numbers) in terms of MB: 500
Size to be extended is : +500 MB ( +512000 KB )
Required space is  available in the VG vg00... Therefore proceeding with filesystem extension now...

lvextend -L +500M /dev/vg00/lv_home
resize2fs /dev/vg00/lv_home
Do you want to proceed with above commands /home now .....press [yes/no]: 

```

Double confirmation is provided as below to extend the filesystem

```

Required space is  available in the VG vg00... Therefore proceeding with filesystem extension now...

lvextend -L +500M /dev/vg00/lv_home
resize2fs /dev/vg00/lv_home
Do you want to proceed with above commands /home now .....press [yes/no]: yes
Are you sure .....press [yes/no]: yes

```

Below is the output displayed after executing after the lvm extension commands.

```

Do you want to proceed with above commands /home now .....press [yes/no]: yes
Are you sure .....press [yes/no]: yes

=====
                        BEFORE EXTENSION
=====

Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/vg00-lv_home
                        4.8G      3.4G   1.2G   75% /home

=====

/dev/cdrom: open failed: Read-only file system
Rounding up size to full physical extent 504.00 MB
Extending logical volume lv_home to 5.38 GB
Logical volume lv_home successfully resized
resize2fs 1.39 (29-May-2006)
Filesystem at /dev/vg00/lv_home is mounted on /home; on-line resizing required
Performing an on-line resize of /dev/vg00/lv_home to 1409024 (4k) blocks.
The filesystem on /dev/vg00/lv_home is now 1409024 blocks long.

=====
                        AFTER EXTENSION
=====

Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/vg00-lv_home
                        5.3G      3.4G   1.6G   68% /home

=====

```

Extending the filesystem by using a new VM disk or by using a new LUN

Before running the script we need to manually scan for the new lun/disk and create a partition using fdisk utility.

```
[root@rhel5_64bit ~]# df -h /home
Filesystem      Size  Used Avail Use% Mounted on
/dev/mapper/vg00-lv_home
                5.3G  3.4G  1.6G   68% /home
[root@rhel5_64bit ~]#
```

Here /dev/sdb is the new vm disk of 1GB added to the server. We need to manually create the partition using /dev/sdb disk using fdisk utility and will provide this disk to the fs extension script as shown below.

```
[root@rhel5_64bit ~]# fdisk -l | grep /dev/sd
Disk /dev/sdb doesn't contain a valid partition table
Disk /dev/sda: 21.4 GB, 21474836480 bytes
/dev/sda1   *           1           22       176683+   83   Linux
/dev/sda2           23          2610      20788110   8e   Linux LVM
Disk /dev/sdb: 1073 MB, 1073741824 bytes
Disk /dev/sdc: 8589 MB, 8589934592 bytes
```

Created partition /dev/sdb1 and labeled the disk as 8e(lvm disk label)using fdisk utility.

```
Command (m for help): p

Disk /dev/sdb: 1073 MB, 1073741824 bytes
255 heads, 63 sectors/track, 130 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1           1           130      1044193+   8e  Linux LVM
```

RUN the script to add extend the fs using the new disk in below mentioned steps

```
[root@rhel5_64bit ~]# ./extend_fs_linux.sh

***** This script is used to extend linux lvm filesystem - online ****

Please enter the filesystem name to extend the filesystem: /home
=====
Below is the information for the filesystem /home you entered
=====

Filesystem "/home" Properties

/home    vg name      : vg00
/home    lv name      : lv_home
/home    vol info     : /dev/mapper/vg00-lv_home
/home    fs type      : ext3
/home    total size   : 5.3G
/home    used size    : 3.4G
/home    avail size   : 1.6G
/home    usage in %    : 68%

Volume Group size information

/home    VG name is  "vg00"

vg00 total size      : 27.81 GB ( 29163520 KB )
vg00 free space      : 2.28 GB ( 2392064 KB )

Do you want to extend the filesystem /home now .....press [yes/no]:
```

VG free space is not enough to extend the filesystem in below senario, therefore we will provide a 1GB disk to the script.

```
Do you want to extend the filesystem /home now .....press [yes/no]: yes
Please enter the size in MB/GB ... Press [MB/GB] : GB
Please enter the size to be extended(only in numbers) in terms of GB: 3
Size to be extended is : +3 GB
Size to be extended is : +3072 MB ( +3145728 KB )
Required space is not available in VG... Please add a sufficient space to VG to extend...

Do you have a disk/lun to extend the VG vg00 now ....press [yes/no]:
```

As the vg is not having enough space the script will ask an available disk/lun details as below to add to the volume group.

```
Required space is not available in VG... Please add a sufficient space to VG to extend...

Do you have a disk/lun to extend the VG vg00 now ....press [yes/no]:yes
Please enter the disk partition name as ex: /dev/sdb1 etc to extend VG size::
```

Below is the disk name provided to the script....

```
Do you have a disk/lun to extend the VG vg00 now ....press [yes/no]:yes
Please enter the disk partition name as ex: /dev/sdb1 etc to extend VG size:./dev/sdb1

Below commands will be executed on your confirmation .....
*****
pvcreate /dev/sdb1
vgextend vg00 /dev/sdb1
lvextend -L +3072M /dev/vg00/lv_home
resize2fs /dev/vg00/lv_home
Do you want to proceed with above commands /home now .....press [yes/no]:
```

Script will display the list of commands before executing on the server...Confirm twice to proceed with fs extension...

```
Below commands will be executed on your confirmation .....
*****
pvcreate /dev/sdb1
vgextend vg00 /dev/sdb1
lvextend -L +3072M /dev/vg00/lv_home
resize2fs /dev/vg00/lv_home
Do you want to proceed with above commands /home now .....press [yes/no]: yes
Are you sure .....press [yes/no]:
```

Below is the output...after extending a filesystem using a new disk.....

```
Do you want to proceed with above commands /home now .....press [yes/no]: yes
Are you sure .....press [yes/no]: yes
```

```
=====
BEFORE EXTENSION
=====
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/mapper/vg00-lv_home	5.3G	3.4G	1.6G	68%	/home

```
=====

Physical volume "/dev/sdb1" successfully created
/dev/cdrom: open failed: Read-only file system
/dev/cdrom: open failed: Read-only file system
Volume group "vg00" successfully extended
Extending logical volume lv_home to 8.38 GB
Logical volume lv_home successfully resized
resize2fs 1.39 (29-May-2006)
Filesystem at /dev/vg00/lv_home is mounted on /home; on-line resizing required
Performing an on-line resize of /dev/vg00/lv_home to 2195456 (4k) blocks.
The filesystem on /dev/vg00/lv_home is now 2195456 blocks long.
```

```
=====
AFTER EXTENSION
=====
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/mapper/vg00-lv_home	8.2G	3.4G	4.4G	44%	/home

```
=====
[root@rhel5_64bit ~]# █
```

*****BE Happy....Enjoy the day*****